Hydration Pilot Evaluation: Annexes

Final Report Annexes

June 2025

The Strategy Unit.

NHS
Midlands and Lancashire
Commissioning Support Unit

Contents

Annex 1: Evaluation framework

Key question	Key groups to ask	Source of information
To what extent does the design of the hydration pilot allow it to be successfully implemented and reproduced elsewhere?		
• What activities did planning and designing the intervention involve?	Senior staff	
• Who was involved in planning and designing the intervention?	Senior staff	
• Why was this approach chosen		
• What activities did the intervention involve?		
• Who has been involved in governing, managing and/or delivering the intervention and what have been their roles and responsibilities?		
• What contextual factors are important to understand in terms of delivery (e.g. geography, size and type of home v domiciliary care, staffing available)	All staff	Staff interviews
• What worked well in delivery?		
• What factors supported effective delivery?		
• What challenges or barriers to delivery were experienced and how were they responded to?		
• Were there any unexpected variables that affected delivery (e.g. staffing, technology, unexpected events)?	Senior staff	
• What are the key lessons for scaling up and sustainability?	All staff	
• What would you improve or do differently?		
What impact did the interventions have on the skills, knowledge and experience of staff?		
• What activities were you particularly involved with?	Frontline care staff	Interviews
• What were your views on the training provided as part of the intervention?		

Key question	Key groups to ask	Source of information
• What did you find easy or difficult about delivering or participating in any part of the intervention? • How did the intervention improve your knowledge or skills? • How did you change your practice as a result of the intervention? • What additional needs do you have that would support you to make changes in your practice? • Would you be happy to continue using this intervention/working in this way?	Healthcare staff	
What are the outcomes from delivering the pilot interventions?		

• What difference did the intervention make in hydration levels?
• Which elements of the intervention made the most significant difference on hydration?
• Were there any unintended consequences of the intervention?
• What UTI-related outcomes resulted from the intervention (rates of UTIs, rates of UTI-specific antibiotic prescribing)?
• What difference with regards to falls were seen as a result of the intervention?
• What difference did the intervention make to the use of health services?
   – Primary care
   – Secondary care
• Were there any other outcomes relating to resident wellbeing as a result of the intervention?
	All staff
	
	Frontline care staff
	Data analysis staff
		Interviews M2[1]
		
		Interviews
		
		M1, M3, M4, M6, M7
		Interviews, M5
		
		Interviews, M4, M6, M7
		
		Interviews
		Local evaluation information

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[1] M1-M7 refers to metrics from the evaluation minimum data-set MDS – these are defined in Table 1.2 in Annex 3.

Key question	Key groups to ask	Source of information
• How much did improvement cost in practice per person?		
What have been the experience and outcomes for residents and/or their carers?[2]		
• What did you/residents think about [the intervention]? • Before [the intervention] – did you/residents/the person you care for worry about drinking water or other soft drinks? • Before [the intervention] – did you/residents/the person you care for have any difficulties remembering to drink water or other soft drinks? • Have you/residents/the person you care for been drinking more water or other soft drinks since the intervention? • Have you/residents/the person you care for been feeling better since [the intervention] – in what way? • Would you suggest any improvements or anything else that would help with your/resident/the person you care for, drinking water or other soft drinks? • Would you be happy to/do you think residents/the person you care for would be happy to continue using [this intervention]/working in this way?	Frontline care staff Residents Family/friend carers	Interviews

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[2] These questions were designed to be answered by older people and their carers directly. These interviews did not take place and the experience and outcomes were explored through conversations with staff.

Annex 2: Process evaluation methodology

Method

The evaluation team conducted a first round of semi-structured interviews (n=49) across eight pilot sites from May 2023 to April 2024[3] involving 58 people. The purpose was to explore sites' experience with designing, planning and initially implementing their pilot hydration interventions. They conducted a final round of interviews (n=48) with seven sites from September 2024 to January 2025 also involving 58 people (a mixture of repeat and new participants). The purpose of these interviews was to explore their experience of ongoing implementation, scaling up activities and their views on the sustainability of their interventions.

Across both rounds, interviews were conducted with pilot site leads, staff involved in delivering or participating in the intervention, and other local stakeholders. Interview numbers varied where local evaluators were also conducting interviews or feedback exercises with staff, to avoid duplication and burden on staff. Interview numbers per site also depended on the availability and willingness of stakeholders to be interviewed. Table 1.1 summarises the numbers per site.

Table 1.1   **Interview participant numbers by pilot site**

Pilot site	First round number of interview participants	Final round number of interview participants
Cheshire and Merseyside	7	9
Norfolk and Waveney	4	11
Northumbria	6[4]	N/A
Nottinghamshire	8	7
South East	11	11
South West	9	6
South West London	1	7
South Yorkshire	5	5

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[3] These were staggered to allow for different start dates across the pilots – interviews were timed for three months after initial implementation. This also included a final follow-up interview with two further Northumbria interview participants conducted in April 2024 – final round interviews were not completed as they did not continue into year two of implementation.
[4] This total includes the additional follow-up interview in January 2024

Participants were recruited through pilot site leads. Interviews were conducted virtually using Microsoft Teams, lasting up to one hour and recorded with participant consent. Topic guides, which covered the key lines of enquiry, were adapted by interviewers to reflect the experience and expertise of each participant.

The pilot staff participant information sheets and topic guides used during the final round of interviews are included here. Those used in the first round largely included the same content but focused primarily on the design and early implementation phases of year one of the pilot programme.

968 Hydration pilots - staff participant info

Hydration Pilots - Round 2 Staff TG v1.0

Interviews were recorded, transcribed and then coded using NVivo software. Thematic analysis was used to synthesise qualitative data from first round interviews to inform an Interim report (produced in December 2023). This process was repeated between November 2024 and January 2025 following the completion of interviews in different sites. Individual case study reports were produced highlighting key findings from each site following the first round of interviews and updated following the final round. These are available alongside this Final Report. Annexes 4 and 5 provide more details on normalisation process theory (NPT) which was used to develop recommendations in Annex 5.

Annex 3: Impact assessment methodology

Impact Method

The quantitative impact evaluation explored whether changes in the metrics listed in Table 1.2 occurred following the actions implemented in seven pilot sites. An Interrupted Time Series (ITS) analysis was used to assess whether implementing interventions to improve hydration can be shown to have caused an improvement in the outcome variables. This method was chosen as the data was only collected for the hydration pilots. Therefore, methods that require comparator populations were not feasible. The method also accounts for seasonality which is important when analysing time series data.

Additional data was provided by some projects on fluid intake. This could not be used in the ITS analysis but provides context. This data is included in individual case study reports, where available (see Annex 6).

An Interrupted Time Series (ITS) analysis was used to assess whether hydration pilots were able to achieve measurable change in the outcome metrics agreed for the evaluation (Table 1.2).

Table 1.2   Evaluation minimum dataset (MDS) metrics

Metric Id	Metric Name	Metric Description
M1	Number of UTI diagnoses	Number of UTI diagnoses during the month per 100 patients on the caseload
M2	Percentage of increased fluid intake from baseline	Average change in fluid increase per patient on caseload
M3	Prescriptions of an antibiotic commonly used for UTI	Percentage of patients on the caseload who were prescribed antibiotics commonly prescribed for UTI's
M4	Emergency admissions to hospital due to UTI	Number of patients who had an emergency admission due to a UTI during the month per 100 patients on the caseload
M5	Number of falls \ Falls related admissions	Number of patients who had a fall during the month, regardless of whether they were admitted to hospital per 100 patients on the caseload
M6	Number of ambulance call outs for UTIs	Number of patients who had an ambulance call-out due to a UTI during the month per 100 patients on the caseload

Metric Id	Metric Name	Metric Description
M7	Number of ED attendances for UTIs	Number of patients who had an ED attendance due to a UTI during the month per 100 patients on the caseload

For a range of reasons (see limitations below), pilot sites were unable to consistently collect the agreed MDS metrics. The exact metrics collected by individual pilot sites and their data sources used for the ITS analyses are listed in Table 1.3.

Table 1.3   Metrics used in individual pilot ITS analyses

Pilot site	Metrics used	Sources
Cheshire and Merseyside	• UTI-related primary admissions in the over-65s population • UTI-related primary admissions in care homes • Falls-related admissions in patients from care homes • Combined antibiotics items prescribed to patients aged 70 years and over per 1,000 list size	• Acute • Acute • Acute • Primary care
Norfolk and Waveney	• UTI primary diagnoses • Antibiotic prescriptions (*Year one only*) • Falls • All diagnosis hospital admissions	• Acute • Primary care • Acute • Acute
Nottinghamshire	• UTI primary diagnoses • UTI primary and secondary non-elective hospital admissions • Antibiotic prescriptions • Falls	• Primary care • Acute • Primary care • Acute
South East	• Number of UTI diagnoses during the month per 10,000 patients on the caseload • Rates of antibiotic prescriptions commonly prescribed for UTI's during the month per 10,000 patients on the caseload • Number of patients who had an emergency attendance due to a UTI during the month per 10,000 patients on the caseload • Number of patients who had an emergency admission due to a UTI during the month per 10,000 patients on the caseload	• Primary care • Primary care • Acute • Acute
South West	• UTI non-elective admissions	• Acute

Pilot site	Metrics used	Sources
South West London	• Patient had a fall admitted to hospital • Number of UTI diagnoses during the month per 100 patients on the caseload • Number of patients who had a fall during the month, regardless of whether they were admitted to hospital per 100 patients on the caseload	• Acute • Care home • Care home
South Yorkshire	• UTI diagnoses per 100 patients on the caseload • Antibiotic prescriptions (not specifically for UTI) per 100 patients on the caseload • Ambulance call-outs (not specifically for UTI) per 100 patients on the caseload	• Acute • Primary care • Acute

Interrupted Time Series (ITS) analysis

Interrupted Time Series analysis (ITS), otherwise known as segmented regression analysis, is an approach that can be applied retrospectively to measure how an outcome variable changes as a function of the onset of an intervention. Segmented regression analysis provides an assessment of whether there has been a statistically significant change in either the trend or the level of an outcome measurement. In contrast to other difference in difference methods, an ITS makes it possible to accommodate multiple sources of variation, including seasonality in the data.

In an ITS design, repeated measurements of an outcome variable are taken before and after an intervention (interruption) is introduced. Statistical methods are used to assess whether the intervention has had a significant effect on the time course of the outcome variable that is greater than any underlying trend. The use of multiple data points as opposed to a standard pre/post-test design reduces some of the threats to validity that can affect other non-experimental designs.

The ITS projects the pre-intervention trend at the point of implementation. It then compares this projection with the actual activity following implementation. This is then assessed for statistical significance to understand whether any observed differences were caused by the implementation of the Hydration Pilots. Figure 1.1 shows an example of how an ITS works.

Figure 1.1   Example ITS analysis
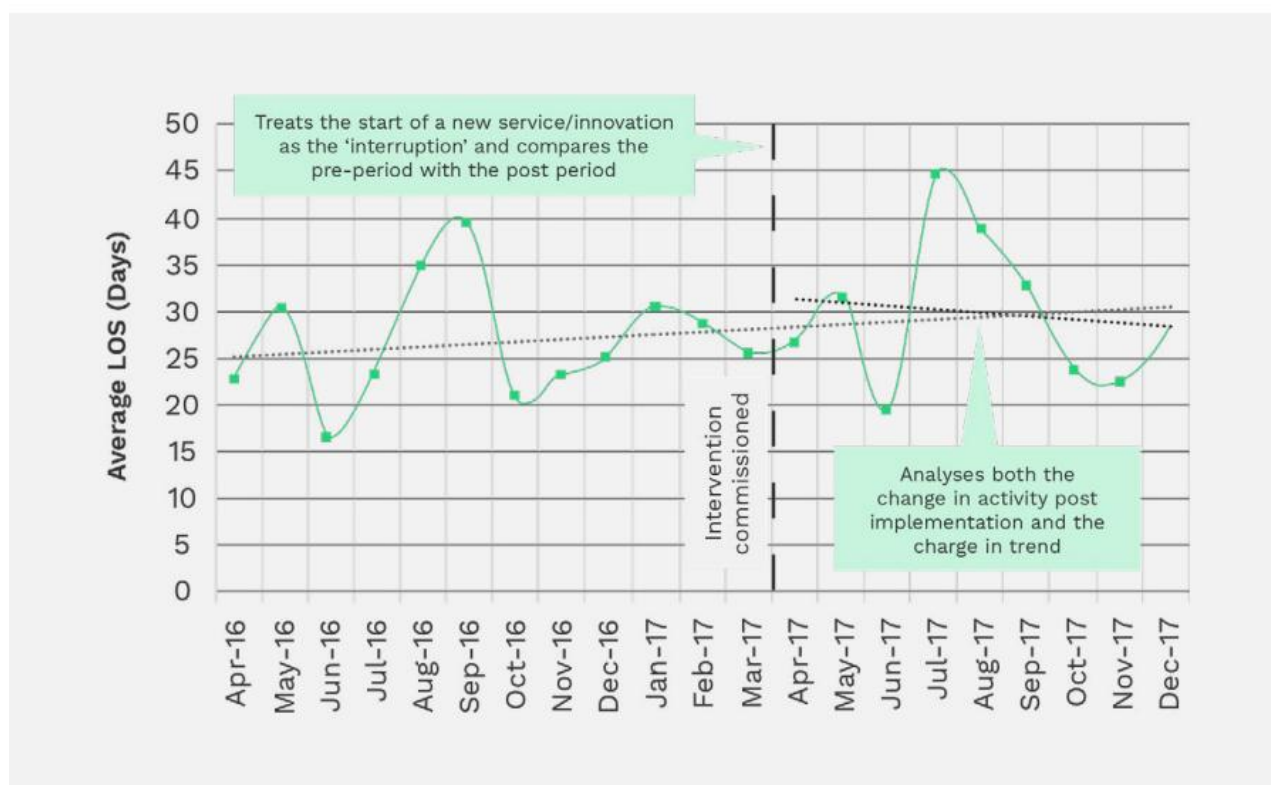
The analysis was undertaken in R using the causal impact package. The pre- and post-implementation periods were set individually for each project. Where available, monthly activity was collected for the year before the hydration pilot was implemented and a year post-implementation. This provided sufficient data points to develop the projection and for any impact to be detected. The pre and post periods were different for each pilot. The pre and post periods used in the analysis are shown in Table 1.4.

Table 1.4   Pre- and post-implementation periods by pilot site

Pilot	Sub-category	Pre-intervention period	Post-intervention period
Cheshire & Merseyside		April 2022 to January 2024	February 2024 to October 2024
Norfolk and Waveney		April 2022 to February 2023	March 2023 to July 2024
Nottinghamshire	Number of UTI diagnoses	April 2022 to February 2023	March 2023 to April 2024
	Emergency admissions to hospital due to UTI	July 2021 to February 2023	March 2023 to June 2024

Pilot	Sub-category	Pre-intervention period	Post-intervention period
	Prescriptions of an antibiotic commonly used for UTI	April 2021 to February 2023	March 2023 to August 2024
	Falls related admissions	April 2019 to February 2023	March 2023 to June 2024
South East	Bexhill	October 2022 to September 2023	December 2023 to July 2024
	Frimley, Redhill and Crawley	April 2023 to March 2024	April 2024 to August 2024
	Crawley South	July 2023 to June 2024	July 2024 to September 2024
	Healthy Horley	August 2023 to July 2024	August 2024 to September 2024
South West		July 2022 to July 2023	August 2023 to May 2024
South West London	Kingston 3, Kingston 4, Merton 3, Sutton 2 and Wandsworth 2	March 2023 to March 2024	April 2024 to November 2024
	Merton 2 and Sutton 1	April 2023 to April 2024	May 2024 to November 2024
	Croydon 8, Kingston 2, Richmond 1 and Wandsworth 1	May 2023 to May 2024	June 2024 to November 2024
	Croydon 2 and Richmond 2	June 2023 to June 2024	July 2024 to November 2024
	Croydon 7 and Merton 1	July 2023 to July 2024	August 2024 to November 2024
	Merton 5, Croydon 6, Kingston 6 and Kingston 5	August 2023 to August 2024	September 2024 to November 2024
South Yorkshire	Four care homes	January 2022 to December 2022	January 2023 to March 2024.
	Six care homes	April 2022 to March 2023	April 2023 to March 2024.

ITS models were developed to test the impact for each outcome in each hydration pilot. The monthly data was changed into ordered, time series observations using the zoo package[5], allowing the monthly dates and the outcomes data to be combined. Following this, the pre-intervention and post-intervention periods were specified in the previous parameter settings.

Segmented regression (or piecewise linear regression) was used to calculate the prediction changes in the ITS model following implementation of the hydration pilots. This regression method estimated one regression for each metric at each pilot in the pre-intervention period. It then estimated another regression for each metric at each pilot in the post-intervention period. Finally, it observed the difference between two periods. The causal impact package[6] has a single-entry point in the CausalImpact() function to fit the outcome variable, control variable, and the intervention period into the segmented regression to build the ITS model.

Limitations

For the impact evaluation, the specific limitations were:

1. ITS analysis can only control for time. Therefore, it was not possible to discount the effect of other interventions operating at the same time as the hydration pilots which aimed to improve the same outcomes. The national rate of falls has shown a downward trend since July 2023 which may mean other confounding factors are influencing the falls metric

2. The pilot sites were not able to collect some metrics designed in the data submission template as the data was not collected locally in the pre-period and national datasets do not identify care home activity

3. In some instances, ITS analyses could not be conducted even if local data was collected, this is because the incidences (n= 0 or 1) observed for some metrics made analyses unfeasible. In other cases, an ITS could be performed, but the incidences were still small; caution is advised in interpretation (these instances have been highlighted in the report)

4. The collection of different metrics from different sources (and therefore with different definitions) means the results cannot be compared across pilots

5. There were some specific limitations to different pilot sites. These include:

   a. **Norfolk and Waveney:** The small numbers in the dataset limited the ability for the impact analysis to detect a change

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[5] https://www.rdocumentation.org/packages/zoo/versions/1.8-12
[6] CausalImpact (google.github.io)

b. **South East:** There was a miscoding issue with antibiotic prescriptions in Redhill. Also, improved coding of A&E diagnoses due to the new EPIC system implemented in Frimley from June 2024 led to an increase in the number of ED attendances being recorded. Thus, the result from the analysis should be interpreted carefully

c. **South West:** Another intervention aimed at improving UTIs happened at the same time as the hydration pilot in Dorset ICB. As the impact was mainly seen in Dorset, this is likely to be a confounding factor. It was not possible to disaggregate the effect of this intervention from the effect of the hydration pilot

d. **South West London**: Small numbers were observed on UTI diagnosis and falls in some phases. The pilot site found it challenging to capture some of the metrics.

Annex 4: Normalisation Process Theory

Normalisation Process Theory (NPT) describes the factors needed for 'successful implementation and integration of interventions into routine work' (Murray, E. et al., 2010).[7]

The four domains or mechanisms used to understand how practices are embedded as standard in NPT are:

- **Coherence.** The meaningful qualities of a practice – considering whether all actors share an understanding of this meaning.

- **Collective participation.** The extent to which a practice engages individuals and groups.

- **Collective action.** How the practice interacts with existing processes.

- **Reflexive monitoring.** How actors reflect on or appraise the practice

NPT can be applied at different stages of implementing interventions including the design phase of both the intervention and its evaluation, as well as providing an analytical framework for understanding qualitative findings. Within the domains a series of questions enable those applying NPT to further analyse or consider aspects of implementation (see Figure 1.2). The evaluation framework includes questions aligned with these domains, which were used during the analysis phase to structure the recommendations.

Figure 1.2   Domains and sub questions of NPT (Murray et al.2010)

Coherence	Cognitive participation	Collective action	Reflexive monitoring
• Is the intervention easy to describe? • Is it clearly distinct from other interventions? • Does it have a clear purpose for all relevant participants? • Do participants have a shared sense of its purpose? • What benefits will the intervention bring and to whom? • Are these benefits likely to be valued by potential participants? • Does it fit with the overall goals and activity of the organisation?	• Did target user groups think the intervention is a good idea? • Did they see the point easily? • Were they prepared to invest time, energy and work in it?	• Has the intervention affect(ed) the work of user groups? • Has it promote(d) or impede(d) their work? • Did staff require extensive training before they could use it? • How compatible is it with existing work practices? • What impact has it had on division of labour, resources, power, and responsibility between different professional groups?	• How did users perceive the intervention once it had been in use for a while? • Was it perceived as advantageous for service users or staff? • Is it clear what effects the intervention has had? • Were users/staff able to contribute feedback about the intervention once it was in use? • Was the intervention able to be adapted/improved on the basis of experience?

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[7] Murray, E., Treweek, S., Pope, C. *et al.* (2010) Normalisation process theory: a framework for developing, evaluating and implementing complex interventions. *BMC Med* **8**, 63 https://doi.org/10.1186/1741-7015-8-63

Annex 5: Applying NPT to recommendations

Table 1.2 below highlights particular experiences from the pilot sites and how they fit into the four NPT domains (in response to at least one of the domain sub-questions). Based on these experiences, recommendations for steps to enable timely successful implementation or normalisation are made for organisations seeking to introduce and normalise similar hydration interventions, and for NHS England to consider for future support of good hydration practice.

Table 1.5   Analysis of pilot activity by NPT domain

Findings	Recommendations for organisations planning implementing hydration intervention	Recommendations for NHS England
Coherence: the meaningful qualities of a practice – considering whether all actors share an understanding of this meaning.		
In **Northumbria (NU),** the pilot team involved care home managers in their co-production group, to ensure their staff training and competency-focused intervention could build on an evidence base but tailor it appropriately to the needs and preferences of that workforce	• **Actively involve care home managers, staff, and target populations** in co-designing interventions to ensure alignment with their needs and preferences. • **Where possible, co-produce all elements of implementation, not just co-design,** with target audience such as baseline	• **Review how hydration is covered in mandatory training for health and care staff** – potentially working with Skills for Care and Skills for Health to review Care Certificate Standard Eight, but also any future alternative • **Develop a standardised content framework** for ICBs
The **South West (SW)** pilot team carried out co-production activities with people with lived experience during the design and production phases to ensure that their target audience (men over 70s living in the community) would value the intervention – survey findings indicated that the population wanted to understand more about why hydration is important for health.		

Findings	Recommendations for organisations planning implementing hydration intervention	Recommendations for NHS England
In the **South East (SE)**it took some time for the three ICBs working together to collectively agree on the intervention and to navigate complexities of figuring out how the intervention could be delivered across the three areas. Participants described that regular discussions and shared focus on driving pilot forward supported project board members to resolve challenges. In **Nottinghamshire (NS):** • The ROC app scored very highly during steering group assessment of relevance and effectiveness. • Some care homes which already had digital solutions for care planning saw the app as duplicating their features. In **Norfolk and Waveney (N&W)** and **South Yorkshire (SY):** • Some care homes did not see the need for the training, feeling their hydration care was sufficient or given that their staff complete the Care Certificate Standard Eight on fluids and nutrition.	survey, design or selection process, reviewing and refining training materials, engaging other members of target audience. • **Include time in implementation schedule for consensus building** or developing shared understanding with target audience that an intervention is needed • **Adapt (even existing) training and resources** to resonate with local contexts and workforce requirements,	or other quality assurance materials for ICBs to review their own adapted interventions to ensure quality and consistency. • **Continue to facilitate shared learning spaces** where staff with ongoing interest in hydration can continue to share good practice after the pilots • **Review and update existing NHS England guidance[8]** on good commissioning of hydration care to ensure it captures learning the from pilots.

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[8] See previous guidance NHS England (2015) *Guidance – Commissioning Excellent Nutrition and Hydration 2015 – 2018* Available at: https://www.england.nhs.uk/wp-content/uploads/2015/10/nut-hyd-guid.pdf

Findings	Recommendations for organisations planning implementing hydration intervention	Recommendations for NHS England
• Some homes were wary of engaging with the pilot team due to concerns about scrutiny of practices – trainers consciously adopted a supportive approach to reduce these anxieties. • Attitudes changed when hydration needs assessments or training of some staff was completed and showed them that there were gaps in their knowledge and skills. • Some stakeholders questioned inconsistencies between different education packages across different sites.	ensuring interventions feel relevant and practical • **Tackle scepticism** by demonstrating gaps in knowledge or practices through assessments or initial training and adopt supportive strategies to reduce anxieties.	• **Consider whether future programme timescales are suitable for co-production** and steer participants accordingly in programme and/or grant criteria • **If sufficient time available for co-production as part of future programmes, signpost to existing national guidance** on co-design and co-production as appropriate to staff, target population and setting.
In the **South West London (SWL)** participants described the #ButFirstADrink behavioural change initiative (whereby before every interaction health and care staff have a drink with a person) as very easy to understand and implement.		
In the **South East (SE)** some participating staff queried the pilot's older target population, the exclusion criteria, and the focus on distributing to patients with a UTI in the past 12 months. They suggested it would have been better trialled with younger people recently diagnosed with UTI (to widen participant numbers).		
Cognitive participation: The extent to which a practice engages individuals and groups.		
In **NS, N&W, NU, and SY** • The level of engagement with training among care homes was variable, challenged by staff workloads and capacity to	• **Scope out potential barriers to engagement** including digital	• **Develop national-level communication materials** to raise awareness about

Findings	Recommendations for organisations planning implementing hydration intervention	Recommendations for NHS England
be released for training (particularly in-person training); in-person visits to homes supported initial recruitment stages. • Once set-up, training sessions in **N&W, NU and SY** attracted care home staff from across different staff groups as intended, providing input from different perspectives. • Additional online training elements provided flexibility but some staff either did not complete the online elements or disengaged with in-person training if they completed it first – **SY** moved to providing it only after in-person had been completed. • Word of mouth promotion from early participants in **N** and **SY** encouraged increased engagement.	infrastructure limitations, conflicting or parallel programmes making demands on same staff groups, and risk manage them through the lifetime of the intervention • **Start small, conduct user testing and stagger implementation** to test reception to the intervention and anticipate any barriers to engagement among wider pool of participants, including sufficient resource for troubleshooting • **Leverage word-of-mouth promotion** by encouraging early participants to share their positive experiences to boost engagement among other staff and settings.	hydration's importance and highlight different interventions, making it easier for ICBs to engage local stakeholders and the public. • **For future programmes funding digital interventions in social care, review technical feasibility of bids** ensuring they include sufficient contingency for addressing any likely digital infrastructure issues. • **Provide an independent steer on the applicability of a digital intervention**, for example through requesting a critical appraisal of any new technology to be used in the target setting.
Webinars in **SWL** which promoted the importance of hydration were attended by up to 700 people on a regular basis and when the pilot was rescoped to focus on BFAD, there was increased interest in participation, with 17 care homes joining an existing 13.		
In the **SE** PCNs with the strongest engagement were those whose leadership embraced innovation as a way of achieving benefits for their patients. The resistance to participation among some other PCNs surprised the pilot lead.		

