

## Title

### I-Hydrate: Practical resources for optimising the hydration of care home residents

#### 5 key points:

1. Residents are not always provided with sufficient fluids to meet the minimum daily intake requirements for health
2. Protecting time for hydration care can increase fluid intake
3. Residents should be offered choice and often prefer strong, sweet flavoured drinks
4. Allocating staff roles helps to define responsibility for residents' hydration
5. Staff need to be made aware of the importance of supporting residents to drink more

**3-4 keywords:** hydration, care homes, quality improvement, older people

#### Abstract

As we age we become vulnerable to dehydration, with older adults who reside in care homes being at increased risk. Ensuring care home residents receive and consume adequate amounts of fluid every day can be a challenge. This article describes the findings of a quality improvement project which aimed to optimise fluid intake for older care home residents. The strategies developed during the project have informed a *Hydration in Care Homes* resource pack.

#### Introduction

Older people are particularly vulnerable to developing dehydration due to physiological changes associated with ageing. This includes deterioration in kidney function, not recognising a sense of thirst, and a reduction in muscle mass where most water in the body is stored (Hooper & Bunn, 2014). In addition, some older people's ability to obtain and consume fluids may be influenced by other factors such as a decline in physical health (e.g. arthritis or poor mobility), cognitive impairment, and/or swallowing difficulties (dysphagia).

The consequences of dehydration can be severe and include delirium, falls, constipation, urinary and respiratory tract infections, and admission to hospital (Mentes, 2006). Dehydration has also been suggested as a contributory factor in the increasing number of bloodstream infections caused by *Escherichia coli*. Since these infections are predominantly associated with urinary tract infection in older people and the number of cases significantly increases in summer months (Wilson, 2018a). The improvement project discussed in this article was conceived in order to explore and address the potential problem of hydration in a care environment.

Older people admitted to hospital from a residential care setting have been found to be ten times more likely to be dehydrated than those admitted from their own home (Wolff et al, 2015). There is no standardised assessment tool to support identification of dehydration in older people (Oates & Price, 2017). Measurement of blood osmolarity is considered the best way of measuring dehydration, but this is impractical in the care home environment. Adults should consume at least 1500ml of fluid per day, with the European Food Safety Authority recommending a minimum of 1600ml/day for women and 2000ml/day for men. There are more complex methods for calculating individual fluid requirements which are based on body weight, body surface area, and the amount of calories or protein consumed (EFSA, 2010).

Although adequate hydration is recognised as a fundamental care need (CQC, 2017), ensuring that frail older people consume these minimum amounts of fluid each day can be challenging. This paper

describes some practical approaches to supporting hydration of older people in care settings. These were informed by a quality improvement project called I-Hydrate, which was carried out in two care homes in London. This provided valuable insights into both the challenges of hydrating residents and the development of practical solutions to improve fluid intake.

### **The I-Hydrate Project: optimising the hydration of older people in care homes**

The aim of this 18-month project was to optimise the hydration of care home residents, improve quality and safety of care, and decrease dehydration and associated morbidity. Selection of the two participating homes was facilitated by the local CCGs Commissioning Collaborative. Both homes had a CQC rating of 'good' on their most recent inspections in 2015. The project was led by the university research team, with a local project team created in each home. This included unit managers, nurses, healthcare assistants, residents and relatives.

### **Baseline data collection**

Before introducing change, current practice in relation to hydration care was explored via observations of care and interviews with staff, residents and relatives. Observations included data capture of fluid provision and intake (including fluid rich foods such as custard and porridge) between 06.00 and 21.00 for a sample of residents. Data forms included space for notes capturing why drinks were not finished, for example via spillage or the drink being removed by staff. Residents were grouped into categories of hydration care: 1) independent: able to drink independently, 2) needs prompting: requires verbal encouragement to consume their drink, 3) needs assistance: rely on staff for the provision and consumption of drinks. This was done in order to explore the experiences of hydration for residents with differing levels of need.

### **Main findings from baseline data**

There was some variance between staff perceptions and observed practice which highlighted important barriers to facilitating hydration (Figure 1). Healthcare assistants provided the majority of direct care to residents, including serving and assisting them to eat and drink. Responsibility for hydration care was not allocated to individual staff but undertaken as a communal responsibility. In general, drinks were offered to residents at specific times during the day: breakfast, lunch, mid-afternoon, dinner. Some residents might be offered a drink before breakfast, mid-morning or before bedtime though these tended to be offered to independent residents. Drinks were rarely offered to residents outside of these times.

Across the two care homes, with data collection over four days, the amount of fluids served and consumed by a total of 14 residents was observed to establish average daily intakes. The mean amount of fluid served per resident was 1512ml/day and mean volume consumed 1031ml/day. Of the 14 residents, only one drank more than 1500ml, with one resident consuming less than 500ml. Residents who were able to drink independently were more likely to receive and consume fluids. Those who needed assistance were less likely to receive drinks, and consumed most of the fluid they received at mealtimes, when staff were focused on assisting them. Residents who needed prompting to drink were served sufficient fluids but only drank half of what they were served as they did not receive enough encouragement to drink.