Findings	Recommendations for organisations planning implementing hydration intervention	Recommendations for NHS England
In **NS:** • Levels of engagement from care homes during the pilot varied during and between phases, with homes without current digital care planning solutions the most engaged. • The app developer launched a tiered accreditation scheme in phase two to encourage usage of the app among staff and made Level 1 e-learning in hydration a requirement for participation – staff usage of app and awareness of good hydration care was reported to increase. • One interviewee questioned the certification requirements (such as target number of points of care recorded) because they were not proportional for the size of the homes. In the **SW**: • They received 70 responses to the co-production survey which shaped the design of the intervention. • Community groups supported the **SW** pilot team to distribute the intervention to 900 recipients initially and 1200 in the second phase. • Some relationships with venues had to be re-brokered between phases one and two of the intervention due to funding-related gaps in activity.	• **Offer flexible, blended training options** (in-person and online) to accommodate staff schedules and work demands, while ensuring e-learning components are effective and complement in-person sessions. • **Consider sequencing of in-person and online training elements to** allow for different levels of engagement or participation.	• **Provide national guidance on delivering educational initiatives in care home settings** on upskilling care home staff, learning from this pilot and a synthesis of the relevant evidence-base**.**

Findings	Recommendations for organisations planning implementing hydration intervention	Recommendations for NHS England
In the **SE** 6 PCNs worked with 467 patients over the length of the pilot. However, a higher-than-expected number of patients declined participation, citing reasons such as already drinking enough fluids, not wanting to fill in the hydration plan, the timing of cycles, and believing their recurrent UTIs were due to other causes.		
In **C&M:** • Care homes and other care settings were slow to engage with initial smart cup intervention and some failed to have the right digital infrastructure to use them. • There was more enthusiasm for the training in the second year of the pilot – with 39 homes, and around 1000 staff (care home and NHS) trained via in-home training or community-based masterclasses.		
Collective action: how the practice interacts with existing processes.		
In **N&W, NU and SY:** • Care home staff reported improved communication about, and increased awareness of, good hydration care from staff in their homes, and that they were personally better able to support the hydration needs of even patients with complex care needs.	• **Work with ICB senior management to keep hydration on their radar** as a strategic area for action • **Plan for targeted support and training to care home**	• **Work with other relevant agencies like CQC, RCGP, CSO and UKHSA and relevant NHSE teams to further socialise** guidance on dipstick testing and ensure all

Findings	Recommendations for organisations planning implementing hydration intervention	Recommendations for NHS England
• However, they also identified organisational and systemic barriers to them being able to implement change, such as staff shortages, cost of changes (such as increased ranges of drinks and hydrating foods) and internal culture and role expectations within their care homes prohibiting them from sitting down with residents to drink. • The requirement for management to attend training in both areas went some way to address this, but interviewees from all three sites suggested obstacles remain.	**staff with low digital literacy,** ensuring online materials and tools are accessible. • **Offer a range of potential interventions for different settings and budgets** to encourage adoption and sustainability. • **Engage with GPs** to align local practices with guidelines (for example discouraging dipstick testing)	local health partners are working in the same way to improve hydration • **Continue to embed a 'prevention first'** approach, integrating preventative care across the entire system
In **N&W and NU** there were significantly more challenges for homes in accessing online training and materials than expected, with low levels of digital literacy among some staff and homes.		
In **SY**, ICB organisational change contributed to limited resources and capacity to implement the pilot in the later scaling up phases (where the intervention was deployed into different SY areas).	• **Continue to work with health and care settings to address any organisational or systemic barriers** such as staff shortages, costs of implementing changes, and internal cultural barriers.	
In **Notts:** • App data indicated that there was an increase in resident fluid intake and points of care for eight homes which participated in phase one. • One home assigned one member of staff, to avoid duplication of effort for more staff, to enter once-daily data	• **Conduct due diligence of any SMEs providing digital**	

Findings	Recommendations for organisations planning implementing hydration intervention	Recommendations for NHS England
about points of care and fluid intake from all staff into the app. • Care home staff in waves one to three reported that they are more easily able to identify patients who have a lower fluid intake and can take steps to remedy this earlier by encouraging the resident to drink, rather than relying on physical signs of dehydration (skin and eyes). • Additionally, care home staff members described how the ROC app has enabled them to provide evidence to GPs when they are concerned a resident may have a UTI or be dehydrated.	**tools** and ensure contracts sufficiently cover organisations for impact of risks. • **Consider from the beginning how the intervention may be sustained with minimal additional resources** and identify potential mitigation strategies	
Most care home staff in **C&M** and **SWL** were already struggling to use the smart cups before they were discontinued as the particular model was not yet fit for market. In **SWL** however, some care homes were positive about the short time they were able to use the smart cup to track hydration levels of residents and the increased levels of communication among staff about hydration that they introduced.		
In **SWL:** • The levels of digital support that homes needed in SWL during the smart cup installation and the issues homes had		

Findings	Recommendations for organisations planning implementing hydration intervention	Recommendations for NHS England
with providing outcome data for residents were more challenging than anticipated. • Following the introduction of BFAD, the pilot team received feedback from care home staff reporting improved knowledge and skills around hydration to the pilot team, and improved confidence to recognise dehydration. • Participants were positive about the less intensive resourcing that BFAD requires and the extent to which it was already becoming part of care home normal routines.		
In **C&M:** • Training participants highlighted to the trainer the challenges of working with GPs still insisting on using dipstick testing for older people despite UKHSA guidance – the trainer was then able to raise this with the ICB. • Dedicated project management resource and roles in the team supported the wider roll-out of the training.		

Findings	Recommendations for organisations planning implementing hydration intervention	Recommendations for NHS England
In the **SE** sites, PCN staff working in ARRS roles[9] (including care coordinators, social prescribing link workers and dietetic assistants) found that the intervention work fitted the type of work they do with patients as part of their usual role and they were able to link it to wider wellbeing work.		
In the **SE,** some staff had limited capacity to implement the pilot alongside their regular duties, and the PDSA cycle timings clashed with work pressures and seasonal leave commitments; there was limited capacity for data collection in particular.		
Reflexive monitoring: how actors reflect on or appraise a practice		
All sites: Conducted some level of local evaluation (involving surveys, interviews, focus groups or bigger feedback events), conducted either by the pilot team or external providers (such as the ICB evaluation team in Norfolk or the app developer in Nottinghamshire) which provided valuable	• **Work with ICB BI teams** to identify what UTI-related data is available and make this easily accessible, addressing barriers where they are identified to	• **Conduct further review of the barriers** in the health and care system preventing health and care partners sharing relevant metric data which would enable sites to

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[9] For more information on the ARRS scheme and roles see: https://www.england.nhs.uk/gp/expanding-our-workforce/

Findings	Recommendations for organisations planning implementing hydration intervention	Recommendations for NHS England
qualitative and quantitative insights and commonly indicated the positive effect on participants (staff, patients or general public) in terms of hydration care and knowledge or hydration-related behaviour. • Struggled to provide data which matched (exactly) all selected national evaluation metrics – with only **SE** and **NS** able to collect some data relating to fluid intake (but not via clinically validated methods) to provide evidence of hydration increasing. • Identified barriers relating to the way different social care and health organisations record patient diagnostic and outcome information, and the barriers to data sharing between them.	encourage a whole-system approach • **Work with care homes or other relevant organisations to improve fluid recording,** potentially with the support of (well-established) digital tools • **Continue to monitor outcomes** of interventions to understand their effectiveness over time • **Select and monitor qualitative outcomes** or collect personal stories from older people who have improved their hydration to demonstrate the value of interventions.	monitor effectiveness of hydration interventions • **Before launching programmes, commission feasibility studies** to establish the standardised metrics it is possible to collect across different health and care settings or what support systems require to collect them. • **Consider any opportunities for sharing insights** from any existing academic trials of specific hydration-related interventions to raise awareness of evidence-base • **Provide resources or step by step guidance on evaluating** effectiveness of hydration interventions such
In **NU** the pilot team used NPT theory as part of their evaluation which included interviews with care home staff participants and an analysis of outcome metrics – this identified that the positive response from participants on an individual level was hindered by some systemic barriers which might prevent the intervention becoming normalised.		
In the **SE:**		

Findings	Recommendations for organisations planning implementing hydration intervention	Recommendations for NHS England
- They developed an interactive dashboard to collate and visualise feedback and an MS Excel-based tool to share with others to support them to collect data. - Feedback was used to change or add elements to the intervention after each PDSA cycle. - Staff agreed that patients responded positively to the booklet throughout all the cycles, self-reporting behaviour changes as a result (for example, increased hydration levels, and investing in water bottles). - Some staff suggested that in the future the intervention would be better used in response to individual patient need rather than rolled out to groups of patients all at once.		as interactive dashboard templates.
In **SY** changes to the delivery approach (based on attendee feedback) included an increase in the length and number of sessions to enable more staff from within a home to attend – as they could not all be released at once. Content was also adapted to better answer queries emerging in first sessions.		
In **NS:** Staff observed positive outcomes for resident from using the app including alerts to potential diabetes among residents		

Findings	Recommendations for organisations planning implementing hydration intervention	Recommendations for NHS England
with high fluid intake and improved skin integrity due to improved hydration. • However due to the lack of interoperability of the app with other systems and duplication of other care solution features the ICB declined to continue to implement it.		
In **N&W,** based on the local evaluation of phase one and further feedback in phase two, delivery partners worked together to refine and shorten the training, adding more online elements to enable flexibility and staff to participate who were unable to attend in-person sessions (although trainers remain sceptical of value of e-learning alone).		
In **C&M:** • The trainer was proactive in ensuring that training was tailored to the needs of participants, drawing on their own clinical experience and domain knowledge, and incorporating feedback from participants (provided at the end of training sessions). • As in **N&W, SY and NU**, staff were reported to have improved their own hydration		

Annex 6: Pilot case studies

Cheshire and Merseyside

Summary

- Cheshire and Merseyside Integrated Care Board (ICB) initially piloted a smart cup intervention (which digitally measures and records the amount of fluid residents are drinking) in multiple care settings across two locations (Sefton and Wirral) between June and December 2023.

- With the cup linked to a wristband (to be worn by residents), the device was designed to transfer data (via Bluetooth) and record it in an online dashboard, enabling staff to monitor residents' hydration levels.

- Challenges experienced with implementing the smart cup included issues with its design and functionality and the quality of data recording; these issues could not be resolved by the manufacturer and it was discontinued in January 2024.

- Following its withdrawal, the pilot refocused on a training intervention, which aimed to increase knowledge among care home staff about the importance of hydration for older people. This training was designed by the trainer, also drawing on learning from implementation of the Hydration pilot in Rotherham, South Yorkshire.

- At the time of interviewing, the pilot team had delivered the training in 40 care homes in Sefton and Wirral, with the aim of expanding to an increased number of care homes and other settings in Cheshire and Merseyside.

- The pilot teams' clinical expertise, and existing links with relevant networks, as well as dedicated project management resource, have aided design and implementation throughout the pilot.

- An interrupted time series analysis of data from care homes in Sefton and Wirral, conducted by the national evaluation team, showed statistically significant reductions in antibacterial prescribing, and falls following the training but no significant effect on UTI diagnoses or E.coli infection rates.

- Positive feedback from training participants highlighted the multidisciplinary nature of the masterclasses. Staff gained new insights on hydration, infection control, and practical measures, prompting some to reflect on their own hydration behaviours.

- The pilot team plan to expand the training to other services like domiciliary care, considering a tailored approach due to the nature of their work setting.

- Continued funding for pilot team posts within the ICB is the main challenge to sustaining the hydration training intervention. The pilot team outlined plans for long-term sustainability, including making resources available to integrated care system (ICS) stakeholders and promoting a more integrated approach between primary care and care homes.

This case study presents the findings from two rounds of interviews with 12 participants piloting a smart cup intervention, and subsequently, a training and education intervention, in Cheshire and Merseyside. This included seven interviews in 2023 and eight interviews in 2024 (including one joint interview). Some participants were interviewed more than once during the course of the evaluation. Interviews were completed with stakeholders from the pilot team, system stakeholders, and care home staff. The pilot team also shared internal documents such as meeting agendas, data summaries, and highlight reports. Relevant information has been summarised and included in this case study. The key findings from this case study are summarised below.

1.1   Description of pilot intervention

Initially, Cheshire and Merseyside's Hydration pilot intervention included both a smart cup device and a hydration-related training and education offer for staff working in care settings (care homes and intermediate care settings) as well as domiciliary carers. The smart cup was designed to provide real-time fluid intake measurements, using a Bluetooth connection, tracking the timing and volume of fluids being consumed by each resident. Each resident also received a wristband, linked to their smart cup, allowing for data to be linked to the resident and recorded in an online platform. The intention was that care home staff should review data collected by the cups and use this information to adjust care and support provided to residents around their hydration levels (for example, encouraging them to drink more). The pilot was focused on the Sefton and Wirral localities within Cheshire and Merseyside, selected due to their relatively high rates of antibiotic prescribing for urinary tract infections (UTIs), when compared with other places in England.

Following the removal of the smart cup from the market, the pilot was refocused solely on the education and training element of the intervention. The model involves providing hydration training as part of a multidisciplinary Integrated Care Board (ICB) support package and review process.

The target audience for the training was mainly care staff working in care homes but also included a broad range of stakeholders from the integrated care system (ICS) whose remit involves working with the target population (people living in Sefton and Wirral aged over 65). This included staff working in care homes including managers, nurses, and catering staff, as well as staff from the wider health and care system, and carers groups.

The main aspect of the hydration training was a 90-minute face-to-face training course delivered, on-site at participating care homes. The team also delivered face-to-face specialist masterclasses in venues across the community. These masterclasses were half-day training sessions with the theme of hydration, delivered in collaboration with other teams in the ICB including the IPC (Infection Prevention and Control), Falls, Speech and Language Therapy (SALT), Continence, Dietetics, Tissue Viability, and Medicines Management teams. In addition, the trainer created an online information resource called the Hydration hub which contained evidence-based information and resources about

hydration. This was made available to all care homes and shared with other relevant groups. During the scaling up phase, the pilot team expanded to cover more areas within the Cheshire and Merseyside system.

1.2   Initial design and planning

The Cheshire and Merseyside pilot proposal was developed by the senior ICB staff, with input from the ICB's antimicrobial resistance (AMR) board and the ICB's Hydration pilot steering group. Following award of project funding, a project lead was recruited. This lead was responsible for the project design, planning and day-to-day implementation of the hydration intervention.

Cheshire and Merseyside ICB designed their intervention with the dual aim of reducing the prevalence of UTIs and the antimicrobial prescribing for these infections. Improving hydration was acknowledged to be both a preventative measure for UTIs but also as having wider health benefits.

> *"…keeping people hydrated impact[s] on so many [aspects] of that person's life. So not only does it reduce the risk of UTI, it impacts on cognition, falls, skin damage… so that was why we thought 'We need to have a focus on that hydration*".

During the intervention selection phase, the project team were able to apply their clinical experience and knowledge about evidence and policy related to AMR and hydration to identify the most suitable intervention in line with their aims.

The smart cup device was chosen as an intervention for three main reasons:

* The use of an electronic device was in line with the ICB's commitment to digital innovation

* The provider for the smart cup technology was locally based, and this was seen as potentially adding social value

* The smart cup device was already being used and showing promising results in a separate care homes project in the Wirral locality.

The intervention was implemented in different care settings (including care homes, intermediate care settings and an NHS hospital), to allow for comparison of how the intervention works in different contexts[10].

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[10] Initially it was planned that domiciliary care would be included as a setting for pilot activities, but due to limitations with the technology (including the need for reliable internet signal within individual homes), this was not possible. However the pilot team stated that in the longer term they plan to expand into domiciliary care.

1.2   Initial set up and implementation

1.2.1   Set up and implementation of smart cup technology

At the start of the pilot, implementation activities conducted by the project team included engagement with care homes and other care settings to share information about the pilot and encourage participation.

Initially, eight care homes were identified for potential participation in the pilot, based on their higher rates of UTIs. However five homes subsequently declined to take part, and one additional home failed installation checks due to insufficient internet infrastructure.[11] Despite the engagement of intermediate care settings and one NHS acute ward interested in participating (in addition to the remaining care homes), delays to implementation prevented some from participating before the smart cup was discontinued.

In total, the smart cup technology was installed in two intermediate care settings and one care home. The project lead supported them to obtain data sharing agreements and data protection impact assessments. The project lead also liaised with the smart-cup provider to schedule the installation of the smart cups and syncing equipment, and training on how to use the smart cup technology. The pilot team then liaised with staff from the care settings to monitor how the smart cups were being used and to review the data being collected.

The pilot team and care homes reported a number of challenges with implementation of the smart cup. For example, the smart cup functionality and design changed mid-way through implementation to a new design reported to be more difficult to use. There were also concerns about the accuracy of the measurement of fluid intake. Further, there was limited communication and technical support from the smart cup provider which added to challenges with implementation.

Due to these challenges, the implementation of the smart cup technology was paused in December 2023 and then discontinued (as discussed in Section 1.1) when the smart cup product was withdrawn from the market altogether.

Based on their experience of using a new digital product and working with a start-up digital provider, the project team reflected that they would recommend implementing the product in one setting over a longer time period before using it in other care settings.

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[11] In order to install the smart-cup technology in the care home or other care setting, a reliable internet connection and specific minimum broadband speed was required. This infrastructure would enable the smart cup data to be synced to a data dashboard

1.3   Rescoping of intervention: set-up and implementation

1.3.1   Set-up and implementation activities

The training element was developed later in the pilot phase, beginning in February 2024 after the discontinuation of the smart cup.

The Cheshire and Merseyside pilot team (including a trainer recruited as part of the pilot) developed hydration-related educational resources including a face-to-face training package for care home staff. The content of the training was based on existing guidance and evidence related to hydration and infection rates in the community. This included relevant clinical guidance from the National Institute for Health and Care Excellence (NICE), UKHSA and NHS England, and the Care Quality Commission. The trainer used a Plan-Do-Study-Act (PDSA) approach to develop the training content. This involved piloting the training to four sites initially and then gathering feedback which they used to further refine the training.

The trainer also liaised with the pilot leads from the Hydration pilot in Rotherham (South Yorkshire) which had also used a training intervention. This pilot had reported promising initial findings (such as a positive impact on UTI rates). Although the Cheshire and Merseyside pilot did not have the same dietetics focus as the Rotherham pilot, they were able to obtain key learnings and insights about the practicalities of delivering the training in care homes (for example, number of attendees, training venue, timing of training). This learning informed the design of the intervention in Cheshire and Merseyside.

The main set-up and implementation activities for the training intervention involved networking and liaising with stakeholders to raise awareness about the training and to gain engagement and buy-in from stakeholders. Throughout the engagement process, the pilot team were proactive in drawing on their existing links with relevant networks to both encourage participation and gather and share learning. This included links with care homes, groups within the health and care system, the community, as well as other Hydration Pilot programme sites.

"My main focus is making every contact count[12], which is a good public health message, and it's making sure that everything's evidence-based. Making sure that there is not just only coverage for our care homes, but those people who are on the periphery. So I've [included] day centre staff as well, also getting professionals onboard [from the] NHS, local authority, or other stakeholders [including] unpaid carers and family carers groups..."

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[12] The Making Every Contact Count (MECC) approach is used in healthcare to use routine interactions with patients to have conversations about their wider health and wellbeing. Further information can be found at: https://www.hee.nhs.uk/our-work/population-health/our-resources-hub/making-every-contact-count-mecc

At the time of interviewing (December 2024), the team had delivered training to 39 of 120 care homes in Sefton and Wirral and planned to deliver training for two more care homes. They had also delivered four masterclasses. The pilot team also delivered training by attending events and meetings. Overall, around 1000 people had been trained, including around 540 care home staff and around 200 NHS staff. Wirral also chose to continue previous hydration-related interventions alongside participation in the pilot.

In addition to the face-to-face training, the pilot team also created educational materials such as the Hydration hub information resource and a newsletter, which they distributed to key stakeholders (for example, care home commissioners, to cascade information to providers). This option allowed the pilot team to send information out to people who may not have been able to attend the in-person training or masterclasses. The trainer collected feedback about the initial iteration of the Hydration hub and used this to make improvements to the resource. The revised Hydration hub was launched in December 2024.

1.3.2 Views on rescoped set-up and implementation

Both the pilot team and care home interview participants highlighted the importance of the training being delivered face-to-face and on-site in care homes, as this made the training more accessible to care home staff who otherwise may not have been able to attend the training.

The trainer also delivered the training in a tailored manner to suit the needs of the trainees and signposted to other resources or teams as needed.

> *"You've got to engage. You've got to be open …You've got to have those listening ears to listen to what they're saying and the issues and the problems because you could be teaching a care home … best practice, but like the GP practices, they're falling at the next hurdle. So we've got to be able to listen and then to cascade and say, "Well I can't fix that problem, but somebody else can" and [escalate the problem]… It's about networking and being … open and engaging."*

In addition, the trainer's background and expertise in infection control enabled them to directly address a known issue concerning the diagnosis of UTIs in care homes using urine dip-testing. Recent UK Health Services Authority (UKHSA) guidance advises against dip-testing for older people due to the high rate of false positives, which may result in over-prescribing of antibiotics for UTIs[13]. The pilot team reported that training attendees from some care homes were reporting that they were still being asked by GPs to follow the old guidance (of using a urine dip-test to check for a UTI). The trainer then liaised with the ICB's medicines management team to ensure that this was addressed in training with

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[13] UK Health Services Authority (UKHSA) Guidance: Urinary tract infection: diagnostic tools for primary care. Available at: https://www.gov.uk/government/publications/urinary-tract-infection-diagnosis

GP practices. Some interview participants specifically commented on the inclusion of this guidance within the training, reporting that it was helpful in assessing symptoms at their care home without defaulting to dip-testing for a UTI.

> *"...when we increased our fluids and our infection control we've seen a massive dip in our urine infections... we don't [use the dip-test] in [our care home] and [if someone wants to use one] I'll [say] "Who's that sample for? Why do you want that sample?" ...I think... when I first started here [if residents were confused], everyone would jump to... 'They've got a water infection' ... whereas now, [with the] education [from the trainer]..they think different now...'OK let's try and increase the fluids, let's try this'. And ... it works. Yes, we get a phone call from our GP every day, Monday to Friday. It's like a triage and they even made some comments one morning, they...said "We've noticed you're not sending us many urine samples in". So obviously we told them about the work we're doing with [the trainer]... and they were absolutely over the moon as well."*

1.4   Scaling up set-up and implementation

At the time of interviewing (December 2024), the pilot team were in the process of organising the expansion of the pilot. The aim of the scaling up phase of the pilot was to expand into further areas in Cheshire (Halton, Warrington, Cheshire East and Cheshire West & Chester) and Merseyside (Liverpool, Knowsley and St. Helens).

The pilot team aimed to prioritise which areas and settings to work in by using local data on rates of antimicrobial resistance, UTIs, falls, and infection rates in care homes. This allowed them to identify potential 'hotspots' for the intervention to maximise the benefit of the intervention.

Another aim of the expansion of the pilot was to expand to other stakeholder groups. Due to limited resource, the pilot team proactively shared the educational resources with key stakeholders both within and beyond the ICS and supported them to cascade this information to their own staff. For example, they shared the resources with IPC teams, Admiral Nurses[14], local carers groups, domiciliary care providers, and day centres within the system by distributing leaflets and newsletters or attending hydration awareness events, meetings, and conferences.

At the time of interviewing in December 2024, the pilot team reported that the scaling up had been working well and identified a number of factors that contributed to this:

- Dedicated resource and roles in the pilot team to oversee implementation. Several interview participants praised the enthusiasm and engagement of the pilot team, and their ability to drive the pilot forward

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[14] Admiral nurses are specialist nurses who provide support to people with dementia.

- Pilot team expertise and wider links to networks across the ICS helped with building the relationships needed for the scaling-up process

- The trainer was proactive in ensuring that training was tailored to the needs of participants, drawing on their own clinical experience and domain knowledge, and incorporating feedback from participants.

In addition, one of the interview participants highlighted that it was also useful to have support and buy-in from the Hydration pilot's steering group and senior leaders from the region, particularly during the transition through the discontinuation of the smart cup and refocusing of the pilot to the training.

1.5   Outcomes

1.5.1   Care recipients

It was not possible to identify the impact of the smart cup on outcomes for care recipients in Cheshire and Merseyside. Although the project team did report some preliminary findings during this period such as a reduction in UTIs, the findings were not reliable due to the small sample size of the data.

At the time of interviewing (December 2024), the pilot team shared that they had locally analysed aggregated outcome data from the care homes that participated in the training intervention. They reported a reduction in falls- and UTI- related hospital admissions, and a calculation of potential cost-savings for the wider healthcare system[15]. They also compared these findings to the UTI-related hospital admissions and falls-related hospital admissions in Knowsley, another place in the ICB which had not participated in the Hydration pilot. This comparison showed that Knowsley experienced a slight increase in falls-related admissions, and a reduction in UTI-related admissions, although this improvement was less pronounced than in Sefton and Wirral.

In Cheshire and Merseyside, the national evaluators were able to conduct an interrupted time series (ITS) analysis to assess the impact of their training intervention. The pre-intervention period for the analysis was from April 2022 to January 2024. The post-intervention period was February to October 2024. Outcome data from Sefton and Wirral were combined for the following five metrics:[16]

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[15] The pilot team shared their analyses and cost-saving calculations. However, independent verification of local analyses was out of scope for the national evaluation.
[16] A set of metrics for the national impact evaluation were developed during the scoping phase of the evaluation by the national evaluation team; pilot sites varied in their ability to provide data relating to these metrics and in some cases measured additional or alternative metrics (or those with similar but not identical definitions) as part of local evaluations. For more information on the interrupted time series methodology, please see the Final Report of the Hydration Pilots national evaluation.

- Average monthly UTI-related primary admissions in the over-65 population of Sefton and Wirral[17]

- Average monthly UTI-related primary admissions in Sefton and Wirral care homes

- Average monthly combined antibacterial items prescribed to patients aged 70 and over per 1,000 list size in Sefton and Wirral

- Average monthly falls-related admissions in Sefton and Wirral care homes

- Average monthly E.coli rates in the Sefton and Wirral area (population level)

As shown in Table 1.1, the results of the ITS indicated that the pilot interventions had a statistically significant effect on two outcome variables (falls and antibiotic prescriptions). Specifically, the analysis showed a significant reduction in falls of 9.8 (19.3%) per month and antibiotic prescriptions of 14.9 (3.9%) per month. There was no statistically significant effect of the intervention on the other outcomes.

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[17] Population-level analysis was included as the intervention (especially the masterclasses) were delivered in the Sefton and Wirral localities and not in specific care homes. This means that the potential impact on UTIs may be wider than the care homes.

Table 1.6   Cheshire and Merseyside (Sefton and Wirral) hydration pilot interrupted time series analyses[18]

Outcome (average per month)	Pre-intervention	Post-intervention	Change	% change
UTI-related primary admissions in the over-65s population of Sefton and Wirral	101.8	90	-11.8	-11.6%
UTI-related primary admissions in Sefton and Wirral care homes	11.6	9.3	-2.2	-19.0%
Falls-related admissions in patients from Sefton and Wirral care homes	50.8	41	-9.8*	-19.3%*
Combined antibacterial items prescribed to patients aged 70 years and over per 1,000 list size in Sefton and Wirral	378.6	363.7	-14.9*	-3.9%*
E.coli rates in Sefton and Wirral	27.5	29.1	1.7	6.2%

statistically significant at the 95% level

Data source: Cheshire and Merseyside ICB Business Intelligence portal

The findings should be interpreted with caution as the ITS does not control for other factors which may have contributed to the outcomes. These include:

- A national[19] downward trend in falls-related admissions to emergency departments, which might partially explain the reduction in falls in Cheshire and Merseyside even in the absence of the intervention.

- Existing hydration-related interventions which continued alongside the current pilot (as in Wirral), which potentially also contributed to the outcomes.

- Efforts across the ICS to reduce unnecessary and inappropriate prescribing of antibiotics resulted in reduced rates of antibiotic prescribing system-wide. However, rates of prescribing for UTIs in homes participating in the Hydration pilot were still lower than in comparable areas in the ICS that had not participated in the Hydration pilot.

1.5.2   Staff and care provider outcomes

Stakeholders reported that the training successfully enhanced the hydration-related knowledge of attendees. The trainer received positive feedback about the multidisciplinary and holistic nature of the

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[18] Green shading is used to indicate statistically significant changes in the expected direction
[19] Source: Secondary Uses Dataset

training and masterclasses, the focus on infection control measures, and the practical activities included.

> *"I would say probably the [hydration] awareness bit [was the most important part of the training], because… [the care home staff] probably were aware, but just haven't solidified and put down into one bit to say this is what needs to be done, this is how we do it, and I don't think you can overestimate the importance of that."*

Both pilot team and care home staff interview participants highlighted that an encouraging unintended consequence of the training was that it prompted some staff to reflect on their own hydration behaviours. This provided a framework for understanding the benefits of hydration for both them and the people they care for.

> *"A lot of the feedback we've had is that they enjoyed [the training]', they now understand the importance of it and how they're going to incorporate it into their work, because we made them realise that on shift a lot of the time they're quite dehydrated as well. So, by making them recognise that in themselves you can then recognise it in the patients [and] in their family members as well because some of them are carers, so it's information that they can use as well outside of work."*

1.6   Looking ahead

1.6.1   Plans for further scaling up and anticipated challenges

At the time of interviewing (December 2024) the pilot team were still in the process of expanding into other areas in Cheshire and Merseyside. Following this, they planned to continue the scaling up of the training to other services, such as domiciliary care, learning disabilities and other specialist services. For example, the trainer was liaising with the local authority and domiciliary care providers within Sefton to agree on the best approach for future training in this setting.

1.6.2   Sustaining the intervention

The pilot team and other stakeholders were keen for the hydration training to continue in the future, given the positive feedback for the training and the positive outcomes associated with it. Interview participants however noted funding issues and resource pressures in the wider NHS as a risk to future training. Nevertheless, the pilot team outlined their plans to sustain the hydration education and training in the long term, including:

- Making all hydration-related resources from the pilot available for Cheshire and Merseyside ICS stakeholders to use. This includes training materials, leaflets, and the hydration hub website, which is expected to be shared system-wide through emails, newsletters, and working groups.

- Sharing hydration-related educational resources via different routes, for example via FutureNHS and attending relevant events

- Liaising and collaborating with system stakeholders in local authority, social care and NHS settings to champion the provision of regular hydration-related training for health and social care staff. This is particularly important in the care home setting given the high turnover in the social care workforce

- Promoting a more integrated approach between primary care and care homes, which may involve delivering training to GP practices about hydration to increase awareness of NICE guidance on the diagnosis of UTIs.

For more information on this pilot site please contact: Dylan.Ellis@cheshireandmerseyside.nhs.uk

Norfolk and Waveney

Summary

- Norfolk and Waveney (N&W) Integrated Care Board (ICB) Infection Prevention and Control (IPAC) pilot team provided three phases of training, based on the DrinKit intervention developed by University of East Anglia (UEA)[20], to care home staff across N&W

- The pilot team commissioned Norfolk- and Suffolk-based training company Training and Assessment in Healthcare (TIHC) to deliver all-staff and Hydration Champion training over three phases from October 2022 to March 2025, expanding care home and staff numbers in each phase, to over 350 in phase three

- THIC staff initially guided care home staff in completing Hydration Needs Assessments (HNAs) and action plans, but in phases two and three, Hydration Champions took over and conducted online self-assessments

- As it was scaled up, the training moved from a fully face-to-face format to a blended approach combining online and in-person learning, to accommodate the flexibility needed among larger groups of participants, and to support its potential use in other settings

- Care homes were initially slow to engage but implementation benefitted throughout from the expertise of the trainers, their respected reputation among homes, and word of mouth promotion by initial participants in the intervention activities

- Staff reported feeling equipped to implement effective hydration practices, particularly in phase three, which had greater reach and lower cost than phase one

- Challenges during scaling up phases included digital incompatibility between an online training platform and care home digital infrastructure and limited channels for engaging and promoting the intervention to increased number of care homes

- While qualitative feedback was overwhelmingly positive, inconsistent data collection across pilot sites limited robust quantitative analysis; for example, UTI-related hospital admissions remained stable in phases one and two, but small numbers and other variables meant no conclusions could be drawn from this dataset

- Nevertheless, across both local and the national evaluation care home staff perceived a clear link between the intervention and positive health outcomes such as reduced UTIs, falls and general alertness among residents

- The local evaluation found that good hydration training and the presence of Hydration Champions within settings were perceived to be key successes of pilot and components of a successful hydration care model going forward

- The pilot team continue to share online elements of the interventions via different routes to expand the reach and widen regional access to learning from the pilot; the training company have continued to provide committed care homes with additional paid-for support.

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[20] UEA Hydrate Group: DrinKit [Online].Available from: https://www.uea.ac.uk/web/groups-and-centres/uea-hydrate-group/drinkit (Accessed February 2025) Funded by The Dunhill Medical Trust, NIHR and UEA Impact Fund.

This case study presents the findings from two rounds of interviews with 16 participants piloting the hydration education intervention in Norfolk and Waveney (N&W). This included interviews with five participants between May and July 2023 and 11 between October and November 2024 (which included follow-up interviews with the original five). Participants included the original developers of the intervention, the pilot team managing its implementation, trainers and (in the second round of interviews) staff from care homes who had undertaken the training. The key findings from this case study are summarised below and include findings from the local evaluations of the pilot phases conducted by NHS N&W Integrated Care Board (ICB) Evidence and Evaluation Hub (EE Hub).[21]

1.1 Description of pilot intervention

The N&W ICB Infection Prevention and Control (IPAC) team provided three phases of training, based on the DrinKit intervention developed by a team from the University of East Anglia (UEA)[22], to care home staff across N&W. The training was aimed at all staff working in care homes including managers, care workers and nurses, activity coordinators, and domestic and catering staff. It was designed to improve their knowledge of good hydration care and how they can support residents to drink well. It consisted of four elements:

- Care home hydration needs analysis (HNA) consisting of a questionnaire (part 1) and observations carried out by trainers at participating care homes (part 2)

- Hydration action plan (HAP) (for addressing three to four areas for improvement identified in both parts of the HNA, plus three standard actions[23])

- Training on good hydration care (including practical activities to run with residents), continence and urinary tract infections (UTIs)

- Hydration Champions training (for staff across four roles of management, care, activities and catering).

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[21] NHS Norfolk and Waveney Integrated Care Board Evidence and Evaluation Hub (2023) *Implementing a hydration pilot in eight residential care homes in Norfolk and Waveney. Evaluation report* and NHS Norfolk and Waveney Integrated Care Board Evidence and Evaluation Hub (2025) *Implementing the revised hydration pilot model in Norfolk and Waveney Evaluation report.* Provided to Strategy Unit team by authors.

[22] UEA Hydrate Group: DrinKit [Online].Available from: https://www.uea.ac.uk/web/groups-and-centres/uea-hydrate-group/drinkit (Accessed February 2025) Funded by The Dunhill Medical Trust, NIHR and UEA Impact Fund.

[23] The standard actions all homes were asked to include in their HAPs were: at least 70% staff to take part in Hydration training at that time, to be repeated in six months; four members of staff to take part in Hydration Champion training; and activity coordinators to develop a range of activities focussed on drinking, providing residents with at least one additional drink at each activity.

Most of these elements were delivered by Norfolk- and Suffolk-based training company Training and Assessment in Healthcare (TIHC); the ICB pilot team delivered the UTI-related training (promoting the use of a care home UTI checklist). Across the three different phases, the pilot team expanded and scaled up the intervention to involve increasing numbers of homes. The training was adjusted in length and format of delivery to accommodate the increasing number of participants, with sessions condensed and in-person training changed to online. The phases and changes are summarised in Table 1.1.

Table 1.1   Intervention phases in N&W

Pilot phase	Dates of implementation	Numbers of participating organisations [24]	Intervention elements
Phase 1	October 2022 to September 2023	8	• Initial care home visit and assessment • Two face-to-face HNA-related visits (baseline and follow-up) • Face-to-face HAP development visit • One-hour face-to-face hydration training • One-hour face-to-face UTI-related training • Seven x three-hour face-to-face training sessions for Hydration Champions
Phase 2	January 2024 to March 2024	19	• Online three-hour hydration and UTI training • Two x one-day face-to-face training sessions for Hydration Champions • Three face-to-face Hydration Champion support and CPD sessions (for champions from phases one and two) • Champion celebration event

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[24] In phases one and two, this was limited to care homes but in phase three, this included charities and services caring for people aged 65 and over; in addition, some attendees represented more than one home if part of a larger group.

Pilot phase	Dates of implementation	Numbers of participating organisations [24]	Intervention elements
Phase 3	April 2024 to March 2025	58	• Two-hour live online introduction session • Online HNA for self-assessment • One-hour online hydration and UTI e-learning (Bronze) • Full-day face-to-face training for Hydration Champions • Four online training sessions 30-45 minutes for staff groups within homes working through HNA goals (Silver) • Monthly online Champion development sessions (for Champions recruited across all phases)

1.2 Initial design and planning

The ICB pilot team and other stakeholders of the N&W IPAC/AMS (antimicrobial stewardship) Network identified a need to address UTIs and enhance hydration among older adults after a 2020-21 analysis showed the area had the highest rate of E. coli bloodstream infections in the East of England. The Hydration Pilot formed part of the Network's GNBSI (gram-negative bloodstream infection) reduction workstream which identified hydration as a key focus for addressing GNBSIs. Although the majority of E. coli infections were among older people living in their own homes, an intervention aimed at older people in care homes was selected as a focus for the Hydration Pilot because it offered a more controlled environment to test and evaluate an intervention. The pilot team envisioned expanding the intervention to the community at a later date.

The initial plan was to conduct a cluster-randomised trial of the DrinKit intervention[25], whereby staff from eight care homes would have implemented the intervention in two staggered clusters of four

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[25] The four-part DrinKit guide is available free of charge and includes an activities and engagement toolkit designed to 'make drinking fun' for residents; drinks diary for residents to record their fluid intake; training

homes. The team from UEA previously researched and developed DrinKit in collaboration with staff from eleven Norfolk and Suffolk care homes, with the support of Norfolk and Waveney ICB IPAC team members. The UEA team's previous research on the signs and symptoms of dehydration and effective hydration care underpinned the proactive, preventative design of the intervention. It also highlighted the need for an approach that engages all home staff instead of relying solely on activity coordinators.

The trial proposal was revised following NHS East of England regional lead concerns about rising hospital admissions from care homes in Norfolk and Waveney; a service improvement project that could be implemented more rapidly was prioritised in response to system pressures. The pilot team subsequently pivoted to offering an adapted version of the DrinKit intervention to eight care homes simultaneously, with most elements to be delivered by a local training company (rather than a senior researcher). TIHC was selected as the training provider following an open tender process, based on the skills and knowledge of their staff and their track record of providing training to N&W care homes on a range of health and care-related topics. The UEA team provided training to TIHC staff on delivering the one-hour all-staff and multi-session Hydration Champion training. The HNA and HAP elements (also part of the original proposal) were included as a way of identifying and measuring progress in improving hydration practices in homes.

1.3   Initial set-up and implementation

1.3.1   Set-up and implementation activities

When phase one implementation began in October 2022, the pilot team conducted most initial recruitment communications, with the TIHC lead trainer following up to secure participation. The team approached eight homes linked to two specific GP practices that feed into Norfolk and Norwich University Hospital NHS Trust (NNUHT) (a consultant biologist from NNUHT was part of the initial scoping group and could provide useful links to laboratory reporting if necessary). One practice was chosen for its high UTI prescribing rates and the other for supporting four care homes of comparable size. Of the original eight homes the team selected (a mixture of large and smaller homes, all in North Norfolk) only one withdrew, and the pilot team secured an alternative.

The different elements of phase 1 HNA process were delivered between October 2022 and September 2023 as summarised in Figure 1.1 (provided by the N&W ICB EE Hub). This included: onboarding assessments and initial visits; completion of the HNA Parts 1 and 2 baseline and follow-up questionnaires (29 questions) and observations of daily routines (9 questions); action planning (HNA Part 3, after which staff received certificates of completion) and meetings with different staff groups

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materials for one-hour sessions aimed at all care home staff; and a Hydration Champions team training manual (content plans for a 15-week, 18-hour training plan).

(care, catering, activities coordinator, management, domestic staff) to agree specific actions for their staff groups (HNA Part 4).

TIHC trainers delivered the in-person hydration and UTI training following the completion of the action planning process and managers of each home were asked to identify four staff members to join a Hydration Champions team and participate in Hydration Champion training. Not all homes were able to identify four; 18 care home staff completed the Champion training by September 2023.

While initial hydration and UTI training was provided to all staff at their respective individual care homes, the Hydration Champion training sessions were designed for specific staff groups. These groups, comprised of staff from all participating care homes, gathered at various designated homes, which were not necessarily their own workplaces. The training company established a WhatsApp group for Hydration Champions to enable them to share ideas, learning, and peer support.

Figure 1.3   N&W Hydration pilot phase 1 timeline[26]
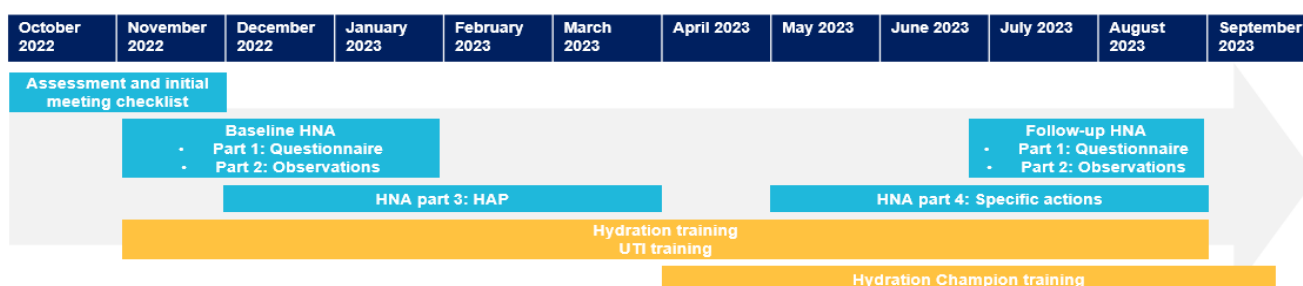
1.3.2   Views and experiences of set up and initial implementation

Engagement of the homes was a slow process, either because of care home attitudes or due to staff and resident illness which prevented staff from attending training. Some homes (such as the larger corporate brand-managed homes) were not initially convinced of the need to provide this training to their staff (given the training provided as part of the Care Certificate Standard Eight on fluids and nutrition). The first set of Hydration Champion training sessions were poorly attended but attendance gained momentum due to word-of-mouth promotion among early attendees.

The HNA process also revealed that staff were not drinking enough themselves and as a result, were not modelling good fluid intake for their residents. One reason for this included the overall attitudes to drinking or cultures within homes (with different levels of hospitality and prioritisation of offering

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[26] Timeline taken from NHS Norfolk and Waveney Integrated Care Board (2023) *Implementing a hydration pilot in eight residential care homes in Norfolk and Waveney. Evaluation report*

drinks). This echoed findings from the research undertaken by the UEA team that developed DrinKit, which also found that staff were restricted in their practice by care home policies.

> *"They're not supposed to carry drinks around with them, for example, often. If they're not supposed to be seen to be drinking in public and, you know, they have to withdraw off to somewhere else to drink it means it's a much bigger process. If they're busy, they don't get time to do it. Whereas if they're allowed to take drinks with them, that's better. I mean, we've gone to meetings in care homes and nobody drinks. You think, 'Okay, we're all sitting down together, why have we all not got cups of tea or glasses of water or something?' We're not using these opportunities."*

Other specific factors which challenged set-up and delivery of the training among homes included:

- Lack of funding in homes for covering the cost of mocktail ingredients or other activities encouraged in the training

- Aligning with the schedules of staff such as chefs and night staff to ensure they could participate in training

- A lack of IT skills and digital infrastructure across the homes which sometimes hindered communication and sharing of materials; however, a parallel role with NHS Digital enabled one of the trainers to support homes with the set-up of NHS email and completion of data security and protection toolkits (DSPTs).[27]

- GPs who were involved in the original funding bid became less involved in the pilot as it was implemented so prescribing data collection was harder than planned; it was also complicated by the N&W pilot launching before confirmation of the national evaluation minimum dataset.

- Changes in personnel in the care homes, complicating engagement, and within the ICB pilot team with staff absence (due to illness) and fixed-term contracts placing pressures on a single member of the ICB team.

Despite initial attitudes, when THIC staff completed HNAs parts one and two with homes it demonstrated its necessity. Trainers noted 'light bulb moments' during sessions where care home staff realised the gaps in their practice, such as not providing morning drinks trolleys or offering residents minimal fluids during medication rounds.

As part of action planning, where possible, trainers supported homes in thinking through the practicalities and implications of selecting particular goals in terms of their capacity and staff rotas.

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[27]

They were keen that homes select actions that were realistic and achievable to make success as feasible as possible.

> *"What we were quite clear about was not setting them up to fail. We wanted it to be achievable within their routines and rotas because it would be awful if they came away thinking 'well we had this action and we haven't achieved it'. We wanted them to achieve because you need to look after people, you get so much more from them if they're encouraged to succeed rather than giving them something that just wouldn't be possible."*

Other factors which facilitated set-up and implementation included:

- Funding from the ICB (although larger homes found it difficult to receive and ringfence this specifically for the training)

- Appointment of the training company with the time and expertise to deliver the training, with minimal oversight required from the pilot team

- Existing relationships between the training company and many of the homes, which enabled them to trust the quality of the training

- TIHC's enthusiastic training style and approach to the intervention and adaptation of materials to suit the audience (with the consent and endorsement of the original authors)

- The inclusion of specific practical but creative ideas for good hydration care included in the toolkit, to mitigate for any lack of ideas among staff in individual homes.

- Positive experiences of the training shared by colleagues encouraged staff who were previously reluctant to engage.

1.4 Scaling up set-up and implementation

1.4.1 Scaling up activities

The delivery partners (the pilot team and the TIHC trainers, working with the intervention development team), undertook two phases of scaling up; made possible by N&W's earlier implementation start (phase one) compared with other Hydration Pilots. Phase two targeted nursing homes in particular, to test the intervention among staff supporting residents with increased care needs, and because the ICB were already working with nurses in those homes around catheters and GN-BSIs. The pilot team invited 54 homes and succeeded in engaging 19 homes in total between January and March 2024. Phase three, officially starting in April 2024, involved a more ambitious scale-up, with invitations sent to over 350 homes (with the expectation that fewer would participate). At the time of interviews (October 2024) 236 homes had indicated an interest and a trainer was in the process of visiting a further 100 in-person to encourage them to participate. By the completion of

phase three, staff from a total of 58 care homes attended, with some attendees representing more than one home if part of a larger provider group.

Based on feedback gathered by the ICB Evaluation team and trainers' reflections on implementation, delivery partners worked together to amend the intervention in length and format, particularly focusing on training for Hydration Champions. Trainers pushed for a more concise training package than the seven three-hour sessions the DrinKit team initially devised for champions, based on the response in phase one, the overlap in content between staff groups and the challenges care home staff faced with being released for multiple training sessions. DrinKit authors worked with the training company to produce a condensed Hydration Champion training package (offered to all Champions together, rather than individual staff groups) – covering two one-day in-person sessions in phase two and shortening even further, to one day for phase three, to accommodate needs of larger group and funding available. This also tested the process for longer term sustainability (see Section 1.6).

Linked to this, the HNA process changed from the survey and observation process in phase one, which heavily involved THIC staff and was too resource-intensive to scale-up, to training Champions to lead self-assessment for their homes in phase two, cascading actions back to staff in the home. In phase three this changed again, to accommodate larger number of participants, and the developers of DrinKit produced an online self-assessment tool for care home managers to complete. They also devised other online training materials for phases two and three, although these could not be easily rolled out (see below). Pilot team members considered their input essential and appreciated their willingness to work with them to refine the original materials for an evolving context.

> *"And any time we have a redesign of the course, we have [DrinKit authors] in the room, because it's their work, the intervention is research-based, we can't lose sight of that, and this is what it's about, making drink fun, everything else falls out of that. So, they've always been in the heart of all of our decision-making."*

Delivery partners differed in their views on online and in-person training, with THIC advocating for maintaining small interactive in-person training sessions to ensure meaningful engagement and learning for staff. However, they faced challenges in providing this to such an increased number of homes in phase three. Online hydration and UTI training e-learning were therefore introduced in phases two and three for all staff sessions (such as the hydration training), but with in-person sessions maintained for Champions in both phases. In phase three, TIHC provided four additional online training sessions to any homes who required further support to work through their HNA goals, as an enhanced training offer. The EE Hub local evaluation (see Section 1.5.1.1) identified that pilot costs were lower in phase three as a result of moving to this more blended training approach, while reaching more people.

TIHC and IPAC staff worked together to provide ongoing support to Hydration Champions. TIHC delivered a celebration event and three developments sessions for Champions in phase two; during phase three monthly development sessions for Hydration Champions continued (open to Champions from all phases), which included UTI-related training content provided by the IPAC team.

1.4.2   Views and experiences of scaling up activities

The move to a more blended training approach was not entirely easy to implement. For the nursing homes in phase two delivery partners agreed that participants should receive an hour's online hydration training, narrated by one of the DrinKit authors. This included interaction and quizzes to maintain the fun approach of the original in-person materials. However, there were issues with the platform used to devise the training, Blackboard (commonly used in academic settings), and its incompatibility with mobile phones, requiring laptops that many care home staff didn't have. As a result, trainers had to incorporate this training into introductory Zoom meetings with care home staff, which diluted some of the core elements. Other challenges to implementation during phases two and three included:

- Obtaining data from a larger number of care homes, which proved to be more challenging than anticipated. In the first phase, with only eight homes, data collection was manageable, if still difficult. However, scaling up required new data-sharing agreements, and acquiring prescribing data from GP practices was particularly problematic.

- Scaling up the project meant extensive efforts in communication and coordination to reach the increased number of homes. This was restricted by the local authority email distribution channels for contacting care homes which the pilot team had no option but to use.

- The slow engagement was surprising to pilot team members given that the training was provided for free, although feedback from homes indicates that there were issues for them with backfilling staff and managing the logistics of training attendance

- Finding affordable and suitable venues for face-to-face training sessions was challenging. For larger numbers of participants, the team had to plan for bigger venues, which added complexity to the logistics.

- Some interview participants (including care home staff interview participants) found the online e-learning to be less engaging than face-to-face content and queried its effectiveness

"I so wish we could maintain the face-to-face. We know the reality of [scaling up] in the long-term is going to be moving to e-learning, but you know when I mentioned all those homes that I visited, and a common theme throughout all of them is that e-learning is disliked. And the efficacy is a completely different conversation, isn't it? But learning, if it's going to be impactful, needs to be liked."

Despite these challenges, as in phase one, interview participants felt that training went well and received a positive response from staff. Particular aspects of delivery which they highlighted as helpful included:

- Personal visits to care homes by TIHC team members significantly boosted engagement. These visits helped build relationships and trust, leading to a higher sign-up rate.

- A multifaceted approach to build on pre-existing relationships and platforms, such as with the provider Norfolk and Suffolk Care Support Limited, to spread the word about the training. Use of social media for example added to the more limited email campaigns in driving expressions of interest.

- The final blended training approach allowed for greater flexibility and convenience for care home staff, accommodating their varying schedules and availability

- Ongoing sessions for champions from across all three phases helped reinforce training concepts and maintain engagement. This ongoing support ensured that staff felt supported and could continue implementing what they learned.

1.5   Outcomes

1.5.1   Care recipients

1.5.1.1   Local evaluation

In phase one the EE Hub local evaluation included an analysis of Hydration Needs Assessments (HNAs) and action planning data; interviews with care home managers and staff; a focus group with the TIHC training team; and an online survey of Hydration Champions.[28] A final evaluation during phase three included an analysis of costs and hospital admissions across all phases of the pilot; two focus groups (one with TIHC, one with ICB IPAC staff), six interviews with Hydration Champions and an updated version of the survey from the phase one evaluation.[29]

After phases one and three, Hydration Champion survey respondents almost all reported positive impacts on numbers of UTIs (including hospital admissions and numbers of UTIs) and falls (after phase one) among residents in their homes as a result of changes implemented following participation in

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[28] Evidence and Evaluation Hub (2023) Implementing a hydration pilot in eight residential care homes in Norfolk and Waveney Evaluation report (internal report, provided to SU)
[29] Evidence and Evaluation Hub (2025) Implementing the revised hydration pilot model in Norfolk and Waveney Evaluation report (internal report, provided to SU)

the pilot activities.[30] They all also agreed there was improved general wellbeing among residents,[31] which interview participants attributed to staff participating in the pilot.

The revised model of the pilot in phase three reached additional groups including staff working with adults with learning disabilities or providing domiciliary care. Hydration champion interview participants from these other groups also found the learning from the training highly transferable and beneficial to their setting and service users, such as adults with learning disabilities who are not able to understand their own body cues about the need to drink.

The ICB evaluation team analysed hospital admission and prescribing data[32] for pre-intervention intervention and post-interventions periods of phase one to assess the impact on UTIs incidence, antibiotic prescribing, and hospital admissions. They also analysed hospital admissions for phase two pre-intervention, intervention and post-intervention periods, but were unable to obtain antibiotic prescribing data beyond phase one. This analysis found that:

- Hospital admissions with a UTI diagnosis from phases one and two of the pilot remained similar throughout and after implementation of the intervention.

- UTI incidence and antibiotic prescribing showed minor, non-significant changes between the pre-intervention and intervention periods of phase one, with a slight reduction in the number of residents prescribed antibiotics for UTIs.

However, due to small numbers and other unaccounted for variables, it was not possible for the local evaluation team to draw conclusions about impact of the pilot based on this dataset.

The ICB evaluation team's analysis of anonymised HAPs in phase one found that staff were commonly choosing (as additional HAP actions) to enhance hydration by pairing drinks with medication and offering hot drinks before breakfast. Follow-up data from summer 2023 confirmed that these practices had been adopted, with more homes also introducing drinks during breakfast and extending hydration to visitors.

Interview participants across both local evaluation phases described increased good hydration practice following the intervention, which included a move towards more flexible, person-centred

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[30] Eight of nine survey respondents in phase one, ten of 14 survey respondents in phase three agreed or strongly agreed that implementing ideas, changes or activities related to hydration in their setting was making a positive difference to number of UTIs; nine of 14 survey respondents in phase three agreed or strongly agreed it was making a positive difference to hospital admissions for UTIs; eight of nine survey respondents in phase one agreed or strongly agreed it was making a positive difference to the number of falls.
[31] All survey respondents (n=9 in phase one, n=14 in phase three) agreed or strongly agreed that implementing ideas, changes or activities related to hydration in their care home was making a positive difference to the general wellbeing of residents.
[32] Provided by ICB Business Intelligence teams

care. This involved moving away from rigid routines, offering a wider range of hydration options to reflect resident preferences, and involving family and friends in activities and events, made possible through pilot funding.

1.5.1.2 National evaluation

As part of the national evaluation for the Hydration Pilots programme, interrupted time series (ITS) analyses were completed to assess the impact of different interventions on key metrics over time. In N&W, data relating to the nineteen care homes that participated in phase two where training was completed by March 2024 were used for the purpose of the ITS. The pre period was defined as April 2023 to February 2024 and the post period was March 2024 to July 2024.

ITS analysis of all-hospital admissions from these participating homes found a small, non-significant reduction from an average 19.8 to 18 per month. As with the local evaluation, for the metrics of falls and UTI diagnoses, it was not possible to conduct an ITS as the incidences each month were small, with some months showing no incidences among the participating care homes.

Despite limitations to the quantitative analysis, as in the local evaluation, care home interview participants continued to report positive results from participating homes of improved health outcomes. This included reduced UTIs and falls but also fewer headaches and fewer skin issues such as skin tears, as well as the same improved energy and wellbeing. Many interview respondents were frustrated though that they would not be able to evidence the clinical significance of these reported changes, despite being convinced of the timing aligning with the delivery of the intervention.