Interviews with residents established that tea, coffee and hot chocolate were popular. Resident's cold drink preferences were explored through drink tasting sessions. Some of the participants had mild to moderate dementia, drink preference was measured on a five-point scale using a tool designed to facilitate communication with people with cognitive impairment. The results from 47

residents who took part showed that they preferred fruit juices compared to squash. Data suggested a liking toward strong flavoured, sweet, less acidic drinks such as pineapple (95% positive response), apple (83% positive response) and mango juice (81% positive response). Understanding these preferences meant that popular drinks could be made routinely available, with additional costs of approximately 50p per resident/day.

### **Strategies to improve hydration**

As baseline findings indicated that all residents regardless of their level of need were at potential risk of dehydration, strategies were designed to improve fluid provision and consumption for all residents. To measure the impact of improvement work, every four weeks six residents in each home were randomly selected for one day of observation of fluid provision and consumption. The Registered Nurse provided weekly data on the occurrence of adverse health events associated with dehydration, for example urinary tract infection, chest infection, falls, incidence of dehydration, and hospital admission. The number of laxative doses and courses of antimicrobial therapy were captured from prescription charts four-weekly.

A number of strategies were developed (Box 1), these aimed to:

- Increase the amount of fluid provided across the day
- Increase the choice of drinks available
- Provide more suitable drinking equipment
- Increase staff awareness and knowledge of hydration

### **Using Plan-Do-Study-Act to implement change**

Changes to practice were tested using Plan-Do-Study-Act (PDSA) cycles, this involves carefully planning and carrying out the change on a small scale in order to identify any problems before implementing on a larger scale (Figure 2). It is also important in ensuring the intervention is effective before rolling it out and integrating it as routine practice. Once a PDSA cycle has been carried out it is key to ask for feedback from staff, and residents or relatives. Any feedback, if appropriate, can be integrated into future tests of change until the practice is working effectively.

By using PDSA cycles each strategy was adapted to fit the local context. Key changes which improved the effectiveness of the strategies included ensuring sufficient availability of drinks and drinking equipment (Figure 3); establishing responsibilities for restocking drinks; allocating staff to specific hydration activities; and on-unit team briefings known as 'huddles'.

### **Outcomes**

The strategies varied success and in the time they took to become established. In one home fluid intake data collected monthly showed the mean fluid consumed by residents increased but did not meet the recommended 1500ml/day. In the other home, eight months from the start of improvement work, residents consumed a mean of 1500ml/day or more for the last three measures of the project. As measurements did not continue past the end of the project it is not known if practice benefitting fluid provision and intake sustained. In addition, there was a significant decrease in use of laxatives at both homes. These data are discussed in more detail in a separate publication (Wilson et al, 2018b).

A 2hr staff training session was facilitated by university staff from the project team who were experienced academic staff with backgrounds in nursing or nutrition. Across the two homes 161 staff attended training. Staff were asked to evaluate the session and their pre and post knowledge across

six facets of hydration care. Results found most staff enjoyed the training (95%, 144/158) and found it useful (95%, 152/160), with a significant increase in all facets of hydration knowledge (Greene et al, 2018).

### **Keys to success**

Allocating staff roles in relation to resident hydration was important in defining and delegating responsibilities. This led to a sense of teamwork as all staff were contributing to a common goal. Another key success factor was incorporating change within existing care activities. For example, offering a drink when clearing away residents' plates following meals; and designating the mid-afternoon drinks round as Protected Drinks Time. The latter involved enhancing the effectiveness of an existing hydration opportunity. All healthcare assistants were given designated roles, offered residents both hot and cold drinks, and allocated time to supporting and encouraging fluid intake including offering refills.

Ensuring equipment was suitable for residents' needs and preferences was another important aspect of hydration care. The relatively simple intervention of providing suitable drinking vessels offered a practical solution to increasing fluid provision without impacting upon staff time. The standard teacups in the care homes held 150ml or 200ml, by introducing a mug which was both larger whilst remaining lightweight allowed residents to receive up to 280ml in one serving (Bak et al, 2018).

### **Hydration in Care Homes resource pack**

The strategies developed during the I-Hydrate project have been brought together into a *Hydration in Care Homes* resource pack, which is available to download from the UWL website (Figure 4). This has been used to train care home staff in the local area. The pack shares information about quality improvement and how to use PDSA cycles to plan and test change. This is a key step in changing practice which is sometimes overlooked. Another key factor in enacting change is involving the whole team; they can share ideas as to where practice could be improved, and highlight any potential barriers to implementing change. Although I-Hydrate focused on hydration care in care homes, it is expected many of the strategies would be effective in other health and social care settings. Most of the strategies are relatively inexpensive to implement, though require careful planning in order to adapt to local settings.

The resource pack explores each hydration strategy and provides resources such as forms and posters which can be used to implement and support their adoption. The pack also contains materials and ideas which can be used to develop a hydration training session for staff. This is further supported by five informational videos which aim to highlight some key aspects of hydration care. These include: an introduction to hydration; offering choice to residents; Protected Drinks Time; swallowing difficulties (dysphagia); and positioning and assisting residents to drink.

### **Conclusion**

The I-Hydrate project demonstrated that care home residents are at risk of dehydration due to inadequate fluid provision and intake. Targeting key areas of hydration care by incorporating strategies to increase fluid provision into the routine delivery of care can increase the amount of fluids residents are offered, and consume. Other important aspects of improvement included evaluating drinking equipment, promoting choice of fluid, and increasing awareness through staff training. Information about these strategies and important things to consider when planning changes to care is available in the Hydration in Care Homes Resource Pack.

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