> *"Nobody can clinically quantify those outcomes, which is annoying but it is what it is but, that being said, there is a definite link. Because we analyse the information, particularly around falls, obviously around infection rates…we look at that data on a monthly basis and we drill really into the [data] and there is a definite link. There is a definite reduction which ties in with the implementation of the rollout [of the pilot]."*

1.5.2 Staff and care provider outcomes

1.5.2.1 Local evaluation

Local evaluation interview and focus group participants in both phases identified Hydration Champions as a vital support for behaviour change, with their passion and enthusiasm encouraging others to make changes. They identified this role as "pivotal" for sustainability in any future model of the pilot intervention. They credited the ongoing development sessions and in particular, the WhatsApp group established for champions, for providing a useful space for sharing ideas, and for breaking down barriers or reducing competitive attitudes between homes.

Hydration Champion survey respondents almost all agreed that participating in the pilot in phases one and phase three had a positive impact on the hydration habits of staff themselves; wider

hydration practices in their care homes and staff awareness of hydration, thus indicating the intervention was meeting its aims for these staff. [33]

1.5.2.2 National evaluation

As well as succeeding in improving staff knowledge and understanding of the importance of good hydration for older people, other outcomes for staff and providers from the intervention that interview participants noted included:

- A positive impact on the wellbeing of staff (and the reported improvement in their own hydration) continued to be a surprising but welcome consequence of phases one and two of the pilot.

- Care home staff appreciated the trainers' approach which acknowledged the potential dehydrating elements of their job and encouraged them to address their own needs.

- One care home staff interview participant highlighted that after cascading the phase two training they had observed an improved quality of fluid recording and communication among staff in their home(s) about hydration.

1.6 Looking ahead

1.6.1 Future plans for expanded provision and views on sustainability

Interview participants described 'optimistic' future plans for developing the intervention further and its potential for sustainability in the long-term. In the shorter-term, at the time of interviews (October 2024), the training company was continuing to provide support to Hydration Champions, including monthly development sessions on a range of topics, to ensure that staff remain engaged and up-to-date with best practices (confirmed to continue quarterly throughout 2025/2026 by the local evaluation). Although TIHC trainers remained convinced of the necessity of providing training face-to-face, they agreed with the pilot team to trial running some of these sessions on Teams, to optimise attendance among staff potentially struggling to travel across a large rural county. Care home staff described how they intended to embed the learning from the pilots through coaching and mentoring of new staff and reviews of documentation to include hydration objectives.

Other avenues for expanding the reach of resources, without the need for further funding, that participants described included:

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[33] All survey respondents (n=9) in phase one and 13 of 14 in phase three strongly agreed or agreed pilot activities made a positive difference to hydration habits of staff and hydration practices in their care settings; all survey respondents (n=9 and n=14) agreed that it had made a positive difference to staff awareness of hydration.

- A collaboration between the DrinKit team with Age UK to develop and share hydration resources and training materials on the Age UK Norwich platform. These resources were designed to help health professionals assess hydration levels in older adults and provide practical ways to support increased fluid intake.

- Ongoing work with the ICB digital team to explore opportunities for using a newly created social care digital platform to host resources.

- Presentations for NHS provider link nurse groups for infection, prevention and control, designed to share findings, which in turn ask them to reflect how they increase fluids for patients in their care.

- Establishing a working group, involving ICB and UEA colleagues to review how the HNA might be adapted for inpatients in NHS acute trust beds.

The local evaluation confirmed that by the end of phase three in March 2025 training resources (including an HNA toolkit, based on those provided during the pilot), were now available on an accessible platform for those on limited budgets. Alongside this though, TIHC had decided to offer bespoke training elements to those homes willing to pay for a more personalised approach. Participants from TIHC suggested that regardless of how it is expanded in the future, a WhatsApp group modelled on the one provided to Hydration Champions would be beneficial for those using the resources to establish a DrinKit intervention in their area, to enable anyone delivering it across the country to share best practice.

"I'd like to have a DrinKit toolkit support group, WhatsApp group, something like that. We've started a WhatsApp group with our champions, they love it. They're sharing good ideas but it would be great to have a DrinKit group so that as people do stuff they share it with other homes as well."

For more information on this pilot site please contact: judy.ames@nhs.net.

Northumbria

Summary

- The Northumbria pilot team delivered a co-designed training intervention, which aimed to upskill staff in three care homes to improve the hydration status of their residents.

- Training was delivered between September and December 2023 through a combination of two face-to-face sessions (attended by all participants) and eight bite-size online modules to increase accessibility for care home staff.

- The pilot team also co-produced a competency framework to support homes with assessing the impact of the training on staff knowledge and practice, including an online learning portfolio platform for recording staff progress

- The local co-production approach was strengthened by:

  – Clinical input, expertise and experiences from the diverse multidisciplinary co-production group, comprising academics, clinicians, analysts, trainers, care home staff, older people and commissioners
  – Creative ideas for engaging staff including hands-on, activity-based training materials, bespoke roleplay videos by local clinicians and animations.

- Levels of initial engagement varied across participating homes due to staff skill mix and staffing levels; to accommodate this, the pilot team ran shortened one-hour versions of the in-person training sessions for staff in one home

- Local evaluation activities included pre-and post-training assessment of a range of clinical outcomes for residents (agreed with the co-production group) and qualitative interviews to explore how training was embedded at participating care homes

- Data collection from 75 care home residents across two homes (also affected by staffing challenges) showed slight reductions in UTI diagnoses and antibiotic use, but no significant changes in emergency service use. An increase in falls among residents was noted. Due to the limited sample size, it was not possible to determine the statistical significance of these changes.

- Interviews conducted by the pilot team with 23 participants highlighted positive impacts of the training on staff knowledge and routine practices, but also barriers such as high workload, limited time, and technology access issues. Staff shortages and organisational limits hindered the application of skills learned during the training.

- Findings from the pilot indicate that interventions which address organisational change and gain senior leadership support are needed to sustain good hydration care in care homes.

- Co-production and stakeholder engagement were key enablers of progress in the pilot and should feature in future designs. Alternative online platforms and delivery formats are needed to increase training accessibility.

This case study presents summary findings from interviews with five participants who were involved in the co-design, implementation and evaluation of Northumbria's hydration pilot. Main interviews were conducted in July 2023 with a final follow-up interview with two participants in February 2024. The key findings from this case study are summarised below and includes information and findings from the local evaluation carried out by the project team.

1.1   Description of pilot intervention

The Northumbria pilot team delivered a co-designed training intervention, which aimed to upskill staff in three care homes to improve the hydration status of their residents. The intervention included training (delivered face-to-face and online) and a formal assessment of staff hydration competency using a locally agreed workforce competency framework.

Training consisted of two in-person workshops of two hours duration. Participants were also asked to complete the first three of eight modules of the online training before attending the first workshop, and the last three modules before attending the second workshop. The training covered three hydration-related domains, each of which had a corresponding list of competencies. These domains are shown in Figure 1.1.

Key topics covered by the training included (but was not limited to): individual hydration needs; practical and emotional issues related to hydration; supported drinking; types of cups and vessels; allergies and intolerances; timing of drinks; swallowing difficulties; and care plans.

The workshops also included practical activities, such as a hydration 'buffet' and a drinks taster, providing participants with an opportunity to try out different drinks and vessels and role-play discussions and interactions about hydration.

Participants were given tools, such as charts, checklists and a hydration care plan, to use within their homes to support more structured and consistent monitoring of hydration among residents. They were also provided with access to a web-based learning portfolio for tracking their learning and competencies while completing the online and face-to-face training.

Figure 1.1   Hydration-related domains covered in the training and learning portfolio[34]

Domain 1: Understanding the daily hydration requirements of older people

- Example: Able to understand recommended volume of daily fluid intake for older people

Domain 2: Assessing individual hydration requirements of older people

- Example: Takes into account individual health care plans when assessing fluid intake requirements. For example, residents who may be on a restricted fluid intake due to their presenting condition.

Domain 3: Implementing person-centred care to maintain and monitor the daily hydration requirement needs of older people

- Example: implements a person-centred approach to hydration care, recognising the importance of using a range of hydration care practices.

1.2   Design and planning through co-production

Northumbria's Hydration Pilot proposal was initially developed by a Northumbria University research team specialising in older people's health and NHS Northumbria Integrated Care Board (ICB) colleagues with a remit for care homes and frailty. Their pre-existing established relationship facilitated this collaboration. The proposal drew on local ICS expertise and ongoing sharing of good practice in hydration care in care homes resulting from Northumberland's participation in the NHS England New Care Model Vanguard programme. Based on this shared learning, there was a collective agreement among local stakeholders that Northumbria should develop an intervention aimed at enhancing care home staff competence in providing good hydration care to residents (seen as a

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[34] Diagram provided by Northumbria pilot team

widespread skills and knowledge gap). Interviewees involved in developing the proposal described local familiarity and experience with different interventions and a desire to synthesise this learning to inform the development of one grounded in the needs of the care home sector.

"It was about thinking about how do we really fine-tune and refine [an intervention] so that it is actually in a meaningful way tailored to the care home workforce and care home environment."

Interviewees also acknowledged the complexities of conducting research in care homes and so were keen to involve different stakeholders including care home staff in the development and implementation of the intervention through co-production. The pilot project team (led by researchers from the university) therefore convened a co-production group of people with a professional interest in the care of older people. This included staff from three care homes, training and education specialists, academics with expertise in older people's health services, and NHS staff with care home remits, including data analysts and clinical staff (such as nurses, dieticians, and speech and language therapists). The multidisciplinary nature of this team meant that there were several role types with complementary skills (such as evidence synthesis, data interrogation, and data analysis), which interviewees regarded positively. While it was not possible to include care home residents due to frailty and complex care needs, the team did involve an older people's representative from the local Elder's Council network to help ensure that lived experience informed the work.

The university team first completed a rapid evidence assessment and narrative synthesis of existing hydration-related resources to inform the process of design and delivery. They shared these findings with the wider team that participated in two virtual workshops in January and April 2023, to design the intervention and identify key competencies for the training intervention. The group drew on existing evidence-based practices, rather than developing a new initiative, and selected face-to-face training as the primary training method, with added online components to enable flexible engagement. Key approaches and issues in the materials included in the rapid evidence assessment shaped the content included in the education programme (as described in Section 1.1). Training materials were designed to be hands-on, activity-based, and engaging, incorporating bespoke videos of roleplays by local clinicians, and animations.

The staff competency framework element was developed to evaluate the training, rooted in the practical and professional knowledge of the co-production team, and integrating existing competencies from the Enhanced Care of Older People (EnCOP) framework.[35] Baseline competencies were to be assessed before training began, with a learning portfolio created for individuals to track

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[35] The EnCOP framework is a competency framework for health and social care staff who work with older people. Further information can be found at: https://frailtyicare.org.uk/making-it-happen/workforce/enhanced-care-of-older-people-with-complex-needs-encop-competency-framework/

their progress and reflect on their learning. This portfolio element replaced an initial idea of a follow-up self-assessment upon completion of the training; the pilot team revised this due to concerns about the accuracy of self-assessments.

Interviewees praised the transparent approach of the pilot project team and the meaningful co-production process. The project's flexibility allowed iterative changes to meet stakeholder needs, and the academic lead's engagement and communication skills were highly regarded. Workshops were well-organised and attended, facilitating rich discussion and consensus-building through thorough communication.

> " I do feel that there was a lot of good discussion and a bit of debate but then consensus [was] reached by the end of the couple of hours, really. But not just in a [tick-box way], definitely with lots of discussion and debate with the people who were on the call… So I think consensus was reached and I think that to support that, there's been a really good agenda set then really good, written communications to prepare for the meeting, [after] the meeting and then, reminders."

1.3   Set up, implementation and delivery

1.3.1   Implementation activities

Before implementation could begin, the team sought the appropriate information governance (IG) and ethical approvals from the ICB and university IG teams and the university ethics council. Implementation was delayed by a request from the NHS England antimicrobial resistance (AMR) team to expand and revise their Hydration Pilots proposal but began once this had been successfully approved.

The project team leads across partner organisations reported that they worked autonomously to deliver the intervention, while giving regular progress updates to their respective stakeholder organisations (including ICBs) and clinical networks.

Coproduction group members supported the recruitment of participants, providing the pilot team with introductions to homes in the North East and North West. Three care homes were recruited as intended. These were a mixture of nursing and residential homes of different sizes and ownership, and included residents with different social, mental or learning health needs. Implementation began in September 2023, with 25 staff in total from across all three sites attending two in-person workshops per site.

As well as delivering the face-to-face training, the pilot team also provided additional digital literacy support sessions for participants who required extra support to access the online training and other materials.

1.3.2 Views and experiences of set-up and implementation

Interviewees reported varying levels of initial engagement from the three participating homes. Particular barriers that the pilot team faced included:

- Difficulty in organising dates for visits or being turned away when attending homes at a scheduled time

- Reduced engagement due to staffing levels, despite initial strong buy-in from managerial staff.

For one home facing staffing challenges, in-person workshops were reduced to one hour, prioritising new topics over reinforcement of baseline knowledge covered in online modules.

A factor that interviewees described as being the most supportive of engagement was the rapport built between pilot team members and care home managers. Care home staff involved in the co-production group had flagged the crucial role that managers would play in the success of implementation which was borne out during the pilot. Other enabling factors they highlighted included:

- The presence of a Trainee Advanced Care Practitioner (TACP) in one home; this also facilitated the collection of outcome data

- In-person engagement of care home managers (through spontaneous visits) rather than email or telephone contact to finalise participation in the training

- Provision of free training

- Individual care home reports on completion of the training, that could be added to CQC files

- Travel funding and other expenses provided (included in budget)

Interviewees considered the sample of homes and skill mix of the staff that participated as a success factor for the training itself. The wide range of roles represented and the variation between homes enabled different aspects of hydration care to be explored in workshops, with participants learning from each other as well as the trainers.

> *"That was useful in terms of our workshops as well, to have that skill mix there. For example, [at one] workshop that we did, there was a nurse, there was an activities coordinator, a care assistant, a cook. There was a big range and that meant for quite an interesting workshop experience where they could learn from each other."*

Although some issues with the online training related to technical issues with the platform used (including slow loading times and poor mobile phone functionality), given the additional resources required to support digital literacy, interviewees highlighted that online training may not be suitable for some social care staff. The issue had been previously discussed by the co-production group who reflected that the majority of mandatory training for social care staff is provided online but the pilot team found that for some participants technical issues provided a hard barrier to participation. They recommended that anyone delivering this kind of training factor this into any plans for blended learning approaches.

> *"There were those who, kind of, would look for a solution...we had an issue on certain phones and people talked about using laptops to overcome that. Then, I think there were [other] people that could go, 'Well, that just means that I'll not do it.' That flexibility that was built into the intervention... to try and increase access, then became a good excuse for people to say, 'Well, I just won't do that, and I'll come to the workshops instead.'...It's certainly something that you really have to bear in mind when a priority for a lot of your users or participants is to go, 'I haven't logged in, I'll just not do it."*

1.4 Outcomes

1.4.1 Local evaluation of the training programme [36]

1.4.1.1 Quantitative findings

The project team conducted their own mixed methods evaluation of the hydration education intervention. As part of this, quantitative data was collected from 75 care home residents across the three participating care homes, to evaluate the impact of the training programme on clinical outcomes. These outcomes were identified and agreed in consultation with the coproduction group:

- Resident's admission to hospital with UTI (urinary tract infection)

- Resident's use of emergency services with UTI

- Ambulance use with UTI

- Diagnosis of UTI

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[36] This evaluation data was provided to NHS England and the Strategy Unit

- Antibiotic use for UTI

- Number of residents who have had a fall

- Number of residents with pressure sores associated to UTI

The main outcome measures were collected at baseline (nine months before the intervention; January 2023 to September 2023) and five months after the intervention (October 2023 to February 2024). The means for baseline and post-intervention were compared.

While the quantitative data indicated some positive changes, due to the small sample size, it was not possible to establish the statistical significance of the changes in outcomes observed.[37] Findings included here should therefore be treated with caution.

As shown in Table 1.1, there were slight reductions in UTI diagnoses and antibiotic use, but no significant changes in emergency service use or pressure-related damage. An increase in falls among residents was also noted.

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[37] As part of the national evaluation for the Hydration Pilots programme, interrupted time series (ITS) analyses were completed to assess the impact of different interventions on key metrics over time. Across the Hydration Pilots programme these analyses have been limited by:
- Variations in the metrics different pilot sites were able to collect
- Sufficient sizes of participant population to be able to discern effects
- Intelligence gathered about additional variables which might impact on effects.
Based on participant population size, it was not possible to conduct an ITS for Northumbria.

Table 1.2   Change in outcomes at baseline and post-intervention

Metric	% and total number (n) of residents at baseline per month	% and total number (n) of residents post-intervention per month	% change and total number (n) per month
UTI diagnoses	6.5% (n = 4.89)	5.6% (n = 4.20)	-0.9% (n = -0.69)
UTI-related antibiotic prescriptions	6.5% (n = 4.89)	5.6% (n = 4.20)	-0.9% (n = -0.69)
Falls (total number)	10.1% (n = 7.57)	11.4% (n = 8.60)	+1.3% (n = +1.03)
UTI-related emergency admissions	0% (n = 0)	0% (n = 0)	0.0% (n = 0.0)
UTI-related ambulance call-outs	0.04% (n = 0.33)	0% (n = 0)	-0.04% (n = -0.33)
UTI-related emergency attendances	0.04% (n = 0.33)	0% (n = 0)	-0.04% (n = -0.33)
UTI-related pressure area damage	0% (n = 0)	0% (n = 0)	0.0%

1.4.1.2 *Qualitative findings*

In December 2023, three months following the training sessions, qualitative data was collected by the university team from 23 participants who had participated in the training. Interviews focused on exploring participants' experiences of the training, and any changes in practice relating to hydration of care home residents.

The project team analysed the qualitative findings using Normalisation Process Theory (NPT)[38], a framework which can be applied to understand people's behaviour in relation to an intervention, and why certain behaviours become embedded or not in organisations.

The qualitative data from interviews with care home staff showed both positive and negative experiences with the intervention. Particularly positive feedback examples include:

- Care home staff reported that they found the training helpful and interesting and that it helped with building their knowledge of hydration.

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[38] See for more information on NPT https://normalization-process-theory.northumbria.ac.uk/

- They also understood the value of a blended approach (both online and in-person) and appreciated the informal and welcoming environment of the in-person training.

- Positive impacts on their knowledge and practice that care home staff described included:

  - They had an increased awareness of hydration and were sharing knowledge about this across the team.

  - They felt that there was improved communication about hydration within their care home, and that they were better able to deal with complexity when considering the hydration needs of care home residents.

  - Embedding training through changes to routine care practice in the home, for example offering residents fruit as a source of hydration.

  - Some participants reflected on specific residents where they had managed to make a positive impact on their hydration.

By contrast, and reinforcing the experiences of the pilot team, care home staff reported some barriers with being able to engage with the training, and/or apply the learning. These included:

- Due to high workload, they had limited time to attend the in-person workshops, and some had to attend the training on their day off.

- Several care home staff also experienced issues with accessing the online training, receiving technical support from the pilot team.

- As with engagement, due to staff shortages, staff had limited time to focus on hydration during their everyday practice.

- Participants also reported that despite personal interests in hydration, they perceived limits to how much they could change within their organisations, such as reduced funding and resources available at an organisational level.

Overall, using the lens of NPT to analyse the findings, the project team concluded that there was evidence of change at the individual level of care home staff in relation to the four dimensions of NPT (coherence, cognitive participation, collective action and reflexive monitoring) – this was demonstrated by the willingness of care home staff to engage with the training, understanding the benefits of hydration, and being willing to use the care plans. However, there was little evidence of change at the organisational level, for example as shown by the barriers faced by care home staff in making changes to hydration practice within their care home.

1.5   Looking ahead

The Northumbria team decided against participating in the scaling-up phase of the Hydrations Pilot programme. This was due to some concerns about the hard outcome focus of the national evaluation metrics, their experiences delivering the intervention to the three homes, and the results of the NPT analysis (which highlighted some systemic barriers to implementing good hydration care). However, due to the positive reactions to the training from care home staff and reports of resulting changes to hydration practice, the pilot team have plans to share their learning by disseminating their work widely. They also intend, subject to further external funding, to develop a gamified version of the intervention and run a further pilot, using co-production and an implementation science approach, to look at the contextual issues that impact sustainability.

They also provided some recommendations for future hydration interventions:

- Both coproduction and stakeholder engagement were key enablers of progress with implementation, and it was recommended that these should feature in the design of future hydration interventions.

- Although the technical support provided to participants was seen as helpful for enabling participation in the online training, the project team acknowledged that this support was time and resource-intensive. They reported that in future they would seek an alternative platform and alternative delivery formats, to increase the accessibility of the training.

- To ensure sustainability, future hydration interventions should focus on organisational change, requiring adjustments at both the individual and organisational levels. This would include obtaining buy-in and support from senior leadership within organisations, who recognise the importance of hydration and make it an organisational priority. In turn, this could encourage managers to protect time for their staff to attend hydration training, which could increase participation in the training.

For more information on this pilot site please contact: Philip Hodgson on
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Nottinghamshire

Summary

- Nottinghamshire implemented a tablet and smartphone-based app to support hydration in care homes. The app provides a structured method for recording the fluid intake of residents.

- The Nottinghamshire Integrated Care Board (ICB) team considered several interventions before deciding on the ROC (Reliance on Carer) app, using a matrix tool to score the proposed options against criteria including cost and scalability.

- The intervention onboarded 49 homes over eight waves, 25 homes over four waves in year one (November 2022 to October 2023) and 24 homes over four waves in year two (November 2023-October 2024), reaching a peak of 25 participating homes. This reduced to three homes at the end of year one.

- After this, the ICB and ROC agreed to overhaul the training, onboarding and app implementation processes, all intending to increase engagement. As of October 2024, 16 homes were inputting data into the ROC app.

- Staff at all levels from participating homes were first invited to complete online hydration training followed by an in-person app training session. Initially, the ROC Care Systems used an in-person train-the-trainer approach, training care home managers to cascade knowledge to their staff. By the end of year two, all training was provided online.

- In year two, ROC Care Systems took over the onboarding process from the ICB and made it entirely remote; this supported with scaling-up the intervention to more care homes. Regardless of the format, participating care homes described receiving responsive and adequate support during onboarding.

- ROC Care Systems also introduced a competitive and tiered approach to implementation. Care homes were encouraged to achieve monthly bronze, silver or gold status based on the number of residents registered in the app and the number of daily data points added. Whilst app engagement increased, care homes expressed some concerns about the validity and quality assurance of different status levels.

- Staff from homes participating in year one noted that a lack of integration with existing resident care record systems hindered the ROC app's implementation and sustained use in pilot care homes. In year two, this concern was still present for some homes but fewer, partially because more care homes without electronic patient record systems participated.

- Quantitative analysis identified statistically significant reductions in UTI diagnoses and falls following introduction of the app, supported by care home manager reports of reduced UTI incidence, fewer antibiotic prescriptions, and improved resident wellbeing; however, other concurrent factors during the pilot mean these outcomes cannot be attributed solely to the intervention.

- Views on long term sustainability were that the app needed to be integrated into a record management system to avoid resource duplication. The ICB has therefore decided not to proceed with the ROC app following the end of the pilot.

This case study presents the findings from two rounds of interviews with 17 participants piloting a smartphone and tablet-based app to support hydration in care homes in Nottinghamshire. Interviews were completed with staff who designed and developed the intervention, staff who are responsible for governance, and care home staff. This included nine interviews in 2023 and seven interviews (plus one individual providing email feedback) in 2024. ROC care systems have also contributed thematic analysis of 12 interviews with care home staff, highlighted in sections 1.4 and 1.5. The key findings from this case study are summarised below.

1.1 Description of pilot intervention

The pilot team in Nottinghamshire implemented the ROC (Reliance on Carers to drink) app, developed by ROC Care Systems. It provides a structured method for care home staff to record the fluid intake of residents, using a traffic light system to record the resident's swallow (how well they can swallow food or fluids) and whether they need assistance or encouragement to drink (as shown in 0 below).

Figure 1.2   ROC App user interface

Source: https://roccaresystems.co.uk/

Care home managers can also access an online portal, linked to the ROC app, which provides an overview of the hydration levels of all residents in the home. Managers are notified twice daily via email about their residents' fluid intake. As of year two, homes using the app would receive a monthly rating of bronze, silver or gold, corresponding to the number of residents in the app and the number of data points added daily. The intervention onboarded 49 homes over eight waves (25 homes over four waves in year one and 24 homes over four waves in year two) reaching a peak of 25 participating homes. This reduced to three homes at the end of year one, but as of October 2024 had increased back to 16 homes. The timing of onboarding waves and corresponding numbers of homes are summarised in Table 1.1.

Table 1.1   Care home onboarding timeline

Year	Waves	Date	Initial target for Care Home onboarding	Actual number of homes onboarded
1	1	Nov 22 – Jan 23	7	8
	2	Feb 23 – Apr 23	6	9
	3	May 23 – July 23	6	6
	4	Aug 23 – Oct 23	6	2
2	5	Nov 23 – Jan 24	19	6
	6	Feb 24 – Apr 24	19	10
	7	May 24 – Jul 24	19	3
	8	Aug 24 – Oct 24	18	5

Participating homes included those with older residents, including a mix of genders and ages. Some homes also work with people with dementia or end-of-life care needs.

1.2   Initial design and planning

The Enhanced Health in Care Homes Lead at NHS Nottingham and Nottinghamshire Integrated Care Board (ICB) initially led the bid for the funding to deliver the hydration pilot. They established a Nutrition and Hydration task and finish group, with the key stakeholder being the Infection Prevention Control (IPC) team. The task and finish group included social care staff, dieticians, pharmacists and clinicians, who were involved in identifying a suitable intervention to implement. A matrix framework was used to score the proposed interventions against criteria including scalability, cost, ease of implementation, and impact on the care home. Throughout the pilot, a multidisciplinary team continued to discuss and agree changes to the pilot. Staff participating in these meetings included medicines optimisation, quality oversight, social care, and project managers.

The ROC methodology was initially a paper-based tool that was piloted in Nottinghamshire and received positive feedback prior to the COVID-19 pandemic. When selecting the intervention to be used for the hydration pilot, Nottinghamshire was horizon scanning for opportunities to increase the use of digital infrastructure in care homes to support better health outcomes aligned to national drivers, and it was felt the ROC app would support this.

"….they also wanted to choose ROC over the rest of them due to the digitalisation aspects and the way that we as a system are moving forward with digitalisation within Care Homes. They felt that they fit in hand in hand."

Prior to onboarding care homes, all homes in Nottinghamshire were risk-rated using submission data for UTIs and ranked from one to 350. The top 20-50 care homes with the highest UTI rates were

highlighted. If these homes expressed an interest in participating, they were prioritised for joining the pilot. Care homes were also prioritised depending on their deprivation index, and whether the service was nursing or residential.

The Improvement Lead had overall governance of the pilot and was responsible for reporting back to internal governance and oversight groups. The project team established regular review forums with participating care homes and the ROC app development team. Initially the meetings were monthly, reduced to every six weeks following the initial implementation period.

1.3   Initial set up and implementation

1.3.1   Implementation activities

After care homes were onboarded to the pilot, the care home manager was invited to attend an online meeting providing more information about the pilot. The meeting was initially via MS Teams at a fixed date and time; however, it was found that pilot engagement increased if managers could watch a pre-recorded webinar in their own time. Care home managers and hydration champions (staff whose role is to promote hydration in the home, often in creative ways) were also invited to attend a one-day training workshop. The pilot initially used a train-the-trainer approach, whereby the staff who attended the in-person training then trained the staff working at their care home. However, knowledge was lost when staff left, impacting on the care home's ability to train new staff.

The pilot team initially supported the majority of care homes with onboarding. Two care homes in wave one required support with improving their Wi-Fi; the remaining care homes were supported with ordering devices, downloading the ROC app, and setting up staff and resident profiles. This could take several hours at each home. ROC Care Systems supplied 50 tablets as part of the pilot; the same tablet was used at training days to provide increased familiarity. In later waves of the roll-out, ROC provided onboarding support to care homes, to reduce the burden on the ICB.

1.3.2   Views and experiences of set up and initial implementation

Several interviewees reported that ROC Care Systems were very responsive to queries and feedback. The training was described as thorough and useful, and the app itself very easy to use. The regular check-in calls enabled care homes to share ideas about implementing the app and promoting hydration to their residents. One care home reported that they measured the fluid capacity of the different cups in their home, to ensure that the fluid intake could be recorded accurately.

A challenge across year one, waves one to four in Nottinghamshire was the different levels of digitisation; around 40% of homes were using digital care records, whereas others were still recording resident care on paper. This led to duplication of work, differences in the availability of digital equipment, and varying levels of digital literacy among care home staff. However, in waves one to

four, care homes that were not already using a digital care record were generally more receptive to, and engaged with, the pilot.

> *"The homes that haven't got digital care records already, [were] much more willing to engage, once they realise[d] what the requirements [were]. They [were] excited by dipping their toe into their first digital solution. Whereas some of those that have already got a digital solution, [were] seeing it as a bit of duplication."[39]*

One home reported difficulties in early implementation of only having one device, which wasn't sufficient for the number of residents. As implementation progressed, the pilot team provided them with two additional devices which the care home reported as helpful in recording resident hydration.

1.4 Year two expansion

1.4.1 Expansion activities

A year after the pilot began, in summer 2023 the ICB and ROC Care Systems agreed that the approach to onboarding and implementation of the app needed to be refreshed following a period of very low app engagement. Three key changes were introduced:

1. **Onboarding process:** The ICB were responsible for sharing Comms and engaging Care Homes. The ICB shared a link to an online Expression of Interest form which was created and monitored by ROC Care Systems. ROC Care Systems then informed the ICB which Care Homes had expressed an interest at fortnightly team meetings. ROC then remotely supported care homes to complete the required data sharing agreements, MOUs and other contracts, freeing up ICB staff time to complete other work.

2. **Revamped approach to hydration training:** Completing Level 1 e-learning in hydration became a requirement for all participating staff instead of a voluntary option. Upon joining the pilot, all care home staff were given access to the e-learning platform. Once staff completed the e-learning, they sent their certificate to ROC who then invited them to an onboarding session to learn how to use the ROC app, after which staff could begin inputting data immediately. To improve engagement in the final wave of year two (wave eight) staff were invited to attend a virtual webinar after completing the e-learning as opposed to an in-person session.

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[39] Quote tense has been changed to reflect that this was a finding from phase one implementation.

"What tended to happen was the people that we'd booked on...potentially didn't attend the training, because they were deployed elsewhere within the care home. So, somebody else would come, and they would be, like, 'I don't know why I'm here, I've just been told I've got to come'. What we found from the virtual training was that everybody was there, everyone was engaged, they knew about the methodology itself, they'd been through that process, so they had a real baseline knowledge"

3. **App development:** ROC Care Systems introduced the new bronze, silver and gold rating system to promote the care homes' success and encourage app use through added competitive elements. Care homes received a monthly rating and certificate by email.

1.4.2   Views on expansion

Interviewees reported that they found the training informative. One care home manager suggested that the e-learning modules could have been offered as a singular video to simplify tracking whether staff completed the training. Several interviewees described the red, amber, and green ratings of hydration levels of residents as a valuable feature, offering a visual indication of a resident's hydration levels throughout each day.

Care homes in year two (waves five to eight) similarly described the challenge of duplication of work, particularly care homes using other digital solutions. One care home manager reported their concern that duplication of effort put additional strain on staff members. Another care home manager described how they overcame the challenge of duplication by allocating one member of staff as responsible for adding each resident's points of care to the ROC app at mealtimes. This adaptation became part of a routine for staff in the care home.

Following the introduction of the bronze, silver, and gold certification system, interviewees described how care homes responded positively and app usage increased. ROC reported 18 active care homes in September 2024 compared with one active care home in September 2023. Gold-certified care home managers shared that care home staff were more motivated to meet hydration targets to maintain a gold certification for their care home. A few care homes also reported they were able to use their certificates to promote their focus on hydration to family and friends of residents. At the time of second year data collection, one care home planned to display their monthly ROC certifications in the care home to highlight their focus on resident hydration.

One care home manager recommended that the ROC app could take the complex needs of residents into further consideration, providing the example that it is not possible to record when a resident has refused a drink. Another interviewee questioned the certification system as a measure of quality as it did not consider the size of the care home, requiring eight points of care for ten residents to achieve a gold certification regardless of care home size.

In the second year, ROC Care Systems collected feedback from participating care homes through 12 interviews with care home managers and care home staff. [40] The data echoed the findings from national evaluation interviews that care home managers appreciated the visual oversight of hydration levels the ROC app provided. They also highlighted the reported improvement in care home staff motivation following the introduction of the bronze, silver and gold certification system.

1.5 Outcomes

1.5.1 Care recipients

1.5.1.1 Local evaluation of outcomes

ROC Care Systems conducted an analysis of data from eight care homes which demonstrated an improvement in resident fluid intake and points of care[41] from when they joined the pilot up until the end of the pilot. Their analysis (an example chart from one home is shown in Figure 1.3) also found an increase in hydration of residents as care homes moved from silver to gold level, averaging a 24.9% increase in average hydration.

Figure 1.3   Average hydration intake and total points of care as recorded by one participating care home.
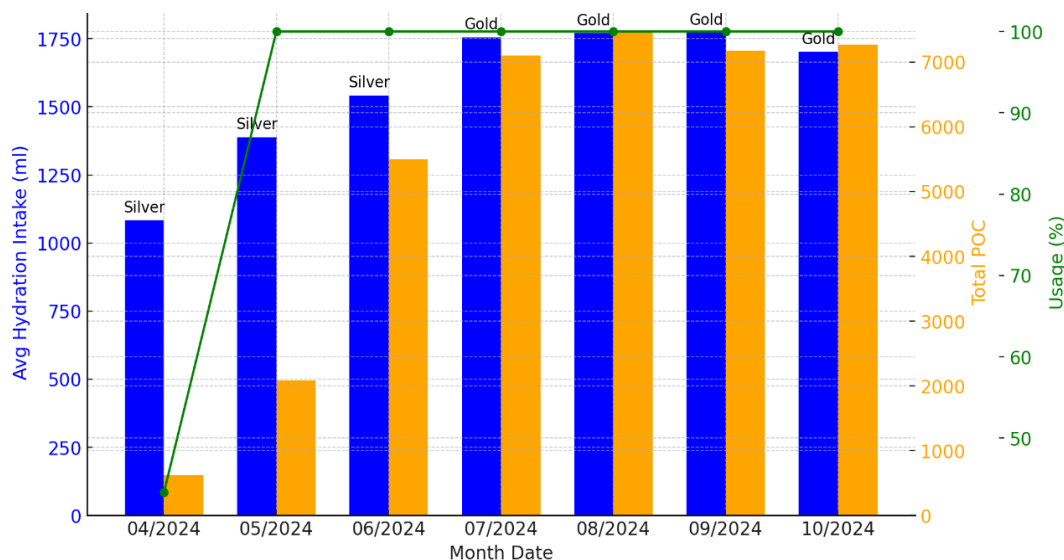
Source: ROC Care Systems

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[40] The ROC findings were provided by ROC in their analysed form and have not been independently verified by the Strategy Unit

[41] Metrics set by the pilot team locally for measuring the performance of the intervention.

1.5.1.2 National evaluation impact and process evaluation outcomes

In Nottinghamshire, an ITS analysis was able to be conducted to assess the impact of use of the RoC app. The analysis was run with controls for each variable. These controls were calculated for care homes in Nottinghamshire who were not involved in the hydration pilot. At least 12 months of post-intervention data relating to these outcomes was available with specific periods varying by outcome (summarised in Table 1.2).

Table 1.2   Baseline and post-intervention time periods for Nottinghamshire ITS outcomes

Outcomes	Pre-intervention Period	Post-intervention Period
UTI primary diagnosis	April 2022 to February 2023	March 2023 to April 2024
UTI primary non-elective hospital admissions	July 2021 to February 2023	March 2023 to June 2024
Antibiotics prescriptions	April 2021 to February 2023	March 2023 to August 2024
Falls	April 2019 to February 2023	March 2023 to June 2024

The ITS identified outcomes from three of the national evaluation metrics:[42] UTI primary diagnoses, falls, and antibiotic prescriptions (medications usually supplied for UTI) (summarised in Table 1.3). The ITS analysis found statistically significant reductions in the incidence of UTIs (a decrease of 9.3 per month per 100 patients (-27.3%) and falls (a decrease of 8 per month per 100 patients (-25.4%), but a statistically significant increase in antibiotic prescriptions (an increase of 47.7 (34.3%).

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[42] These metrics were developed during the scoping phase of the evaluation by the national evaluation team; pilot sites varied in their ability to provide data relating to these metrics and in some cases measured additional or alternative metrics (or those with similar but not identical definitions) as part of local evaluations. For more information on the interrupted time series methodology, please see the Final Report of the Hydration Pilots national evaluation.

Table 1.3   Nottinghamshire ITS results[43]

Metric	Average monthly number before intervention per 100 people	Average monthly number after intervention per 100 people	Difference	Percentage change (%)
UTI primary diagnoses	12.8	3.6	-9.3*	-27.3
UTI non-elective primary admissions	3	2.6	-0.4	-13.3
Antibiotic prescriptions (commonly prescribed for UTI)	139.1	186.8	47.7*	34.3
Falls	31.5	23.5	-8.0*	-25.4

*Statistically significant at 95% level

The results should be considered alongside the following factors:

- The pilot was conducted in quarter waves, with varying levels of engagement throughout from the homes that participated

- One participating care home was also taking part in a falls reduction programme, which may have contributed to the statistically significant reduction in falls over the pilot period

- Not all patients in the care homes participated in the pilot, even if the care home was signed on and using the ROC app.

- Care homes not involved in the pilot were included to provide a control for identifying trends

- A statistically significant increase in the number of antibiotic prescriptions may be attributable to changes in data collection

- The small number of residents included in the dataset and therefore the low number of UTI diagnoses in some months may have limited the ability for the impact analysis to detect a real change against variability in the data

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[43] The percentage change for all metrics was projected to decrease as a result of the pilot. The green shading indicates that percentage changes were seen in the expected direction while the pink shading indicates changes in the opposite direction.

- The control variables included data from January 2022 whereas the ITS variable included data from April 2021. Consequently, not all periods in the ITS analysis can be controlled for, limiting the ability of the analysis to detect a real change in the data.

In addition to the data analysis, interviewees also discussed observed positive outcomes of the app for care recipients. In the first year of implementation, one care home manager commented that due to the ROC app, they were able to identify a resident with very high fluid intake, to be borderline for diabetes. Skin integrity was also reported to be improved, as with improved hydration, the residents' skin was less dry and less prone to tearing.

In the second year of implementation, care home managers also noticed fewer hospital admissions for UTIs. They shared that they had observed fewer resident falls, though they acknowledged their care homes were taking part in fall pilots at the same time as piloting the ROC app, making it difficult to attribute the reduction identified in the ITS solely to the ROC app with certainty.

1.5.2 Staff and care providers

Care home staff in waves one to four reported that they are more easily able to identify patients who have a lower fluid intake and can take steps to remedy this earlier by encouraging the resident to drink. One care home manager reported that they would otherwise use physical signs of dehydration (skin and eyes) to identify residents who need to drink more fluids. Additionally, care home staff members described how the ROC app has enabled them to provide evidence to GPs when they are concerned a resident may have a UTI or be dehydrated. Care home staff also described having increased knowledge of the poor outcomes associated with hydration, including increased risk for falling, constipation, and delirium.

In waves five to eight, care home managers similarly reported that staff knowledge and understanding of the importance of hydration had improved, with a greater awareness of resident fluid intake reported. Care homes described their newly proactive approaches to encourage hydration amongst residents. One care home described how they offer different drinks to residents on a weekly rotation. Previous weeks have included hot chocolate, smoothies and mocktails. A few care home managers also described staff's improved understanding of the importance of their own hydration, commenting on the effect that modelling drinking behaviour can have on care home residents.

ROC Care System's feedback analysis similarly found staff knowledge and awareness of the importance of hydration had improved. They reported that care home managers described changes in caring behaviour among staff, such as trying different approaches to encouraging residents to sip their drinks.

"We're having quite positive feedback from some of the homes. One of the homes has gone on to do other things, for example they've now got Hydration Wednesdays, where it's a real focus of the week,

and they bring in different activities to the home. The app encourages a bit more of an understanding of that proactive approach to hydration."

1.6   Looking ahead

While the majority of care home staff interviewed reported that they would be happy to continue using the app, one respondent stated that due to incompatibility with other digital record systems, they would not continue using the ROC app. This was due to staff having to record fluid intake on the main digital care record as well as the ROC app, duplicating the amount of time required. One interviewee described that since the pilot's inception, the social care digital landscape has changed with around 80% of Nottinghamshire care homes now using digital care records. However, the manager of one care home that did not use a digital record system was disappointed at having to return to paper records upon the conclusion of the pilot. The majority of care home staff interviewed preferred that the ROC app be embedded into other digital record management systems. Since the ROC app is not interoperable with digital care records, it was difficult to justify using the app when other embedded fluid management systems are available.

The pilot team recognised that some of the participating care homes reported a positive impact on staff knowledge and resident wellbeing. However, they felt that the low adoption of the app among care homes limited the strength of the outcome data on UTI incidence described in section 1.5. This led them to conclude that the ROC app did not provide sufficient value for money for Nottinghamshire.

"I think in terms of sustainability, the aspect of logging into the app is not a problem, I think it's the digital interoperability within services, and the current tech opportunities within services may be limited, if we're talking outside of the pilot where we're not issuing devices to services."

For more information on this pilot site please contact: rose.dent@nhs.net.

South East England

Summary

- South East England developed a personal hydration plan for use with older people in their own homes. The pilot aimed to increase levels of hydration and reduce the number of urinary tract infections through patient education and empowerment

- Sussex Integrated Care Board (ICB), Frimley ICB and Surrey Heartlands ICB collaborated to design the pilot and took a Plan-Do-Study-Act (PDSA) quality improvement approach to learn from several cycles of the pilot and to improve and develop the intervention throughout

- A pilot team was hosted by Sussex ICB and developed resources and training for the intervention. The intervention was delivered through staff in Primary Care Networks (PCNs) where there were high levels of urinary tract infections and large populations of older people

- Training, and data collection and analysis support from the pilot team, alongside established relationships between PCN staff and patients, facilitated implementation, which was also strengthened by engagement from PCN leadership

- Staffing challenges throughout implementation included funding-related delays in appointing the pilot team; complex governance processes for shared staffing across three ICBs; limited capacity of some PCN staff to implement the pilot alongside their regular duties; and ongoing staffing issues within the pilot team due to fixed term contracts

- More widely, other challenges the pilot team and PCNs faced included struggles with meeting patient participant targets, navigating data collection issues across different local contexts, and the seasonal timings of different cycles.

- The pilot team revised the hydration plan and created additional videos and leaflets for carers and the public based on insights from patients and staff gathered through local evaluation surveys, community events, and focus groups.

- Almost three-quarters (71%) of patients reported increased fluid intake; health improvements patients described included fewer headaches and reduced constipation. Staff also increased their awareness of hydration, leading to personal behaviour changes

- An interrupted time series analysis showed statistically significant changes in UTI diagnoses, antibiotic prescriptions, and emergency attendances, but not always in the intended direction. Data limitations and other local contextual factors made attributing these changes solely to the intervention unfeasible.

- There was enthusiasm for rolling out the intervention to a broader population but concerns about funding (to cover printing costs) and longer-term impact (not shown in evaluations). Outside of the pilot, resources may be better provided in response to individual health needs rather than as a blanket approach to groups of patients.

- To increase sustainability, the pilot team focused on sharing learning through local, regional, and national events and online hubs. They also commissioned films to spread awareness post-pilot and developed an Excel tool for easy data collection and impact demonstration.

This case study presents the findings from two rounds of interviews with 23 participants piloting the Hydrate to Feel great personalised hydration plan intervention in the South East. This included 11 participants in January and February 2024 and 12 between October and December 2024. Interviews were completed with those overseeing and delivering the intervention across Sussex, Surrey and Frimley Integrated Care Systems (ICSs), including Integrated Care Board (ICB) and Primary Care Network (PCN) staff. The key findings from this case study are summarised below and include those from a local evaluation, which the pilot team provided to Strategy Unit evaluators.

1.1   Description of pilot intervention

The pilot team in South East England (a collaboration of NHS Sussex, NHS Frimley and NHS Surrey Heartlands ICBs) developed a personal hydration plan intervention to support older people in their own homes with the aim of increasing both their levels of hydration and reducing their number of urinary tract infections (UTIs). As part of this Hydrate to Feel Great programme, patients over 65 with a UTI diagnosis in the past 12 months were asked to track their fluid consumption over four weeks using a paper-based drinks diary. Patients with urinary catheters, on fluid-restricted diets or with a Rockwood Frailty Score of 9[44] were excluded. In total, 467 patients participated between November 2023 and October 2024.

The pilot took a 'Plan Do Study Act' (PDSA) approach to quality improvement, which was delivered across three PDSA cycles, involving PCNs from across the ICB areas. The intervention was developed and adapted based on feedback from patients, staff and stakeholders in each cycle. Table 1.1 describes the participating PCNs, and main elements of, and changes to, the intervention over the pilot.

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[44] See: https://www.england.nhs.uk/south/wp-content/uploads/sites/6/2022/02/rockwood-frailty-scale_.pdf

Table 1.1   Implementation cycles of the South East Hydration Pilot

PDSA Cycle	Dates	PCNs involved	Intervention elements and changes
1	November 2023 to February 2024	Bexhill	• 21-page A4 Word Document 'My Personalised Hydration Plan'
2	March 2024 to September 2024[45]	Bexhill Surrey Heath Crawley Care Collaborative (Four separate GP practices) Redhill Care Collaborative	• 20-page A5 booklet 'My Hydration Plan' including EasyRead version • Hydrate to Feel Great leaflet (for general public) • Carer training video
3	August 2024 to November 2024	Bexhill Surrey Heath South Crawley (Four separate GP practices) Healthy Horley	• Option for patients to measure fluid intake in millilitres (ml, rather than count drinks) - insert included in diary

PCN staff recruited and supported patients to complete the diary, providing them with feedback on their fluid intake at the end of the four weeks. Exact staff roles varied by PCN but all were Additional Roles Reimbursement Scheme, or ARRS roles[46] (including care coordinators, social prescribing link workers and dietetic assistants). Other PCN staff including data analysts and administrators gathered patient and outcome data on behalf of the pilot team. The pilot team (hosted by Sussex ICB) gathered feedback on the resources and outcomes data via staff and patient surveys (pre- and post-intervention). Additionally, they collected data at community events and focus groups with community organisations at multiple points during the pilot to inform the next PDSA cycles.

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[45] Overlaps between PDSA cycles two and three related to delays in completion of review surveys
[46] For more information on the ARRS scheme and roles see: https://www.england.nhs.uk/gp/expanding-our-workforce/

1.2   Design and planning

The three ICBs aimed to improve hydration in ageing populations by educating patients about its importance. By doing this, they sought to enhance infection control, reduce the need for repeat antibiotic use, and prevent hospital admissions for UTIs.

Quality improvement leads at each ICB planned and designed the intervention together. Data across the three ICBs showed that the highest prevalence of UTIs was in older people living in their own homes, with UTIs in older people living in care homes decreasing. Staff at both Frimley ICB and Surrey Heartlands ICB had experience in designing and delivering successful hydration projects in care homes. They brought together stakeholders interested in hydration and infection control to adapt and build on the care home hydration work for patients living in their own homes. In parallel, Sussex ICB planned a similar approach; the national antimicrobial resistance (AMR) team at NHS England requested that the three areas collaborate to develop a joint Hydration Pilots bid. A lead from each ICB formed a project board and worked together to plan and design the intervention across Frimley, Surrey Heartlands and Sussex.

Whilst there was a commitment from the project board to use a co-production approach to develop the pilot, interview participants reflected that there was limited time or scope to achieve this. They therefore decided to take the PDSA approach to embed learning and quality improvement within the pilot, using the personalised hydration plan as the measurable intervention. The project board reviewed literature and best practice on personalising approaches to patient education on hydration and designed the plan to use self-reflection and personal goal setting for levels of fluid intake, rather than clinically defining a personalised fluid intake target for each patient.

Each ICB appointed a Senior Responsible Officer (SRO) for the project. The pilot was hosted by Sussex ICB, which signed Memoranda of Understanding and data sharing agreements with both Frimley ICB and Surrey Heartlands ICB and employed a pilot team with staff in project management, data analysis and quality improvement roles. The pilot team worked with a Hydration Improvement Programme Board to oversee and implement the pilot and report monthly to the NHSE national antimicrobial resistance (AMR) team. The board consisted of the SRO from each ICB, other senior stakeholders involved in developing the pilot and an officer from NHS England.

Interview participants felt the leadership, commitment and allocation of non-resourced time from members of the project board enabled the project to progress from the design phase to the implementation phase. They also described the complexities of bringing together three ICBs to develop the pilot, including initial divergence on ideas and approaches to improving hydration, concerns about dilution of funding and differences in governance systems, and financial and operational processes. However, the project board collaborated well to find solutions to these

challenges through regular discussions, clear timelines for project development and a shared focus on driving the project forward. Relationships between ICB partners strengthened throughout the delivery of the pilot.

> *"I reflect on it now and I think it's been beneficial that we've worked across the [three ICBs]. So, I think, that initial work – and there was a lot to work through – but I think, now I would say we're a very cohesive group and work very closely together."*

1.3 Setting up the PDSA cycles

The project board used data to identify PCNs across the three ICSs through which to implement the pilot. PCNs with the highest rates of UTIs and large populations of older people were prioritised. In Sussex, Bexhill PCN was identified and agreed to take part in the pilot's first PDSA cycle. In later cycles, the PCNs that did engage were not always the ones with the highest rates of UTIs locally but often did have sufficiently high rates of UTIs among patients to make them appropriate places to target the intervention.

The initial plan was to deliver the pilot in each of the three ICSs by employing three quality improvement managers. However, several factors impacted recruitment to these posts (discussed below) and only one post was filled. The project board therefore agreed to an alternative approach whereby PCNs (with their agreement) were instead funded to deliver the pilot through their existing staff, with the support of the Sussex ICB-based pilot team.

To set-up the first cycle (which aimed to work with 50 patients), the pilot team worked with Bexhill PCN to develop funding, data sharing and reporting systems. Bexhill PCN allocated staff to project management, data analysis and project delivery roles. The pilot team delivered training for the PCN's Care Coordinators on the pilot aims, the importance of hydration, the use of the personal hydration plan template and the tools to gather data from patients and carers.

This pattern of set-up activities was largely repeated for PDSA cycles two and three with the main change being the recruitment of additional PCNs (with one in PDSA cycle two, and one in PDSA cycle three, participating as four separate GP practices, see Section 1.1). Bexhill PCN participated throughout each of the cycles. Given the core role PCN staff played in delivery, the pilot team were keen to avoid imposing a rigid staffing structure on PCNs as they came on board. Subsequently, PCNs in cycles two and three varied from Bexhill in the number and type of staff used to deliver the pilot. While some also used teams of staff working in varied ARRS roles, some tasked single professionals with delivery, who had more dedicated capacity, instead of delivering it alongside other duties. In Bexhill they switched from approaching patients individually to inviting patients to attend information events, where they completed baseline surveys with groups of people.

Interview participants viewed the recruitment of the Sussex ICB-based pilot team – in particular, the appointment of a pilot lead with clinical skills as a dietitian and enthusiasm for improving hydration for older people – as a key milestone for the project, providing both resource and focus for set-up and implementation.

Recruitment however posed the biggest challenge to the pilot at the start. There were difficulties establishing governance processes for shared staffing across three ICBs; a lack of capacity within ICBs to carry out recruitment rounds; and delays due to the timing of Hydration Pilots programme funding being released to ICBs. Due to NHS rules, posts were advertised through Sussex ICB only meaning potential candidates interpreted the posts as solely Sussex-based. Other related challenges interview participants described included the fixed-term nature of the posts; the competitiveness of the offered salary and the wording of the job titles and adverts, which attracted applicants often lacking the right skillset.

Although interview participants described frustrations with these recruitment challenges, they credited the project board for collaborating well to reach a pragmatic decision, to change the delivery model and allocate funding to PCNs, so as not to delay the project start date any further. Further, participants considered that the revised model offered benefits over the original model, as PCNs had established relationships between patients and staff and allocating funds to PCNs made them more likely to engage in the pilot.

As during cycle one, levels of engagement from PCNs across the three ICBs varied in cycles two and three. The pilot lead utilised existing links and networks of those on the project board and within ICBs to develop relationships with PCNs. These relationships were stronger in some areas than others and the time available within the wider ICBs to support the pilot lead with this engagement process was variable.

> *The PCNs we ended up working with either had build-up conversations, had been massively enthusiastic and put their hands up, or had a connection with somebody, usually me..., I hadn't appreciated the degree of resistance that would be met [or that] I would be calling up old colleagues and saying, 'Do you know anyone at this practice that might be interested'...I thought it would be much more straightforward.*

Though a slow process, the team did however succeed in getting all three ICBs represented, which proved difficult during the first cycle. For the later cycles, the strongest factor driving engagement was an enthusiastic viewpoint (among PCN leadership and frontline staff) that this was a different way of achieving positive outcomes for patients.

> *I don't think we [have] ever really turned down an opportunity to do something new, innovative, exciting and especially when it potentially holds benefit for our patients and or our practices. So, we said, 'Yes, we'd love to be involved.'*

1.4   Implementing the PDSA cycles

PCNs came on board at different points during cycles two and three and were set individual targets for the number of patients to recruit in each cycle. While these targets increased between PDSA cycles two and three; several PCNs faced challenges in meeting them, particularly in cycle three. This mirrored cycle one where of the 79 patients Bexhill PCN Care Coordinators invited to participate, 34 agreed to complete the diary. A higher-than-expected number of patients declined participation, citing reasons such as already drinking enough fluids, not wanting to fill in the hydration plan, the timing of cycles, and believing their recurrent UTIs were due to other causes. The number of patients each PCN was able to work with across all three cycles is summarised in Table 1.2.

Table 1.2   Patient participant numbers by ICB, PCN and PDSA cycle

ICB	PCN	PDSA cycles	Patient participants (total)
NHS Sussex	PCN1	1,2,3	118
	PCN3	2	97
	PCN6	3	61
NHS Frimley	PCN2	2,3	86
NHS Surrey Heartlands	PCN4	2	47
	PCN5	3	58

Some PCNs queried the criteria for recruiting patients, suggesting that the diary would be most beneficial for patients only recently diagnosed with a UTI (rather than being diagnosed within the past 12 months); one PCN narrowed the criteria in cycle three as a consequence. Others highlighted that older people with UTIs have heard the messages before or other health conditions (involving catheter use or other conditions including frailty) precluded their participation. Instead, they suggested younger participants may have been more receptive and would have provided a larger pool from which to recruit.

I mean, the criteria I think made things slightly difficult, and obviously the age...a lot of them that have recurrent UTIs have heard before that they need to drink plenty of water...And then obviously you had to take out the patients that had catheters, recently diagnosed with cancer. [Chronic kidney disease, CKD] as well, a lot of them had CKD. ...by the time you took all that out, you weren't left with many. So, that was the most challenging part of it really.

As each PCN varied in the way it delivered the intervention, the pilot team found it difficult to identify the most effective or efficient. However interview participants highlighted some particular aspects from the different PCN approaches which worked well. These included:

- Using specific staff for different tasks, such as running record searches for appropriate patients to target; texting or calling patients and booking appointments; and working with the patients to introduce the intervention and undertake baseline surveys

- Using staff in ARRS roles with time to contact and work with patients where they were working with similar patients as part of their usual role (in contrast to using nurses with limited capacity)

- Focusing on patients with UTIs in the past one to three months only (or by contrast, widening recruitment communications out to anyone aged over 65)

- Providing sufficiently long appointments (at least 20 minutes) to explain the purpose of the pilot, reviewing the resources and completing the baseline survey

- Conducting home visits or enabling patients to complete first discussions and baseline surveys over the phone.

On their part, PCN staff indicated that the funding, training and data collection support the pilot team provided, as well as ongoing commitment from PCN leadership enabled implementation. However, they also faced challenges:

- Some PCN staff had limited capacity to implement the pilot alongside their regular duties, and the cycle timings often clashed with work pressures and leave commitments (such as December timing for cycle one, and summer timing for cycle three)

- Limited capacity for data collection, analysis, and reporting led to issues, including data-sharing problems between the pilot team and the PCN and inconsistencies in local patient data recording. This resulted in difficulties with data accuracy and timeliness, which became more complex during later cycles, with more PCNs involved

"there [were] definite benefits to us doing it, we know our patients, we've got a good team of care coordinators who were already working with some of those people. But as in these things, you know, it comes down to time and capacity''

Based on feedback gathered through surveys, a community event (held with staff and patients involved in cycle one), and further online meetings with PCN staff, the pilot team made several improvements following the end of PDSA cycle one in February 2024. These were:

- Reducing the drinks diary in size (from A4 to A5) and length, changing its structure, adding more information about hydration and commissioning an Easy Read version for patients with learning difficulties

- Revising the pre- and post-completion surveys, to collect more useful feedback on potential health benefits and changes to quality of life,

- Revising the data reporting spreadsheets, to help PCNs provide better process and outcome data.

The pilot team continued to bring PCN staff together in cycles two and three to share learning on delivery. An additional element that the team developed for cycle three, as a result, was the diary insert with instructions on measuring fluid intake in millilitres. This followed feedback from a dietician leading work in one of the PCNs, which indicated some patients were interested in measuring their fluid intake more precisely. The team developed an insert rather than make a more permanent content edit, to continue to meet the needs of patients more comfortable with measuring fluid intake in numbers of drinks.

During PDSA cycle two, the pilot team also developed additional resources to complement the patient-facing intervention. They developed a short training video (narrated by the pilot lead) aimed at domiciliary care agencies across the ICBs, on the basis that carers might be supporting some of these patients.

"And each area we worked in, we looked up the CQC registered care agencies that were providing care to people at home and we sent them the video and said, in part because I didn't want a carer to go into somebody's house and go, 'What do you mean you want me to get you another drink? What's this booklet for?' It was, sort of.. 'Just to let you know we're working in your area,' but also, 'This is why, and this is why it's important.'"

They also developed a leaflet for the general public, to spread hydration education more widely. For this. they used insights from the South West England Hydration pilot, with its similar public-facing approach. To support it and promote the messages more widely, in May 2024 the pilot team and Bexhill PCN jointly hosted a Hydration Station event, at De La Warr pavilion on Bexhill seafront, to share practical ideas for improving hydration with passersby.

Throughout cycles two and three the pilot team continued to meet with and seek feedback from community groups across the three ICBs including those working with people with aphasia, an elder's association and community associations for older people from Nepal and South East Asia. Despite this, interview participants discussed other ways the pilot could have worked with patients from more diverse backgrounds. One interview participant suggested targeting or prioritising

particular communities in later cycles would have helped the team to better establish the intervention's wider applicability and impact on populations in areas of higher deprivation.

One of the biggest wider challenges to the pilot in later stages was the ongoing staffing issues within the pilot team. Several key members of the team, including the data analyst and pilot lead, left before the end of the pilot, due to the uncertainty of fixed-term contracts, and could not be replaced due to ICB reorganisation pressures. Changes to roles at the strategic level also meant Programme Board members were balancing ongoing pilot oversight roles with new positions and portfolios. Remaining staff members upskilled and (successfully) took on additional duties but were stretched in capacity and skillset by activities in the pilot's final stages which included final data analysis, procurement processes for a film company and disseminating results from the pilot to other interested ICBs and infection prevention teams (see section 1.6).

Despite these challenges, there was widespread general positivity about implementation of the pilot, largely due to the feedback from patients (as described in the next section). Interview participants described the value they saw in the work and were encouraged by the difference they felt it made to patients.

> *I think a lot of what went well boils down really to good planning within [the pilot] team and learning from what had gone before and really, you know, trying to put ourselves in people's shoes and understand how things might impact them. And then, you know, that unwavering enthusiasm of NHS staff who even, when things are not particularly easy, they look at something and go, 'Well, I can see how this would really help someone.' And that was the, sort of, the feeling you got, that people that were asked to help deliver the project could see its worth and its benefit.*

1.5   Outcomes

### 1.5.1   Patient outcomes and feedback

1.5.1.1   *Local evaluation*

The pilot team data analyst developed a Power BI dashboard which visualised data from pre- and post-intervention questionnaires. Of 467 participants, 400 patients completed both questionnaires. •75% (n=351) of people who took part completed their drinks diary for the full four weeks. Most participants were women (n=372, to 95 men), aged 75-84 years (n=219)[47] and white (n=433). Patients came from a range of economic backgrounds; Figures 1.1. and 1.2 show how participants varied by areas of relative deprivation (as measured by indices of multiple deprivation (IMD)) and by ethnicity.
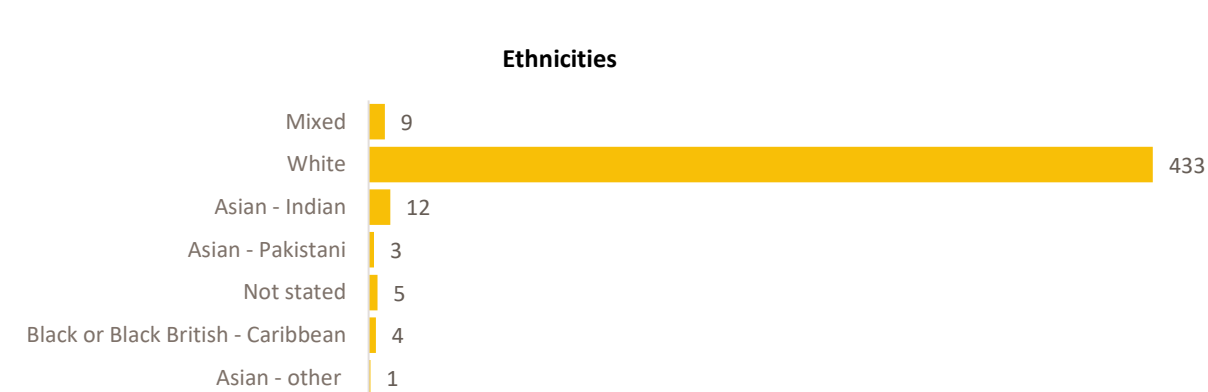
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[47] 177 participants were aged 65-74, 71 aged 85+

Figure 1.4   Numbers of participants living in areas of different levels of deprivation [48]
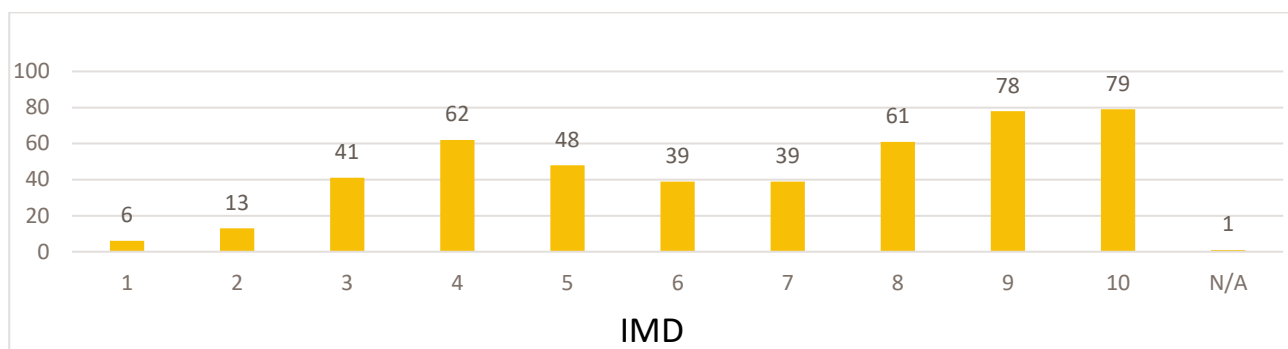
Figure 1.5   Numbers of participants by ethnicity[49]

Among patients who completed both surveys, 71% (n=281) reported they were drinking more than their baseline estimate after completing My Hydration Plan. [50] Among patients counting their drinks, across the three cycles, the number increased by 1.5 drinks per day on average. Among patients measuring their fluid intake in millilitres (mls) in cycle three, their fluid intake increased on average by 313 mls each day. [51] The limits to these positive findings include the self-report methodology, which was reliant on accurate recording by patients.

1.5.1.2   National evaluation

In South East England, the national evaluators were able to conduct an interrupted time series (ITS) analysis to assess the impact of the intervention, it was conducted in four phases aligned with different PCN start dates.[52]Metrics were analysed at whole population level (numbers per 10,000

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[48] Adapted from chart provided by pilot team to the Strategy Unit, with decile 1 indicating the most deprived ten per cent of areas, and decile 10 the least deprived ten per cent.
[49] Adapted from chart provided by pilot team to Strategy Unit
[50] 13.9% (n=55) indicated they were now drinking less than at baseline, with 15.2% (n=60) drinking the same.
[51] Fluid intake figures provided by pilot team to Strategy Unit.
[52] Not all PCNs were able to provide sufficient data to enable an ITS

patients on primary care caseloads) due to difficulties identifying patient participants within local data. The ITS identified outcomes from four national evaluation metrics. The time-period and the number/combinations of metrics that informed the analyses differed between the PCNs.[53] Table 1.1 provides a summary of the metrics and findings for each participating PCN.[54] Key findings for each metric are as follows:

- Statistically significant increases in UTI diagnoses in two of the four phases, contrary to expectations, but a significant decrease in the final phase.

- Significant reductions in UTI-related antibiotic prescriptions were found in phases one and two, but phase three saw a significant increase, and the final phase had a non-significant decrease

- A significant increase in UTI-related emergency attendances occurred in phase two, while changes in other phases, including emergency admissions, were not significant.

Due to the population-level analysis, relatively small numbers of participants across the three ICBs and short post-intervention periods for the final two phases, confidently attributing these changes to the intervention is unfeasible. An introduction of the EPIC emergency health record system in Frimley in July 2024 potentially affected how emergency attendances were recorded. Additionally, changes in how PCNs record UTIs and local efforts to reduce antibiotic prescribing may also explain these results.

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[53] These metrics were developed during the scoping phase of the evaluation by the national evaluation team; pilot sites varied in their ability to provide data relating to these metrics and in some cases measured additional or alternative metrics (or those with similar but not identical definitions) as part of local evaluations. For more information on the interrupted time series methodology, please see the Final Report of the Hydration Pilots national evaluation.
[54] Green shading is used to indicate result in intended direction, pink in opposite direction

Table 1.3   ITS results per PCN

	Participating PCNs	Start date	Pre-period	Post-period	Metric	Average monthly number before intervention per 10,000	Average monthly number after intervention per 10,000	Difference	% difference
1	Bexhill	September 2023	October 2022 - September 2023	December 2023 -July 2024	UTI diagnoses	18.5	23.4	5*	27.0%*
					UTI-related antibiotic prescriptions	44.8	42.3	-2.5*	-5.6%*
					UTI-related emergency attendances	4.3	5.1	0.8	18.6%
2	Surrey Heath, Redhill, Crawley Collaborative	March 2024	April 2023-March 2024	April 2024-August 2024	UTI diagnoses	15.8	16.1	0.3	1.9%
					UTI-related antibiotic prescriptions	23	21.5	-1.5*	-6.5%*
					UTI-related emergency admissions	6	6.7	0.6	10.0%
					UTI-related emergency attendances	0.9	2.7	1.8*	200.0%*
3	South Crawley	July 2024	July 2023-June 2024	July 2024-September 2024	UTI diagnoses	20.6	47.4	26.9*	130.6%*
					UTI-related antibiotic prescriptions	62.4	72.5	10.0*	16.0%*
					UTI-related emergency attendances	2.4	2.9	0.5	20.8%
4	Healthy Horley	August 2024	August 2023-July 2024	August 2024-September 2024	UTI diagnoses	7.3	3.3	-3.9*	-53.4%*
					UTI-related antibiotic prescriptions	8	7.3	-0.7	-8.8%
					UTI-related emergency admissions	5.2	4.1	-1.0	-19.2%
					UTI-related emergency attendances	2.1	1.7	-0.4	-19.0%

statistically significant at 95% level

Interview participants discussed patient outcomes, including their views on results from the local surveys. This included a 'surprising' number patients self-reporting improvements in non-UTI related outcomes (such as fewer headaches , reduced constipation and overall better wellbeing).

> *"Quite a few people said they had less headaches and that it had helped with their bowel habits and things like that. Even I was quite surprised sometimes at, like, how many people were saying, 'It helped me with this and it helped me with that.' I just think, 'Wow, that's great.' Because, like you said, it sounds like such a simple thing, but actually implementing it showed vast improvement just for those few patients that we got to see. "*

Staff agreed that patients responded positively to the booklet throughout all the cycles, finding it straightforward to use, and self-reporting behaviour changes as a result (for example investing in water bottles). The request from some patients to use a more precise measurement challenged initial views among the project board and pilot team that this would be too complicated.

Most interview participants felt that the proportion self-reporting that they were drinking more was relatively accurate. Among patients reporting they were drinking less, interview participants suggested that this may be because they overestimated their fluid intake at baseline (wanting to please healthcare staff), before the diary provided them with a more accurate illustration.

> *"It seems quite likely that those people are doing what a lot of us do when a healthcare professional asks us questions is that we tell them what we think they want to hear. So, you've got quite a dry, kind of, 'What do you drink on an average day?' 'Oh, well, obviously, I drink eight cups of-,' you know, it's that, 'I think this is the right thing to say. Nobody is actually asking me to measure what I do.' And then, it comes on to that process of, 'Oh no, you actually are checking what you're drinking,' and that's proving to be less.*"

1.5.2 Staff and system outcomes

Interview participants also discussed how participating in the pilot affected staff involved in implementation:

- It provided opportunities for pilot team and PCN staff to develop new skills and feel more empowered in their roles. One participant mentioned that the coaching approach taken by a colleague helped them gain confidence and try new tasks.

- Others described an increase in knowledge and awareness of good hydration that made them conscious of their personal hydration habits; many PCN staff reported via different PDSA feedback mechanisms that they were drinking more water as a result.

- The positive feedback from patients improved the morale and job satisfaction of some interview participants, particularly important for those balancing pilot activities with their usual workload.

> *"I think, when you're working in that sort of role and actually, somebody says, 'Oh, thanks for what you told me, I feel better now,' that's a lift, isn't it? So, you get a few of those and your enthusiasm can carry you through. And I think that was very powerful."*

At a system level, interview participants highlighted examples of the holistic approach PCN staff took while visiting patients to discuss hydration, linking the pilot work to other local objectives for improving patient outcomes. This included conducting blood pressure checks in one PCN, or wider conversations about overall diet, lifestyle choices and other health behaviours; one participant indicated this was particularly valuable for diabetics. The project also enabled the development of collaboration across the three ICBs, allowing partners to pilot approaches to working together and overcoming challenges.

1.6   Looking ahead

1.6.1   Scale and spread of the intervention

Interview participants were enthusiastic about rolling out the intervention to a broader population, such as anyone regularly suffering from UTIs, particularly people younger than 65 years with co-morbidities. One participant queried whether it might be suitable for pharmacists to provide it to patients as part of the Pharmacy First approach to treating uncomplicated UTIs.[55] They were not convinced that it was suitable for scaling up in the way that the pilot expanded, by offering to all potentially relevant patients in a population at once. Some were not convinced that PCN staff were the correct staff to support patients with their hydration plans, at least in the time-intensive methods used in the pilot. They suggested instead that these resources would be better deployed by either primary care or community provider staff when individuals' health needs indicate it could be useful, moving away from the artificial conditions of the pilot to a more opportunistic delivery.

> *"A project is quite a forced thing, isn't it? We [wanted to] get a significant number of people involved. In real life, the resources [would be used] based on an individual's health needs at that point in time. So, if someone sits down with the practice nurse or GP and has a UTI, potential signs of a UTI, or another issue that could relate to their hydration status, then this would be a useful time to say, 'We've got this resource to help you drink better. Do you want to take this away and give it a go?' [The pilot] feels quite different to how it would really be used."*

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[55] For more information on Pharmacy First see: https://www.england.nhs.uk/primary-care/pharmacy/pharmacy-services/pharmacy-first/

Interview participants also identified care homes as a key potential audience – potentially linking it with the Enhanced Health in Care Homes framework[56] as a way of embedding it in usual practice. However, some interview participants questioned whether the pilot had enabled them to fully understand the potential long-term impact of the plan. The relatively small number of patients participating across individual ICBs and the short time-period for outcome analysis following cycle three were the main reasons for this. They suggested that measuring outcomes over a longer period would be beneficial to fully appreciate the intervention's value for any potential broader audience.

1.6.2   Sustainability of the intervention

In the final stages of the pilot, the team focused on sharing learning and making resources as accessible as possible to support potential scale and spread beyond the pilot's end and increase sustainability. Remaining pilot team members continued to attend local, regional and national events to raise awareness and share results of the local evaluation. They also commissioned two films (one aimed at staff, another at patients) to continue to spread awareness and insights about the project that did not depend on the existence of their roles (as their roles were due to end in March 2025). Each ICB intended to share these alongside digital versions of the plan on either ICB or other local health-related websites. Budget was allocated to continue printing and distributing resources throughout 2025. Finally, they created an Excel tool to support organisations using the resources with patients to evaluate and demonstrate its impact, crucial for ensuring its long-term applicability.

> *The only way this is going to grow in the future without [a team of people pushing it] is if the people using it are enthusiastic about it...having data facilitates that...I felt it was really important to provide [clinical staff] with some sort of tool that would make it very easy for them to collect data and say, 'Look, we've started using this resource and our UTI rates, hopefully, have gone from X to Y.'*

Interview participants expressed concerns that hydration would not continue to be a focus for all three ICBs and that the cost of printing the plans in the future will prevent PCNs from sharing hard copy versions with patients via their staff. However, one participant discussed that their ICB was exploring how the resources could be part of a response to high dependency users of acute trusts which they hoped might lead to a positive legacy for the pilot.

For more information on this pilot site visit: South East Hydration project on NHS Futures.

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[56] For more information on the EHCH see: https://www.england.nhs.uk/long-read/providing-proactive-care-for-people-living-in-care-homes-enhanced-health-in-care-homes-framework/

South West England

Summary

- South West England's Hydration Pilot is a public-facing educational intervention. It was iteratively co-designed and co-produced with stakeholders, including the target population (men over 70 years old living in their own homes, in Devon, Dorset and Somerset) from January 2023

- The regional pilot team used the Plan Do Study Act (PDSA) quality improvement approach to review and refine an educational pack, with input from these stakeholders up to July 2023

- The educational pack contains a printed leaflet about hydration with other resources such as a reusable water bottle, coasters and stickers, printed with the slogan 'Don't wait, drink 8', to act as hydration prompts

- Packs were distributed directly to members of the target population in the community via visits to community groups and hospital discharge lounges, with over 950 packs distributed between August and December 2023

- The team faced challenges that limited the extent of co-production due to delays in navigating NHS processes (such as recruitment, governance, and purchasing) and the delivery timeframe for the pilot.

- In Round 2 of the pilot Gloucestershire and Somerset Integrated Care Boards (ICBs) agreed to scale up the intervention in their systems, and distributed approximately 1200 packs from October 2024 to December 2024

- The pilot team intended to measure locally agreed pilot outcomes (including changes in self-reported hydration levels) through pre- and post-intervention questionnaires completed by staff with participants that were given an education pack. However, data collection was challenging in both rounds of the pilot and at the time of the evaluation, there were limited findings from local surveys available

- An interrupted time series analysis of nationally available population-level data (for Devon, Dorset and Somerset ICBs) from Round 1 of the pilot showed a statistically significant reduction in UTI non-elective admissions and in falls-related admissions. However, these findings are likely to be at least partly explained by factors unrelated to the pilot, and should therefore be treated with caution

- The regional pilot team plans to further scale up the intervention by promoting its adoption through ICBs and providers and by raising awareness of hydration with wider population of older people after this pilot ends

- Challenges to sustainability include difficulties with demonstrating impact and the need to provide sufficient staffing resource to support engagement with the public.

This case study presents the findings from two rounds of interviews with ten participants piloting the "Don't wait, drink 8" hydration education intervention in the South West region of England. This included interviews with five participants from July to December 2023 and six participants in September to October 2024 (with one participant from Round 1 interviewed again in Round 2). Interview participants included a range of staff and stakeholders involved in the intervention including regional pilot team members, stakeholders from the project steering group, coproduction task and finish group, and ICB project team members. The key findings from this case study are summarised below.

1.1   Description of pilot intervention

South West England's regional hydration pilot team implemented a community-based educational intervention which the regional pilot team co-produced with clinical and target population stakeholders.

The regional pilot team identified the target population for the intervention as men over 70 years old who are living in their own homes (see section 1.2 for the rationale). Members of the target population were given a pack containing an educational leaflet with advice and information about hydration, in addition to items (a water bottle, coasters, stickers and a fridge magnet) printed with the hydration-related slogan 'Don't wait, drink 8', which aimed to encourage individuals to drink the recommended eight glasses of water a day. The leaflet included information about why hydration is important and about various sources of hydration, such as different foods. The regional pilot team iteratively developed this to ensure its suitability for the target population.

In Round 1, from August 2023, the regional pilot team handed out the education packs at different Devon, Somerset and Dorset community settings, including sports groups, social groups, and other community groups. They also used a 'train the trainer' approach to provide hydration-related training to staff and volunteers from community groups and organisations to enable them to hand out the packs and collect data from individuals. Packs were also given out at hospital discharge lounges by the regional pilot team and hospital staff. When the regional pilot team were interviewed in December 2023, approximately 950 packs had been distributed, and the team were continuing to distribute packs and collect follow-up data.

Initial setup for Round 2 began in July 2024. Following this, from October 2024 to December 2024 implementation expanded further into Somerset ICB, and began in Gloucestershire ICB for the first time.

1.2   Initial design and planning

1.2.1   Proposal and scoping

The aim of the Hydration Pilots proposal for the South West was to reduce the number of urinary tract infections (UTIs) and gram-negative bacteraemia infections amongst the population, in line with the national Antimicrobial Resistance (AMR) action plan. A review of gram-negative infection data in the South West region showed that rates of infection with Klebsiella[57] were rising across the region, particularly in men over 70 years old living in their own homes. Therefore, the regional pilot team chose to focus on this population group. The initial pilots were conducted in Devon, Dorset and Somerset areas of the South West where previous AMR work had been done.

The intervention was not specified in the proposal, as from the outset of the pilot, the regional pilot team set out to use a co-production approach in combination with a Plan-Do-Study-Act (PDSA) quality improvement approach to allow them to identify an intervention that would be best suited to the target population's needs.

The regional pilot team recruited two project managers (on a job-share basis) to lead the implementation of the intervention in Round 1 of the pilot. A steering group was also established to support co-production and provide oversight of the pilot. This group consisted of stakeholders across the South West region including the regional pilot team, engagement leads, infection prevention and control leads, representatives from ICBs across the region, the NHS England co-production lead, and a representative from the target population.

1.2.2   Co-production and design of the intervention

To design the intervention, the regional pilot team connected with systems across the South West to access shared resources or learning, engaged with stakeholders and consulted the target population to understand their views on the most suitable intervention.

> *"We put to the steering group that... we're going to focus quite a bit of time on getting a ... clear understanding of what ... men ... in the community think about hydration ... So that when we understand it better, we can then work out what the problem is to solve."*

Initially, the regional pilot team and steering group conducted a scoping exercise which consisted of collecting data and insights about baseline hydration levels, knowledge of hydration and barriers to hydration among the target population.

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[57] Klebsiella pneumoniae is a gram-negative bacteria usually found in the intestines which can cause a UTI if it enters the urinary tract

This data was gathered via engagement with key stakeholders including staff from NHS hospitals, community grassroots organisations and voluntary sector organisations. The regional pilot team engaged with over 400 people via surveys, in-person visits to community groups, and visits to NHS hospital discharge lounges. The survey data was supplemented by the richness of the data collected during conversations with stakeholders from the target group.

Findings from the scoping activity indicated variability in hydration-related knowledge and some misconceptions about hydration amongst the target population. Individuals from the target population also indicated that, they preferred not to have devices or technology to remind them to drink water. Rather, they were interested in accessing education to understand the risks and benefits of hydration, and why hydration is important for health.

Based on the findings of the scoping activities, the regional pilot team decided to focus on co-producing an educational pack, including a leaflet and other resources, with members of the steering group. Existing national and regional resources about hydration informed the content of the educational leaflet.

"That scoping work that we did with everybody, it form[ed] part of that baseline of what hydration work is out there, and what can we pinch with pride, and what can we build upon? So, some of the work [we did] with the design company [was]: Can we make it similar to what's already out there so we're a united message across the South West?"

The steering group reviewed the leaflet to ensure its accessibility and suitability for the target audience. This included checking for appropriateness of tone, use of plain English, and whether there was a coherent message about hydration throughout. The leaflet was accompanied with items such as reusable coasters, fridge magnets, stickers and a water bottle printed with the slogan 'Don't wait, Drink 8' (as shown in Figure 1.1), designed to act as prompts to drink water. A local design and printing company was chosen to co-design and produce the leaflets and slogan-bearing items. The regional pilot team reported a good relationship with the company during the design process. This positive relationship continued during the scaling-up phase, as described in Section 1.4.

Figure 1.1   Pack promotional slogan examples

Overall, the regional pilot team reflected that although the coproduction approach had worked well in the design of the intervention, there were limitations. For example, although the regional pilot team sought feedback from patient representatives about the education pack materials, there was a relatively short timescale for production and distribution (approximately 3-4 months). This prevented the team from reviewing the education pack materials with even more members of the target population before distribution began. Questions about the suitability of the resources were instead included in the post-intervention evaluation.

1.3   Initial set up and implementation

Implementation of the intervention began in August 2023. The distribution locations (see 1.1) were chosen because of existing links with the groups that had been made during the scoping exercise at the start of the pilot.

The regional pilot team used a train-the trainer approach which consisted of training community group and hospital staff teams to distribute the education packs and have conversations with individuals about hydration. They also provided staff with guidance on collecting information from individuals about their understanding of hydration and their baseline self-reported hydration levels.

Towards the end of Round 1, in November 2023, the regional pilot team reported that implementation was broadly working well and that they had distributed 950 education packs either directly to individuals or via the community and hospital teams. Following this, they intended to continue with implementation, including in the hospital discharge lounges.

However they reported that there had been some challenges with this. Staff working at hospital discharge lounges had capacity pressures due to competing clinical priorities. Staff working at the hospital discharge lounges were unable to respond to email correspondence and distribute educational packs; and all three lounges dropped out of the pilot at the end of Round 1. There were also challenges with collecting data (see Section 1.5). The regional pilot team later reflected that with hindsight, the discharge lounges may not have been the most suitable setting for this intervention, due to these challenges.

> *"... in hospital [discharge lounges], ... there's so much other stuff going on and [patients are] trying to get home. They've got a lot of other stuff to worry about. So when you're talking to them about having extra drinks and 'can you sign this and we'll ring you in a month', they've forgotten all that, because they've been in hospital, and they just want to get home really..."*

1.4   Scaling up set-up and implementation

At the end of Round 1 the regional pilot team experienced some delays and challenges with recruitment and resourcing to support expanding the pilot (with the project manager role only contracted to March 2024). Despite this, the regional pilot leads continued to explore the potential for expanding the intervention. They invited all ICBs in the South West region to participate in the scaling-up phase of the pilot, highlighting the funding provided. Two ICBs (Somerset ICB and Gloucestershire ICB) volunteered to take part and to distribute education packs to the target population within their respective ICS areas. The education pack content was kept the same as in Round 1.

At the time of interviewing for Round 2 both ICBs were still in the initial stages of scaling-up. Their implementation activities completed to date (across the two areas) consisted of: setting up governance processes for the intervention; engaging and establishing relationships with stakeholder groups and organisations; attending community events; ordering materials for the education packs; and they had begun to distribute packs.

Both ICBs were set a target of distributing the educational packs and collecting data from 2500 individuals in their respective systems. This target was chosen as it represented approximately 10%

of the eligible population. To maximise engagement opportunities the project team in Gloucestershire decided to attend busy community locations such as garden centres and golf clubs. They also distributed the educational packs in hospital foyers and outpatient departments. Another key focus was on inner-city areas of high deprivation and population density, with the aim of including a more diverse group of individuals in the intervention. Within this area they attended venues including local community lunch clubs for older people and had information stalls outside supermarkets.

The project team in Gloucestershire were able to draw on their connections with a wide network of stakeholders working in hospitals within the system to reach local populations. By contrast, the project team in Somerset had more limited resources, with a smaller network of stakeholders that needed to be widened to achieve a similar level of progress. At the time of interviewing for Round 2 both ICB sites were continuing with the distribution of the educational packs and collecting baseline and follow-up data (as described in Section 1.5).

Both teams experienced some challenges which affected their progress with scaling-up. The recruitment delays (linked to delays in ICBs receiving pilot funding) reduced the remaining time available for set-up and implementation of the intervention to three months (October to December 2024). As described in Sections 1.1 to 1.3, while some relationships with community groups, voluntary sector organisations and hospital discharge lounges had already been established by the regional pilot team; others needed to be developed or re-established. Some of the distribution sites also involved additional administration, for example, using a third-party events team and managing liability insurance to set up a stall at a local garden centre.

Although the ICB teams were funded for their involvement in the pilots, some ICB project stakeholders highlighted the challenge of undertaking the pilot alongside the duties of their substantive role. Project duties were time-intensive and included distribution of the packs, conversations about hydration and baseline data collection, and the travel time required to reach the multiple community locations.

> *"…in a busy team when we've got lots of demands on us, because this is an extra thing to do, …that's the most difficult thing."*

Despite these challenges, both project teams reported that shared learning was a key enabler for progress with the project; the teams met regularly to share resources and their lessons from implementation. The regional pilot team's existing positive relationship with the local printing supplier also facilitated implementation, allowing the ICB teams to quickly order and obtain additional print runs of the educational packs.

1.5   Outcomes

1.5.1   Local evaluation of outcomes

1.5.1.1   Local evaluation methodology

The regional pilot team evaluated the intervention's impact locally by measuring changes in self-reported hydration levels before and after the intervention. They used pre-intervention questionnaires to collect data on hydration levels, general health, demographics, and consent for follow-up. These were completed by staff liaising with individuals during the distribution of the packs. After four weeks, staff completed post-intervention questionnaires (with participants who provided contact details) to gather data on hydration levels, general health, and feedback on the education packs. Some participants also completed the questionnaires independently. The regional pilot team also collected feedback on the resources by returning to events at community organisations where the education packs were previously given out to the target population.

Pre- and post-intervention data proved difficult to collect in both rounds of the pilot. Interviewees reported several challenges:

- There was limited staff resource within projects for data collection from 960 individuals in Round 1 and 5,000 individuals in Round 2

- There was incomplete data collection for the purpose of analysis.

  – The project was delivered across a range of NHS and non-NHS partners, who did not always have capacity to administer questionnaires and deliver the hydration education to individuals, due to other workload pressures

  – In many cases, contact details were illegible or missing, which meant that those individuals could not be followed up

  – The need for follow-up appeared to be a barrier to engagement with the evaluation, with several participants declining to take part in the evaluation when learning about the need for follow-up

  – Collection of follow-up data from participants was challenging, as many participants did not respond to follow-up attempts via telephone or email.

- Despite the data collection challenges faced by the regional pilot team in Round 1, the funding for ICBs was made conditional on their collection of outcome data in Round 2, with the assumption that ICBs were likely to have a greater reach to individuals from the target group who resided in their systems. However, the ICBs faced similar data collection challenges in Round 2. The response targets were viewed to be unrealistic.

1.5.1.2 Local evaluation results

Due to these challenges, a full set of data (from both pre- and post-intervention data collection methods) could only be analysed from 35 individuals after Round 1 of the pilot.[58] At the time of interviews for Round 2 there was also some emerging data from Round 2 Gloucestershire participants.[59] Across this data, the pilot team reported the following mixed results:

- Under a third of participants self-reported increased hydration levels (nine of 35 reported increased hydration levels in the Round 1 data)

- A higher proportion of participants reported little to no impact on hydration levels (including those who maintained good hydration); but 20 of 35 Round 1 participants indicated they had made positive changes in their drink choices (such as swapping tea for water)

- A minority of participants reported improved general health (four of 35 participants in Round 1).

The data from both rounds showed mixed views on the resources provided as part of the intervention: [60]

- Feedback was positive about the accessibility of the leaflet and the appeal of the resources to generate interest in a conversation about hydration, particularly among those individuals who were living with a partner

- Some individuals shared the resources with friends or family (16 of 35 participants in Round 1), thought they were helpful, and/or indicated they used the leaflet and water bottle as reminders to drink more

- Others reported no change in their drinking habits or did not use the resources at all.

There were no requests for further resources or support with hydration at the end of the intervention.

Interviewees considered the conversations held with older men to raise awareness about hydration – both pre- and post-intervention – as the most valuable aspect of the project. Round 2

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[58] 104 participants completed pre-intervention questionnaires but of these, 69 provided incomplete, incorrect or missing contact details, preventing follow-up post-intervention data collection. A summary of the data from the 35 individuals

[59] Exact numbers of participants providing particular feedback was not yet available from the Gloucestershire data but results were appearing to be in line with those in Round 1

[60] Most of this feedback was provided as either free responses during interviews or conversations at events and summarised by interviewees; where quantitative data is available to quantify a finding, this is provided.

interviewees viewed the resources provided as a part of the intervention as secondary to this conversation, but still as an important enabler of behaviour change.

> *"I think [the educational leaflet and other resources go] together, because the bookmark, reading, they carry that around with them...The fridge magnet, they can put it on [their fridge] ...the coaster, they were prompts. So...if it's on their coffee table, it was just something that reminded them... to keep drinking,.... Or just have a drink now..."*

However, they also described conversations with older men which indicated that concerns about needing to use the toilet more often, if they drink more, may persist among this population group.

> *"...Some of the feedback from some of ... my colleagues [about the men over 70 they] have spoken to is that they talk about their prostate...and they [say] 'Oh no, I don't have a drink after 6 o'clock at night because I'd have to get up in the night [to use the toilet]. "*

1.5.2   National evaluation of outcomes

As part of the national evaluation for the Hydration Pilots programme, interrupted time series (ITS) analyses were completed to assess the impact of different interventions on key metrics over time. Across the Hydration Pilots programme these analyses were limited by:

- Variations in the metrics different pilot sites were able to collect

- Sufficient sizes of participant population to be able to discern effects

- Intelligence gathered about additional variables which might impact on effects.

In the South West, an ITS analysis of data relating to the Round 1 was feasible for two of the national evaluation metrics: UTI-related emergency admissions and falls-related admissions.[61] As shown in Table 1.1, the results of the ITS analysis showed statistically significant reductions in UTI emergency hospital admissions and falls-related hospital admissions during the period that the pilot was delivered.

However, these findings should be interpreted with caution; they are likely to be partially explained by external factors. These included the implementation of another co-occurring hydration-related

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[61] The national evaluation team developed and agreed these metrics with the NHSE AMR team during the scoping phase of the evaluation; pilot sites varied in their ability to provide data relating to these metrics and in some cases measured additional or alternative metrics (or those with similar but not identical definitions) as part of local evaluations. For more information on the interrupted time series methodology, please see the Final Report of the Hydration Pilots national evaluation.

intervention in Dorset ICB which could not be controlled for by the ITS model, and a national downward trend in falls-related hospital admissions from July 2023.

Table 1.4   Results of ITS analysis of key metrics before and after the hydration intervention[62]

Metric	Average monthly number, before intervention	Average monthly number, after intervention	Difference (total number)
UTI-related emergency admissions	145.9	114.1	-31.8*
Fall-related hospital admissions	317.3	256.6	-60.7*

statistically significant at a 95% level

1.6   Looking ahead

1.6.1   Future plans for scaling up and spreading the intervention

At the time of interviewing in Round 2, the regional pilot team planned to complete their evaluation of available data from both rounds and finalise plans for future roll-out of the intervention. They intended to share further learning through conferences and infection control networks connected with in 2024. They also aspired to promote the intervention to other ICBs and providers, encouraging them to adopt it as business as usual, dependent on evidence of positive impact shown in the local evaluation.

The team discussed plans for introducing staff awareness training in hydration, and developing staff skills in patient engagement, communication, and education. Potential options include sharing the intervention and leaflet with key staff (such as district nurses, community services and hospital staff caring for older people) through existing local networks and embedding it within infection control training.

To strengthen the reach of the intervention, interviewees discussed that it would be necessary to engage a wider population of older people in awareness-raising activities on the benefits of good hydration, potentially including a coordinated communications campaign and collaboration with

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[62] Green shading in the table indicates statistically significant change that was in direction that was expected at the start of the pilot.

community organisations. This might include older women, and targeting areas with higher rates of UTIs, considering deprivation and healthcare inequalities.

1.6.2   Sustainability of the intervention

The regional pilot team were concerned by the possibility that challenges to data collection might prevent them from demonstrating the impact more clearly and considered this a risk to sustainability, as it may discourage ICBs or providers from adopting the intervention more widely. They also highlighted that distribution during the pilot had relied on other NHS teams and community organisations for support, with no additional resources provided to them. Although comprehensive evaluation was a necessary part of the current pilot, the regional pilot team and project team highlighted that this depth of evaluation may not be necessary in the longer-term, particularly as the leaflet was already evaluated using the PDSA approach. It may then be considered feasible for existing structures to absorb the awareness-raising activities and monitoring/evaluation of routine hydration or infection-control related activities, thus reducing costs. They indicated that any future implementation would necessitate a review of the staffing model to ensure sufficient allocation of staff time and skills for effective engagement.

> *"...because it's a project, [the costs sit with]... project administration, but actually...you could make it into business as usual [BAU], because you wouldn't need to do the evaluations all the time, because that's done as part of the [pilot] ...that's where a lot of the costs sit as well. So... because it's leaflets and education, it would be part of everyday business for some people... you could move into BAU quite easily with our product... It would be part of an education package that [patients] should have [routinely]..."*

For more information on this pilot site please contact: Jo Coles: jo.coles@nhs.net.

South West London

Summary

- South West London Integrated Care Board (ICB) initially piloted a smart cup hydration intervention (which digitally measures and records the amount of fluid residents are drinking) across care homes in their area, between August 2023 and February 2024.
- The pilot ICB team also introduced online training to increase awareness among care home staff (from pilot homes and the wider area) about the importance of hydration for older people in care settings.
- With the cup linked to a wristband (to be worn by residents), the device was designed to transfer data (via Bluetooth) and record it in an online dashboard, enabling care home staff to monitor residents' hydration levels.
- Participating care homes viewed the support provided by the pilot team positively, whilst the provision of online training was useful for sharing across different staff groups working in homes.
- Staff reported various challenges with implementing the smart cup intervention, including issues with data capture, wristbands causing abrasions for residents and a change in product design mid-way through the pilot.
- Despite these challenges, interviewees did report benefits from piloting the intervention. Specifically, they described increased understanding of the importance of hydration monitoring by care home staff and examples of direct benefits to residents (e.g., increased energy).
- Following implementation challenges faced during the pilot, the smart cup was withdrawn from the market and no longer implemented in the care homes. The pilot team continued to offer hydration training via quarterly webinars, including one attended by 700 people, with plans for an in-person conference focused on sharing learning and approaches to managing hydration.
- They also rescoped the intervention and switched to the #ButFirstADrink initiative. This is a behavioural change intervention which works on the principle of staff asking residents whether they have had a drink prior to any interaction.
- Due to the lower costs associated with implementing #ButFirstADrink compared with the smart cup, all care homes in South West London were invited to participate. Eleven of the original 13 homes, and an additional 17 homes outside of the initial pilot, were participating as of September 2024.
- An interrupted time series analysis of data from care homes by the national evaluation team was inconclusive, with only small pockets of statistically improvements identified. Local data analysis by the SWL team found a reduction in ambulance call-outs and conveyances but this could not be verified by the ITS.
- The ease of implementing the initiative was an enabler, along with a governance structure which provided useful input when the intervention needed to be rescoped; the pilot team are looking to expand the initiative to other community and domiciliary care settings.

This case study presents the findings from two rounds of interviews of staff piloting a smart cup and subsequently, the #ButFirstADrink initiative in South West London. This included five participants between December 2023 and March 2024 and seven participants between November 2024 and January 2025. Interviews were completed with members of the pilot team, steering group and care home managers. The key findings from this case study are summarised below.

1.1   Description of pilot intervention

South West London initially piloted a smart cup intervention within care homes, in order to support staff with monitoring resident's hydration levels. The smart cup was designed to provide real-time fluid intake measurements, using a Bluetooth connection, tracking the timing and volume of fluids consumed by each resident. Each resident also received a wristband which was linked to their smart cup, allowing for data to be linked to the resident and recorded in an online platform. The intention was for care home staff to review data collected by the cups and use this information to adjust care and support provided to residents around their hydration (for example, encouraging them to drink more).

The project lead, as part of a role with the National Hydration Association, provided an online training session for pilot participants (and the wider care home community) to educate them on hydration. Following challenges faced during the pilot (in South West London, and also in another Hydration Pilots site, Cheshire and Merseyside) this particular smart cup model was withdrawn from market, preventing further implementation in other homes as was initially planned. The pilot team decided to draw on a behavioural change intervention that required limited resource to set up, the #ButFirstADrink initiative .[63] #ButFirstADrink asks staff to check with residents at the beginning of any interaction whether they would like a drink. South West London have also continued the Integrated Care Board (ICB)-wide hydration training offer through monthly webinars, as well as organising a hydration-focused conference to share learning.

1.2   Initial design and planning

South West London ICB's decision to participate in the hydration pilot programme was driven by a local system priority of reducing E. coli infection rates and use of antimicrobials. The enclosed environment of care homes was considered the most appropriate and easiest for tracking progress in improving hydration and potentially decreasing UTIs.

In selecting the intervention to pilot, the ICB team (which included individuals with experience in infection prevention control and acute kidney injury) were particularly interested in innovative

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[63]For information on #ButFirstADrink see: https://www.youtube.com/watch?v=cEP2kg8A0xs

digital interventions. They intended to build on previous local experience of piloting other digital projects and align with the digital focus of 87% of care homes in South West London.

To recruit care homes, a survey was sent to gauge interest in participation. Initially, 70 care homes registered their interest, with ten care homes (housing elderly residents with a range of needs) agreeing to participate in the pilot. Broadband wireless signal strength in care homes was a key deciding factor in the selection process due to the digital nature of the smart cup intervention. Demographic factors other than age were not used to limit participation or focus; it was considered important to involve homes in all six boroughs of South West London.

The design of the initial webinar was led by the project lead, drawing on their clinical expertise; it was expanded beyond the pilot homes as the ICB were aware of an increasing appetite for improving knowledge about the importance of improved hydration across care home providers and staff across South West London. The webinar format was chosen due to the ongoing success of a fortnightly ICB webinar series, begun during the COVID-19 pandemic, aimed at care homes and covering topics indicated as relevant by local participants.

1.3   Initial set up and implementation

1.3.1   Implementation activities

Prior to beginning implementation, the project team requested approval from the information governance team to collect residents' data using the smart cups and ICB sign-off on using pilot funding to purchase smart cups.

After receiving the necessary approvals, an engineer from the smart cup manufacturing firm visited six of the participating care homes to install the electronic dashboard software required to collect and analyse data from the cups (the product was withdrawn before it could be installed in the remaining four). In parallel, care homes selected between ten and 20 residents to participate in the pilot, with sampling based on: being over 65; having a history of UTIs; and a history of falls. Following consent from residents, care homes informed their families that the pilot would be taking place.

Individuals appointed as hydration champions from each home (and other individuals available when smart cup provider staff visited) were trained to use the cups, wristbands and dashboard, and were expected to spread the training among other staff in their homes. Alongside this smart-cup practical training, more than 500 people participated in the initial webinar which took place in November 2023.

1.3.2   Views and experiences of set up and initial implementation

Overall, the staff interviewed were enthusiastic about the introduction of the intervention given their desire to improve residents' hydration. They valued the project team's support with

implementing the pilot and the regular email updates about issues relating to the smart cup. They also found the recorded webinar about hydration to be a useful way to share information with their staff. Despite the significant implementation challenges (as described below), the dashboard and cup did allow staff (for a limited period) to track hydration levels of residents and ensure they had met their fluid intake target.

However, installing the smart cup intervention into care homes was more challenging than anticipated. Despite care homes' prior experience with digital projects, the pilot team reported that they needed to provide more support than expected during both the set-up and implementation phase. This included helping care home staff set up broadband internet (if not already in situ), connecting devices to the broadband internet, and creating app profiles for staff and residents.

> *"I know in South-West London we have got some great digital projects already going on, and we've supported a lot of the care homes, the majority, with getting to grips with technology, but they still did need a fair bit of support with getting to grips with the new system, the way it worked."*

Implementation of the pilot was set back due to delays in the delivery of the smart cups. Once the intervention was implemented, there were also connectivity and data recording issues (for example, the smart cup not syncing with the dashboard) and the wristband causing skin abrasions in a few residents. The design of the product was subsequently changed, with the withdrawal of the wristband and replacement with colour-coded cups (which risked different residents using different cups, affecting data accuracy). After this, only two homes continued to use the cups. There was also limited support and communication from the provider of the smart cups.

Following challenges faced during the pilot (in South West London, and also in another Hydration Pilots site, Cheshire and Merseyside) this particular smart cup model was withdrawn from market and not implemented in other homes as was initially planned.

1.4   Rescoping of intervention: set-up and implementation

1.4.1   Set-up and implementation

Following South West London's pivot to the #ButFirstADrink initiative, the pilot team focused on expanding the reach of the intervention to other care homes in the area covered by the ICB. 13 homes were involved in the original smart cup intervention; participation was limited by the cost of the smart cup. As the #ButFirstADrink initiative doesn't require specific technology to be purchased, it is cheaper for homes to implement, therefore the project team could promote the intervention to a greater number of homes. 11 of the original 13 care homes involved in the smart cup intervention continued to implement #ButFirstADrink, and a further 17 care homes signed up after the pilot was rescoped. As of September 2024, 28 homes were piloting #ButFirstADrink.

Place leads and digital support teams in each of the six boroughs of South West London were responsible for engaging with care homes. The team identified care homes for outreach by assessing UTI and fall case numbers within the ICB and evaluating the feasibility of each home's participation, considering staff engagement and capacity. They then approached selected homes to provide details about the intervention and invite them to participate.

In addition to promoting the #ButFirstADrink initiative and engaging additional care homes, the pilot lead also met with other London local authorities to promote the initiative and potentially expand it beyond South West London (further discussed in section 1.5). Furthermore, the project lead continued to host hydration training webinars introduced as part of the original pilot education package. At the time of the evaluation in September 2024, the most recent webinar (September 2024) attracted over 700 attendees, and the pilot team were also preparing to host an in-person hydration conference.

1.4.2 Views on rescoped set-up and implementation

Interviewees attributed the success of rescoping the pilot to several key enablers. They emphasised the importance of the pilot team and their resilience following the decision to switch interventions, particularly in maintaining motivation among participants to continue with the pilot. A few interviewees discussed that the structure and style of the #ButFirstADrink initiative has also been a key enabler in scaling up the initiative beyond the original 13 care homes; the behavioural change approach allowed it to be easily adopted within care homes.

Additionally, interviewees shared that, enabled by the pilot team's previous strong relationships with care homes across South West London, care home engagement with scaling up the intervention has been positive. The wider level of engagement with the hydration webinars in particular was identified as a key success for South West London care homes.

> *"I think what we've noted as a team is probably the untapped desire that the system had to learn more about hydration, whether that was #ButFirstADrink or getting wider knowledge around the importance of hydration, is something that was unexpected but also was a really positive aspect."*

Interviewees viewed the governance of the pilot as both an enabler and challenge. Having a governance structure in place from the beginning of the pilot meant that when the intervention needed to be rescoped, the steering group could provide appropriate input as they had knowledge of the previous challenges and alternative approaches. However, it was also reported as a challenge to keep the steering group updated on the pilot's progress and engaged in making decisions about alternative approaches to try.

Several interviewees discussed the challenge of receiving data from care homes as the pilot progressed. Whilst initial care home engagement had been positive, it had been challenging to gather data from homes, taking longer than expected and often incomplete. A few interviewees

also highlighted challenges with capacity and managing their time, explaining it would be preferable to have begun engagement and communication with care homes earlier in the delivery timeline to manage challenges of care home data collection. Interviewees reflected that further support for the team could have aided in managing capacity challenges.

1.5 Outcomes

1.5.1 Care recipients

In SWL, the national evaluators were able to conduct an interrupted time series (ITS) analysis to assess the impact of #ButFirstADrink for six of the seven pilot phases (aligned with different start dates for groups of care homes, labelled by borough and group in Table 1.1). The results for each phase were analysed separately to account for the different start dates. The ITS identified outcomes from four of the national evaluation metrics:[64] UTI primary diagnoses, falls, ambulance incidents and ambulance conveyances (also summarised in Table 1.1). This found:

- Statistically significant reductions in the incidence of UTIs (a decrease of 4.7 per month per 100 patients (-67.1%)) and falls (a decrease of 7.5 per month per 100 patients (-100%)) in phase six only. [65]

- There was also a statistically significant reduction in ambulance incidents in phase 4.

It was not possible to perform ITS analysis for phase one (relating to Croydon 5 care homes) due to the small numbers of incidences available for analysis.

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[64] These metrics were developed during the scoping phase of the evaluation by the national evaluation team; pilot sites varied in their ability to provide data relating to these metrics and in some cases measured additional or alternative metrics (or those with similar but not identical definitions) as part of local evaluations. For more information on the interrupted time series methodology, please see the Final Report of the Hydration Pilots national evaluation.

[65] Green shading is used to indicate a statistically significant result in the intended direction, pink indicates a result in an opposite direction

Table 1.5   Baseline and post-intervention time periods for SWL ITS outcomes

Phase	Participating homes	Implementation date	Pre-period	Post-period	Metric	Average monthly number before intervention per 100 people	Average monthly number after intervention per 100 people	Difference	Percentage change (%)
2	Kingston 3, Kingston 4, Merton 3, Sutton 2 and Wandsworth 2	March 2024	March 2023-March 2024	April 2024-November 2024	UTI primary diagnoses	3.9	3.4	-0.5	-15.4
					Falls	3.7	9.1	5.4*	145.9
					Ambulance incidents	14.2	25.3	11.1*	78.2
					Ambulance conveyances	11.0	17.8	6.8*	61.8
3	Merton 2 and Sutton 1	April 2024	April 2023-April 2024	May 2024-November 2024	UTI primary diagnoses	9.5	9.2	-0.3	-3.2
					Falls	3.4	7	3.5*	102.9
					Ambulance incidents	7.7	5.4	-2.3	-29.9
					Ambulance conveyances	6.0	5.6	-0.4	-6.7

Phase	Participating homes	Implementation date	Pre-period	Post-period	Metric	Average monthly number before intervention per 100 people	Average monthly number after intervention per 100 people	Difference	Percentage change (%)
4	Croydon 8, Kingston 2, Richmond 1 and Wandsworth 1	May 2024	May 2024-May 2024	June 2024-November 2024	UTI primary diagnoses	5.3	8.1	2.8*	52.8
					Falls	11.3	13.5	2.2	19.5
					Ambulance incidents	31.6	27.7	-3.9*	-12.3
					Ambulance conveyances	24.9	31.9	-3.0	-12.0
5	Croydon 2 and Richmond 2	June 2024	June 2023-June 2024	July 2024-November 2024	UTI primary diagnoses	9.1	11.8	2.7	29.7
					Falls	22	31.3	9.3*	42.3
					Ambulance incidents	11.9	16.3	4.5*	37.8
					Ambulance conveyances	9.1	12.5	3.4*	37.4

Phase	Participating homes	Implementation date	Pre-period	Post-period	Metric	Average monthly number before intervention per 100 people	Average monthly number after intervention per 100 people	Difference	Percentage change (%)
6	Croydon 7 and Merton 1	July 2024	July 2023-July 2024	August 2024-November 2024	UTI primary diagnoses	7	2.3	-4.7*	-67.1
					Falls	7.5	0	-7.5*	-100.0
					Ambulance incidents	23.3	18.4	-4.9	-21.0
					Ambulance conveyances	18.2	14.6	-3.6	-19.8
7	Merton 5, Croydon 6, Kingston 6 and Kingston 5	August 2024	August 2023-August 2024	September 2023-November 2024	UTI primary diagnoses	3.3	2.7	-0.6	-18.2
					Falls	16.7	19.2	2.5	15.0
					Ambulance incidents	8.0	10.8	2.7	33.8
					Ambulance conveyances	6.3	8.2	1.9	30.2

Although other statistically significant effects were also identified in other phases (as shown in Table 1.1) the results should be treated with caution for the following reasons:

- A statistically significant increase in the number of falls and UTI diagnoses (in phases two, three, four and five) can likely be attributed to improved data collection by the participating pilot sites.

- The small number of residents included in the dataset along with the short-term delivery of the intervention limited the ability for the impact analysis to detect a real change against variability in the data.

Local data analysis (provided by the pilot team to the Strategy Unit) identified a reduction in ambulance attendances and conveyances. This could not be verified by the ITS analysis, although this could be related to the short time post-intervention some phases had to demonstrate impact. A future analysis, when all the phases have been embedded, may produce different results.

Interview participants also reported outcomes they observed in homes as a result of the intervention. One care home manager described that participation in the hydration pilot provided reassurance to residents' families that the care home recognised the importance of ensuring their residents are hydrated. With both the smart cup and #ButFirstADrink interventions, interviewees observed that care home residents were more active and engaged when their hydration levels improved.

1.5.2 Staff and care provider outcomes

Although the smart cup intervention was not continued, some care home staff interviewees praised it for embedding a focus on hydration within the wider staff group of the home. One care home manager reported that following initial pilot activities, daily discussions of resident hydration levels were introduced and communication between day and night staff improved due to their shared understanding of hydration.

Following the introduction of #ButFirstADrink, the pilot team received feedback from care home staff reporting improved knowledge and skills around hydration to the pilot team, and improved confidence to recognise dehydration. This feedback also indicated that the behavioural changes the #ButFirstADrink initiative encourages were becoming a part of care home normal routines.

1.5.3 Other outcomes

Several interviewees highlighted the system's growing interest in hydration as an unexpected outcome of the pilot. One interviewee evidenced this as being reflected in the high numbers of attendance to hydration events hosted by the pilot team. The pilot team discussed aiming to sustain this momentum by continuing to develop further scaling up activities which are described in Section 1.6.

"I think what we've noted as a team is probably the desire or the untapped desire that the system had to learn more about hydration, whether that was #ButFirstADrink in its purest form or getting wider knowledge around the importance of hydration, is something that was unexpected but also was a really positive aspect."

1.6   Looking ahead

The South West London pilot team emphasised that hydration and education remain a priority for them and the care homes they support. Going forward, the pilot team were aiming to roll out an ongoing education package, to keep the momentum of hydration awareness in South West London and beyond, as well as planning events for Nutrition and Hydration week in March 2025[66]. The team continue to recruit care homes to introduce the #ButFirstADrink initiative and have been exploring options to expand to other care settings, including community and domiciliary care.

Beyond plans to further scale up, interviewees were positive about the intervention's sustainability. This was attributed to its educational and behavioural model, which requires less intensive resourcing than digital interventions such as the smart cup. One interviewee suggested that care home managers will be more likely to continue with the implementation of #ButFirstADrink if they have noticed positive outcomes on resident hydration. However, a second interviewee noted that although the behavioural change could be sustained, without further reminders about the #ButFirstADrink message, it may not be possible to sustain the initiative beyond the funding.

"..if you put in the increased awareness, it doesn't expire. So, what I want to say is, if you increase that awareness, it then becomes a change in culture. So, there is a high chance that it will be very sustainable, just for the fact that we're focusing on awareness, really, and changing practice, and making sure that everyone is on board with it"

Some interviewees reported concern that staff turnover could interfere with sustaining the #ButFirstADrink message. To combat this, some interviewees discussed that #ButFirstADrink and wider training could be incorporated into health and care induction training, thus becoming part of normal practice.

For more information on this pilot site please contact: Charlotte.Trumper@swlondon.nhs.uk

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[66] https://nutritionandhydrationweek.co.uk/

South Yorkshire

Summary

- South Yorkshire ICB began implementing training to upskill care home staff and improve residents' hydration across Rotherham from January 2022 (before pilot funding).

- Hydration Pilot funding was used to ringfence full-time staff capacity to project manage and deliver training in Rotherham and develop a complementary virtual training package from January 2023 onwards.

- A phased approach was used to implement the training in Rotherham, with over 1800 staff participating by the end of pilot.

- The Rotherham pilot team updated their training offer following initial implementation, taking into account common issues in care homes and new guidance. The revised training offer was also rolled out to domiciliary care staff and homes for people with learning disabilities.

- Quantitative findings from Rotherham suggest that intended pilot outcomes have been achieved across key local and national evaluation metrics. This includes increased referrals to other teams and statistically significant reductions in UTI diagnoses and antibiotic prescriptions.

- A flexible approach, MDT support, pilot funding and dedicated project management staff resource aided design and implementation of the training in Rotherham.

- The Rotherham pilot team have experienced challenges with care home engagement throughout implementation and have worked adaptively to mitigate these.

- Following roll-out of the training in Rotherham, additional funding was secured for a Project Manager role to sit within the Rotherham pilot team and oversee expansion of the training across Barnsley, Doncaster and Sheffield, with some delays due to HR processes and capacity issues.

- Progress expanding the training varies across the three areas: at the time of interviews, early conversations about implementing the training had taken place in Doncaster and Sheffield, while; Barnsley launched the training in October 2024.

- Key facilitators for the expansion of the training included the enthusiasm of stakeholders involved in implementation to drive this work forward, and the support provided by the Rotherham pilot team to teams in other areas.

- The Rotherham pilot team plan to continue developing the training and hope to embed it as business as usual. However, permanent funding and dedicated capacity are seen as vital to ensuring the pilot can maintain its impact in Rotherham and continue expanding to other areas.

This case study presents the findings from two rounds of interviews with eight different participants involved in the hydration training intervention in South Yorkshire. Five interviews were completed for Round 1 between September and December 2023 and five further interviews were conducted for Round 2 between September and October 2024. Interviews were completed with stakeholders involved in designing, implementing, and delivering the hydration training intervention in Rotherham and Barnsley as well as a care home manager who received the training in Rotherham. The key findings from this case study are summarised below.

1.1   Description of pilot intervention

In 2022, South Yorkshire Integrated Care Board (ICB) developed and initiated delivery of an intervention which consisted of hydration training for care home staff across Rotherham. The training aimed to educate staff about hydration, create a culture change in how the importance of hydration was viewed and improve hydration levels amongst care recipients. The training offer has been updated over time (see below). Currently it covers:

- Definitions of dehydration and hydration

- Dehydration symptoms

- Implications of dehydration for care recipients

- The effects of medicines on hydration levels and cognitive function

- The importance of accurate reporting and calculating fluid requirements

- Recommended strategies for increasing residents' hydration levels. For example, offering hydrating snacks, delivering hydration-related activities, such as mocktail classes, and implementing routine changes and policies, such as structured drinks rounds.

The pilot training was designed for a range of staff including managers, nurses, kitchen staff, carers, care assistants and activity coordinators, at care homes with older adult residents. As the pilot progressed, it was also adapted for domiciliary care staff and those working in sheltered accommodation for people with learning disabilities.

From January 2023, pilot funding supported the pilot team to enhance the previous training offer in Rotherham, ring-fence full-time staff capacity to oversee delivery and create a complementary virtual training package to sustain learning. The delivery approach was adapted with care homes receiving a number of in-person training sessions to suit their size and need. This included refresher sessions and combined sessions with similar training and other care homes where appropriate. The virtual training package covering hydration and medicines, falls and continence, was also shared with homes following in-person sessions.

Training content was updated as the pilot progressed to include information about diabetes, dementia, continence and sensory issues for residents with learning disabilities, and to align it

with British Dietetic Association (BDA) guidance. The training was also shared via recorded virtual sessions on the Extension of Community Healthcare Outcomes (ECHO)[67] platform. Following roll-out across Rotherham, the training has also been introduced to care homes in Barnsley, with plans to do the same in Sheffield and Doncaster (see Section 1.5 Scaling up set-up and implementation for more detail).

1.2   Initial design and planning

The approach delivered during the pilot in Rotherham built on the previous hydration training, which was developed by a multi-disciplinary team (MDT) led by the Head of Medicines Management at South Yorkshire ICB. This team were involved in pilot implementation and consisted of the Medicines Management Care Homes team, Medicines Optimisation Pharmacists, Care Home Quality Nurse, Dietetics department, Infection Prevention team, Tissue Viability team, Continence team, Ambulance team, Local Authority Health Compliance Contracting Officers, and Speech and Language Therapy team.

The original training package was developed after the MDT reviewed ambulance call-out and fall admission data and considered the impact of hydration on other issues such as infections, pressure ulcers and falls. Following research into hydration interventions, the team identified a local Rotherham pilot, delivering hydration training in care homes which provided the foundation for a scaled-up version of the intervention. The pilot team wanted to create a sustainable intervention that benefitted and upskilled care home staff, and felt other options, such as smart cups (which record fluid intake electronically) might not achieve this sufficiently. Interviewees highlighted how the teamwork, efficiency and wide-ranging expertise of the MDT supported design of the training content; dietitians led development of the content with the MDT creating sections related to their specialities.

Initial implementation of the in-person training was underway before the team secured Hydration Pilot funding. Following this, MDT members were involved in designing the virtual training package, with an external IT company. This was created with time pressures of care home staff in mind, and designed as short sections, to make it more accessible and engaging. Other changes made to the training design and content throughout the pilot were completed to align it with guidance and topics raised during delivery, as described in Description of pilot intervention.

The MDT regularly met during the design and implementation of the pilot. However, governance structures and involvement in the pilot changed as implementation progressed due to organisational and personnel changes within South Yorkshire ICB. Interviewees reported this to

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[67] ECHO or Project ECHO is an online knowledge sharing and training platform for staff working in health and care settings, including care homes. It allows professionals to form an online community, share knowledge and discuss best practice to improve outcomes for patients and communities. It is based on the University of New Mexico's Health Sciences Centre ECHO Model.

cause challenges, such as uncertainty about where roles or responsibility sit, and additional barriers to enacting decisions for the pilot. Strong links between MDT members mitigated some of these challenges.

The Rotherham pilot team also changed how the pilot was monitored as implementation progressed. For example, during early implementation, a single control care home was used as a comparator to measure the pilot's impact on key metrics, such as numbers of antibiotic prescriptions. As the training was rolled out, this comparator changed to data for each care home prior to receiving the intervention. Adapting data collection plans and having early discussions about how to monitor the pilot prior to implementation was reported to be useful. This is because it allowed the team to demonstrate the pilot's impact and address issues as it progressed.

1.3 Initial set up and implementation

1.3.1 Implementation activities

A phased approach was used to implement the pilot, with groups of care homes receiving training at different stages. The team initially selected homes that had high ambulance call-out rates or homes that were more likely to engage during early implementation. This was based on the strength of existing relationships between the project team and the care home managers. They then rolled it out more widely across Rotherham.

Hydration Pilot funding allowed the team to secure the full-time resource of a Band 4 Dietetic Assistant (previously involved on a part-time basis) as the pilot project manager. They oversaw implementation and delivered training in Rotherham, with initial support from Medicines Management technicians. MDT team members took on different responsibilities (such as a Prescribing Advisor Pharmacist overseeing data monitoring) and had regular, virtual project meetings with monitored actions.

Following initial implementation, the pilot team continued to roll training out to additional care homes and revisited existing care home participants to deliver refresher or updated training. Some care homes received up to seven separate training sessions, with local authority colleagues and care home managers requesting additional training if required.

Changes to delivery approach were made in line with attendees' feedback, and to accommodate different needs of homes' staff, residents and structures. The length and number of sessions increased (from one hour-long session to between two and four sessions of up to an hour and a half) to enable more staff within each home to attend the training. This enabled the project manager to adapt materials for later sessions, based on initial feedback too. The pilot team also delivered hydration sessions alongside similar training, such as malnutrition or dysphagia training with the Speech and Language team, due to close links between the content.

As outlined in Section 1.1, after implementation across care homes with elderly residents, the project manager delivered training for domiciliary care staff in Rotherham. This was delivered as a full day session covering hydration, malnutrition and dysphagia content, at a council-based training centre. The project manager worked with a Speech and Language Therapist and Lead Disability Nurse to adapt and roll the training out to residential homes for people with learning disabilities too.

The Rotherham pilot team also organised an online launch event for the virtual training package, which was shared with homes after in-person training or with those struggling to host an in-person session. As the pilot advanced, the team used the virtual platform ECHO, which allowed them to share recorded versions of the training with care homes.

1.4   Views and experiences of set-up and initial implementation

Interviewees identified the involvement of staff from different professional backgrounds alongside the team's proactiveness and passion as key success factors in developing the original training package and implementing the enhanced training offer during the pilot.

At the time of writing, the intervention had been rolled out to all older adult care homes in Rotherham, with over 50 care homes and 1301 staff receiving the training. Despite this, the pilot team reported challenges engaging with some care homes throughout implementation, including homes repeatedly cancelling sessions and staff not attending or engaging with booked sessions.

The pilot team reported the reasons for reluctance to engage included: high staff turnover; concerns about being assessed by Medicines Management via the training; staff annual leave during the summer period; and a lack of ringfenced funding or capacity available for training within homes. Some homes queried the necessity of participation because they considered the hydration-related care they already provide to residents to be sufficiently good. There were also challenges engaging domiciliary care, with small numbers attending training sessions designed for them.

The pilot team highlighted that their iterative and multidisciplinary approach helped them improve engagement, complete implementation and ensure the training had an impact. Examples of their approach include:

- Different team members contacting care homes and using existing relationships to secure engagement, such as local authority team members promoting training with homes or insisting homes they run receive training

- Working flexibly with care homes to arrange training, support them and ensure the training works for them. For example, delivering alongside other training, to multiple care homes at once or changing timings to suit home routines or staff schedules

- Limiting requests and accessing alternative sources of data for monitoring the pilot to reduce the burden on care homes and encourage engagement

- Adapting content to individual homes, sharing learning and initiatives from homes that have already received the training and highlighting benefits of participation including longer-term cost savings

- Confirming numbers attending ahead of sessions so they can be rescheduled if necessary.

> *"We've just gone from all the directions to try and get it off the ground and to get the enthusiasm up. We've also worked with the care homes, because I think there's an attitude in care homes that everybody's out to criticise and get them and scrutinise. We've deliberately gone out of our way to not do that and say, 'What can we do to support you? What do you want to happen? How can we get this to work with you?' And they've been open and honest and said, 'Well, staff won't come in on their day off, so can you do this? And what about the night staff, can you do a morning session?' And we've been really flexible and fitted round the needs of the care home."*

Interviewees highlighted that pilot funding was a key enabler for implementation, as it allowed them to resource the virtual training package and appoint a full-time project manager. A dedicated team member who could focus on delivering the training full-time was reported to accelerate implementation.

The virtual package also allowed the training to be implemented more broadly and the project team plans to offer this to domiciliary care staff to improve engagement. However, there have been some challenges with this, including low numbers of staff using the virtual package and staff accessing it before in-person training and no longer engaging with in-person training. To overcome this, the pilot team ensured they shared the virtual offer after in-person training.

Interviewees reported some obstacles to putting the training into practice, with reflections that it can be a 'trial and error' process for homes to see what works for them. For example, some staff felt a suggestion they drink alongside care recipients conflicted with their care home's policies, time limitations and local authority advice to focus on care recipients. As a result, care home management are required to attend training to ensure they know what content is covered and that any changes made due to the training are supported by leadership and in line with internal policies.

1.5 Scaling up set-up and implementation

1.5.1 Scaling up activities

The pilot team secured additional pilot funding from NHS England to expand the training to care homes in Barnsley, Sheffield and Doncaster, primarily to cover the capacity of an additional project manager role to oversee the expansion. Rotherham training has continued to be organised and delivered by the original funded pilot project manager and in the future (if funding continues) will be delivered by a Band 4 Dietetic Assistant. Recruitment challenges (with ongoing delays to receiving internal approval for this project manager role) led to delays to expansion

plans; Barnsley's pilot launched in October 2024, while at the time of interviews, plans in Sheffield and Doncaster were still in initial discussion stages.

The Barnsley pilot team adopted the model used to implement the training in Rotherham by establishing an MDT to oversee the expansion. This team consisted of: a Care Home Quality team lead; local authority leads; matrons and care coordinators; the pilot project manager from Rotherham; and representatives from the GP federation. The training is managed and delivered by a seconded Care Home Quality Team Nurse with initial support from Rotherham's pilot project manager (an alternative staffing arrangement established due to delays in the project manager role recruitment). The content of the training remains the same as that delivered in Rotherham (with plans to refine this to suit the local context as delivery progresses) and is delivered alongside malnutrition training.

The Barnsley pilot was launched with a virtual event and communications about the training were sent to all care home managers to secure engagement. Barnsley has 41 care homes for older residents, 27 specialist care homes for people with complex needs and learning disabilities and several domiciliary agencies. As in Rotherham, the training was implemented using a phased approach. The Barnsley pilot team categorised homes into geographical localities, delivering one training session to multiple care homes within each locality and single sessions to 'stand-alone' homes that did not fit into localities.

The first four training events in Barnsley were delivered to a mix of multiple homes and stand-alone homes between October to mid-November 2024. One session was also delivered to a specialist home. The Barnsley team plan to evaluate the sessions to refine the training before rolling it out more widely. They have also used the ECHO platform to provide online sessions following in-person training, with plans to use this more widely than Rotherham due to having more homes.

1.5.2 Views on scaling up

Interviewees discussed factors that have supported expansion in Barnsley, with the pace of roll-out highlighted positively despite challenges. Stakeholder engagement and commitment were reported to have aided implementation. For example, community service teams leading the pilot helped secure buy-in from other stakeholders. Dedicated resource (of the seconded Care Quality Nurse), along with the passion of colleagues in Barnsley, also propelled its launch. The Barnsley team's enthusiasm encouraged the Rotherham pilot team to go ahead with expansion before the project manager role was in place.

The support from the Rotherham pilot team, and particularly the pilot project manager, was also highlighted as important for scaling up in Barnsley. This included support setting up the MDT, securing buy-in from stakeholders, offering shadowing opportunities and problem-solving. The Rotherham Medicines Optimisation team also provided guidance on data collection to the Barnsley team. Interviewees from Barnsley valued their input and this collaboration highly.

> *"I can't say enough, [the pilot project manager from Rotherham] really has made all the difference. It's because I've not felt like I've been running it on my own. And it's been so nice.... when we've done presentations for forums and everything, we've done it jointly. And I think we're working really well together, which makes such a difference, doesn't it?"*

Interviewees also reported various barriers to scaling up the intervention outside of Rotherham. The timing of organisational change within South Yorkshire ICB (coming after initial expansion plans were developed) posed difficulties, as it led to a comprehensive review of activities and budgets. Limited capacity and resources were highlighted as a challenge in various ways. This includes the Rotherham pilot team lacking the dedicated capacity to focus on expansion due to delays establishing the project manager role (attributed by interviewees to conflicting priorities and pressures on the ICB HR department).

Capacity was also recognised as a challenge for delivery in Barnsley; the Care Home Quality team were newly formed and the nurse leading the pilot was new in post, meaning other work had to be prioritised over the Hydration Pilot initially. Interviewees also discussed ongoing concerns about the future availability of capacity among dieticians to deliver malnutrition training alongside hydration training at the necessary pace.

Additional challenges in Barnsley, such as revisions to membership of the working group, delayed set-up. Interviewees reported that there were insufficient levels of seniority among original members to ensure decisions could be implemented. Membership was updated to address this. As in Rotherham, care home engagement in Barnsley posed a challenge, with the initial launch event not as well-attended as hoped. However, the Barnsley pilot team continued to develop ways to engage with care homes, such as highlighting the importance of the training with care home managers, and the first training session was reported to be well attended.

1.6   Outcomes

1.6.1   Care recipients

1.6.1.1   Local evaluation of outcomes

The Rotherham pilot team conducted their own analysis of key evaluation outcome data for each phase of the pilot. Table 1.6 shows that data collected from 13 care homes relating to the period January 2023 – June 2023 is in line with previous data from April 2022 – April 2023, indicating intended outcomes achieved prior to the pilot start were sustained across key local evaluation metrics.[68] This includes referrals to other services increasing, which was interpreted positively by the pilot team as encouraging care homes to refer care recipients before issues become more

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[68] Metrics set by the pilot team locally for measuring the performance of the intervention.

serious. Interviewees highlighted that although the outcomes are maintained after nine months, the slight drop in improvement suggests a need to sustain the training.

Table 1.6   Changes to outcomes in Rotherham (local evaluation) (January 2023 – June 2023)[69]

	Baseline total (6 months) [70]	Post-intervention total (6 months)[71]	Percentage change (%)	Baseline total (9 months) [72]	Post-intervention total (9 months)[73]	Percentage change (%)
Ambulance call-outs	643	606	-5.8	969	909	-6.2
Antibiotic course [74]	452	393	-13.1	678	623	-8.1
Barrier products	71	46	-35.2	102	70	-31.4
Laxatives	605	537	-11.2	918	804	-12.4
Referrals	189	284	+50.3	295	437	+48.1
Repeat antibiotics	33	27	-18.2	49	40	-18.4
UTIs diagnoses	88	51	-42.0	106	70	-34.0

Similar outcomes were seen for 16 care homes which received the training between July – December 2023. Table 1.7 shows reduced antibiotic courses, barrier products, UTIs diagnoses[75] and repeat antibiotics and increased referrals when comparing baseline and six-month post-intervention data.

However, one interviewee suggested a lack of initial engagement from the homes was reflected in the relatively smaller improvements in these outcomes when compared to homes from earlier phases, that were more enthusiastic about taking part in the training. Other outcomes for the 16

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[69] Adapted from data table supplied by South Yorkshire ICB project team. The percentage change for all metrics was projected to decrease as a result of the pilot, apart from the percentage change for referrals, which was expected to increase. The green shading indicates that percentage changes were seen in the expected direction
[70] July 2022 - December 2022
[71] July 2023 - December 2023
[72] April 2022- December 2022
[73] July 2023 – March 2024
[74] All antibiotics, not UTI-specific
[75] Diagnoses formally recorded UTIs in patient records

homes included higher laxative use and ambulance call-outs, which increased by 10.9%, but was seen to still mitigate increasing ambulance numbers as it was below an expected 16% increase.

Table 1.7   Changes to outcomes in Rotherham (local evaluation) (July 2023 – December 2023)[76]

	Baseline total (6 months)[77]	Post-intervention total (6 months)[78]	Percentage change (%)
Ambulance call-outs	704	781	+10.9%
Antibiotic course	576	530	-8.0%
Barrier products	116	74	-36.2%
Laxatives	691	705	+2.0%
Referrals	265	356	+34.3%
Repeat antibiotics	40	35	-12.5%
UTIs read coded	58	49	-15.5%

1.6.1.2   National programme impact evaluation results

As part of the national evaluation for the Hydration Pilots programme, interrupted time series (ITS) analyses were completed, in order to assess the impact of different interventions on key metrics over time.[79] Across the Hydration Pilots programme these analyses have been limited by: variations in the metrics different pilot sites were able to collect; sufficient sizes of participant population to be able to discern effects; and intelligence gathered about additional variables which might impact on effects. In Rotherham, two ITS analyses were able to be conducted at different phases of the pilot, which identified outcomes from three of the national evaluation metrics:

- UTI diagnoses

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[76] Adapted from data table supplied by South Yorkshire ICB project team. The percentage change for all metrics was projected to decrease as a result of the pilot, apart from the percentage change for referrals, which was expected to increase. The green shading indicates that percentage changes were seen in the expected direction while the pink shading indicates changes in the opposite direction.

[77] January 2023 -June 2023

[78] January 2024 – June 2024

[79] These metrics were developed during the scoping phase of the evaluation by the national evaluation team; pilot sites varied in their ability to provide data relating to these metrics and in some cases measured additional or alternative metrics (or those with similar but not identical definitions) as part of local evaluations. For more information on the interrupted time series methodology, please see the Final Report of the Pilots programme evaluation.

- Antibiotic prescriptions (but not specifically for treating UTIs)[80]

- Ambulance call-outs (but not specifically for UTI-related symptoms)[81]

In Rotherham the first ITS analysis analysed data from phase one which covered four care homes and started in January 2023[82]. The second ITS analysed data from the second phase which covered six care homes and began in April 2023[83]. As shown in Tables 1.3 and Table 1.4, the results from both ITS analyses showed a statistically significant reduction in the average number of UTI diagnoses and antibiotic prescriptions per month among residents (although it was not possible to measure the impact on UTI-specific antibiotic prescriptions). In the first phase, there was a reduction in UTI diagnoses of 1.8 per 100 people per month; in the second phase it reduced by 0.8 per 100 patients by month. For antibiotic prescriptions it reduced by 4.3 per 100 people in the first phase and by 1.2 per 100 people in the second phase.

However, the first ITS showed a statistically significant increase (of 2 per 100 people) in average monthly ambulance call-outs, whereas the second ITS showed a statistically significant reduction for this metric (a reduction of 2.7 per 100 people), potentially indicating other variables may have had an impact on this outcome during earlier stages of the pilot. The difference between results from local and national evaluation analyses for similar metrics is linked to differing time frames and populations included within the analysis.

Table 1.8   Phase one Rotherham ITS results

Metric	Average monthly number before intervention per 100 people	Average monthly number after intervention per 100 people	Difference
UTI diagnoses phase 1	2.9	1.1	-1.8*
Antibiotic prescriptions (not specifically for UTI) phase 1	18	13.7	-4.3*
Ambulance call-outs (not specifically for UTI) phase 1	9.7	11.6	2*

statistically significant at 95% level

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[80] The metrics in the national evaluation framework were defined as UTI-specific but it was not possible for the Rotherham system to collect at that level of granulation
[81] As above
[82] The pre-period used for this ITS was data from January 2022 to December 2022 and the post period was January 2023 to March 2024.
[83] The pre-period used for this ITS was April 2022 to March 2023 and the post period was April 2023 to March 2024.

Table 1.9   Phase two Rotherham ITS results

Metric	Average monthly number before intervention per 100 people	Average monthly number after intervention per 100 people	Difference
UTI diagnoses phase 2	1.8	1	-0.8*
Antibiotic prescriptions (not specifically for UTI) phase 2	16	14.8	-1.2*
Ambulance call-outs (not specifically for UTI) phase 2	17.2	14.5	-2.7*

* statistically significant at 95% level

Despite these positive outcomes, changes in resident fluid intake over time (one of the main national evaluation metrics for the Hydration Pilots) and the extent to which Rotherham's pilot has impacted this are unknown. This is due to the challenges of collecting this data for participating care homes.

In addition to the data analysis, interviewees also discussed positive outcomes of the training for care recipients in Rotherham. This included the outcomes demonstrated by the quantitative data and improvements in care recipients' quality of life, with more social opportunities.

"We're also increasing the range of the options, the quality of life for the residents. There's a lot more activities and things taking place. We've had families really get on board with this, as well, and there's lots of places that are doing family days and, you know, getting the families included in the coffee mornings and the mocktail sessions and the parties and the barbecues, and all of those things. So, it's had a big social impact, as well as all the clinical issues."

1.6.2   Staff and care provider

The Rotherham pilot team regularly collected feedback from training attendees throughout implementation via an evaluation form. The majority of 417 responses to the form (as of October 2024), indicated that attendees felt the training:

- Improved their knowledge, skills and understanding of the importance of hydration in care homes

- Changed attitudes to carrying out responsibilities in promoting and encouraging hydration

- Provided learning they could apply directly to their work.

They also praised the trainer's delivery style as appropriate and effective. Interviewees provided examples of how the training motivated care home staff to improve hydration practice. This included staff recording drink levels more accurately and introducing snack trolleys, mocktail bars, and dedicated days to discuss and experiment with hydration approaches.

The pilot team also reported that the training had also enhanced the skills of those involved with delivering it. The pilot was seen as an opportunity for staff to develop their roles and lead work they are passionate about.

1.6.3 Other outcomes

As with early implementation, the Rotherham pilot team reported that the extended pilot provided MDT members with the chance to collaborate with colleagues from different teams, which has led to other related work. The Rotherham pilot team have also been recognised by several awards for their work including: an Allied Health Professional Innovation and Improvement award at the Chief Allied Health Professions Officer's Awards, and the Health Service Journal Place-based Partnership and Integrated Care Awards in 2024. As a result of this recognition, the Dietetics department from Birmingham Community Healthcare NHS Foundation Trust approached the pilot team to discuss the implementation of the intervention within their local context.

1.6.4 Scaling up outcomes

At the time of writing, the Barnsley pilot was too early in its implementation to assess outcomes. However, the team hopes it will demonstrate similar outcomes to those in Rotherham such as reduced antibiotic prescriptions, UTIs, ambulance call-outs and increased referrals.

1.7 Looking ahead

The Rotherham pilot team plan (at the time of interviews) were planning to further enhance their training offer using the remaining pilot funding from NHS England. This included:

- Developing additional training content, such as milkshake recipes, for their virtual platform

- Creating gold, silver and bronze certificates to award to care homes based on their progress with hydration initiatives

- Circulating training support packages, with cups, hydrating snack pots and resources, including forms detailing residents' drink preferences and assistance needs, to care homes.

At the time of writing, these materials were still being finalised due to delays working with an external manufacturer and governance processes involved.

The pilot will continue to be implemented and refined in Barnsley, with plans to mobilise and launch in Sheffield and Doncaster once the new project manager is in place. Interviewees reported that securing permanent funding will be essential for ringfencing delivery capacity in both Rotherham and Barnsley, to ensure the training can become business as usual and sustain its impact. Current threats to sustainability that interviewees described included the March 2025 end-date for the Barnsley lead's secondment and ongoing organisational change. The team intend to keep pursuing options for securing the future of the intervention.

> *"I really hope it is sustainable. I think it is really important that we keep up the momentum and we keep going out and keep the involvement there. I think if we just stopped today, things would peter off...I really hope it will be sustained but, it just depends on the funding that is available because people do not have the capacity to do the training and commit the time in their current roles, so that is always going to be an issue."*

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