

**Social Care Digital Innovation Programme  
Implementation Phase Application**

**Discovery Phase Review**

**Hydration Innovation**

**North Somerset Council**

**Managing Markets and Commissioning Theme**

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## The problem to solve

The number of older people in North Somerset is increasing, putting pressure on our health and social care system. As of March 2018, official statistics showed that North Somerset had 23,269 people over 75, the Bristol North Somerset South Gloucester (BNSSG) commissioning area has 75,920 people over 75. The population aged 75 and over is predicted to increase to 37,000 in 2030. There is expected to be an increase of 88% by 2030 in the number of people living in care homes aged 75 and over. The number of people receiving residential care aged 85 and older has doubled compared with ages 75-84, yet there are half as many residents in North Somerset aged 85 and older.

Dehydration in care homes for the elderly is a nationally recognised concern, it is essential that we keep people in care homes healthy, preventing unnecessary hospital admissions and functional decline. Older people are more susceptible to becoming dehydrated because the system of the body which maintains fluid balance becomes less efficient due to age related changes as follows (Hydr8te Toolkit, 2016):

- Reduced awareness of thirst, especially in individuals with dementia and those who have had a stroke.
- Less efficient kidney function.
- The total body water reduces with age so there is less reserve.
- Older people may be taking medication which affects fluid balance.
- Older people may be reliant on others for drinks due to physical or cognitive limitations including difficulty swallowing
- Older people fear fluid intake will worsen incontinence

## Impact on care home residents

The impact of inadequate hydration in older people has been linked with several outcomes:

- UTI's, incontinence
- Falls due to low blood pressure, dizziness,
- Pressure sores
- Constipation
- Acute Kidney Injury (NICE, 2013)
- Reductions in cognitive ability (Rogers *et al*, 2001) particularly devastating if an individual already has dementia and can result in challenging behaviour
- Increased death rate in stroke patients (Rowat *et al*, 2012, Kelly *et al*, 2004)
- Increased risk of clots and heart attacks (Chan *et al*, 2002)

Diagnosing dehydration in older people is challenging and requires consideration of several factors. The difficulty arises because the same changes are often indicators

of other conditions including age related decline, dementia and medication side effects. Hooper *et Al*, (2015) concluded there is no single diagnostic sign or symptom for dehydration. Effective hydration management which promotes good hydration and nutrition in older adults leads to increased wellbeing and improved quality of life, dehydration should be preventable (Courtney *et al*, 2009)

### **Impact on Health and social care services**

Unlike poor nutrition the cost of poor hydration hasn't been established, this is surprising as inadequate hydration care is widely acknowledged to be associated with risk of harm and increased morbidity as described above (National Institute for Health and Care Excellence, Campbell, N.).

- BNSSG 2018 data shows that 46.2% of emergency admissions from care homes were with primary diagnoses that were reduced in targeted hydration pilots elsewhere (UTIs, falls etc)
- Some avoidable issues related to dehydration require treatment with antibiotics, increasing the risk of antimicrobial resistance, and placing strain on health services.
- The average cost of an ambulance journey (2017/18) is approximately £210.00.

### **Impact on Care Home providers and Care home staff**

Hydration monitoring in care homes is fraught with difficulties because many factors impact on a carers ability to accurately measure the volume of liquid consumed by a resident. However, it is widely acknowledged that recording fluid balance information is fundamental to safe care.

*"Good hydration is a core element of care and plays a role in the prevention of avoidable harm associated with other known patient safety issues." - Caroline Lecko, NHS England Patient Safety Lead, July 2013*

Most measures in place, both in care homes and those included in contractual specifications are reactive and not proactive measures. They seek to identify and treat dehydration and not identify the risk of dehydration and prevent it from happening.

Residents experiencing the impact of dehydration are likely to need increased levels of care from staff, which could place other residents at risk.

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## Research Methodology

The project team includes representatives from health, social care, the private and voluntary sectors, working together funded by a grant from NHS digital they completed a range of activities to gain insight into the meaning of hydration to residents and staff living and working in a 78-bed care home in North Somerset. Throughout the project the focus has been on engaging residents wherever possible, this determination has shaped the activities described below.

| Discovery Phase Activities       | Methodology  | Frequency   | Output  | Completed by  |
|----------------------------------|--|---|---|---|
| Observation days –               | <p>Noted resident's hydration activity using questions:</p> <ul style="list-style-type: none"> <li>• What are people drinking?</li> <li>• How are people drinking?</li> <li>• When are people drinking?</li> <li>• Who is helping people to drink?</li> <li>• Are there any missed opportunities to drink?</li> </ul> <p>Staff behaviour noted</p> | <p>6 observations over three floors of care home between:</p> <ul style="list-style-type: none"> <li>• 08:30 – 12:00 breakfast – tea break</li> <li>• 14:00 - 17:00 afternoon activity – tea</li> </ul> | Qualitative data giving insight into hydration activity                     | Voluntary Action North Somerset (VANS)              |
| Reminiscence cafe with residents | Focus group - Themed posters prompted discussion about drink related topics  | 1 afternoon session   | Qualitative data noting ideas about the context of drinking for this cohort | Residents, Activities coordinators, VANS, 1 visitor |
| Expert interviews                | 5 Structured questions   | 10 interviews: 8 with Healthcare  | Qualitative data identifying themes for                                     | Project team  |

|  |  |   |   |   |
|--|--|---|---|---|
|  |  | Care professionals<br>2 with GP's   | good and bad practice   |   |
| Craft session to create themed hydration trolley | Resident engagement in craft activity. Does a brightly decorated, themed trolley including a variety of drinks choices and fruit encourage people to drink more? | 1-day session   | Qualitative data from observation                                     | Residents, Activities Coordinators, VANS, 1 visitor |
| Staff interviews                                 | 6 structured questions   | 4 staff members with different job roles interviewed  | Qualitative data giving insight into staff understanding of hydration | VANS Staff  |
| Resident interviews                              | 7 structured questions   | 2 residents from ground floor (higher functioning)  | Qualitative data to understand the importance of hydration            | VANS Residents                                      |
| Group session                                    | Looking at hot and cold drinks menus   | 5 residents from 1 <sup>st</sup> and 2 <sup>nd</sup> floor (lower functioning and more dependent) | Understanding the importance of personal choice                       | VANS Residents                                      |





## What does best practice look like? - emergent themes from discovery phase

### For residents

- Unlimited access to a range of drinks options to suit personal preferences
- The correct drinking vessels always available Early referral to speech and language therapists if needed
- Relaxed environment
- The correct level of support

### For staff – particularly care assistants

- Quality training about the importance of hydration and the impact of dehydration
- Awareness of the needs of individual residents
- Encouraging resident engagement in their own hydration
- Awareness of who is at risk of dehydration

### For the care home

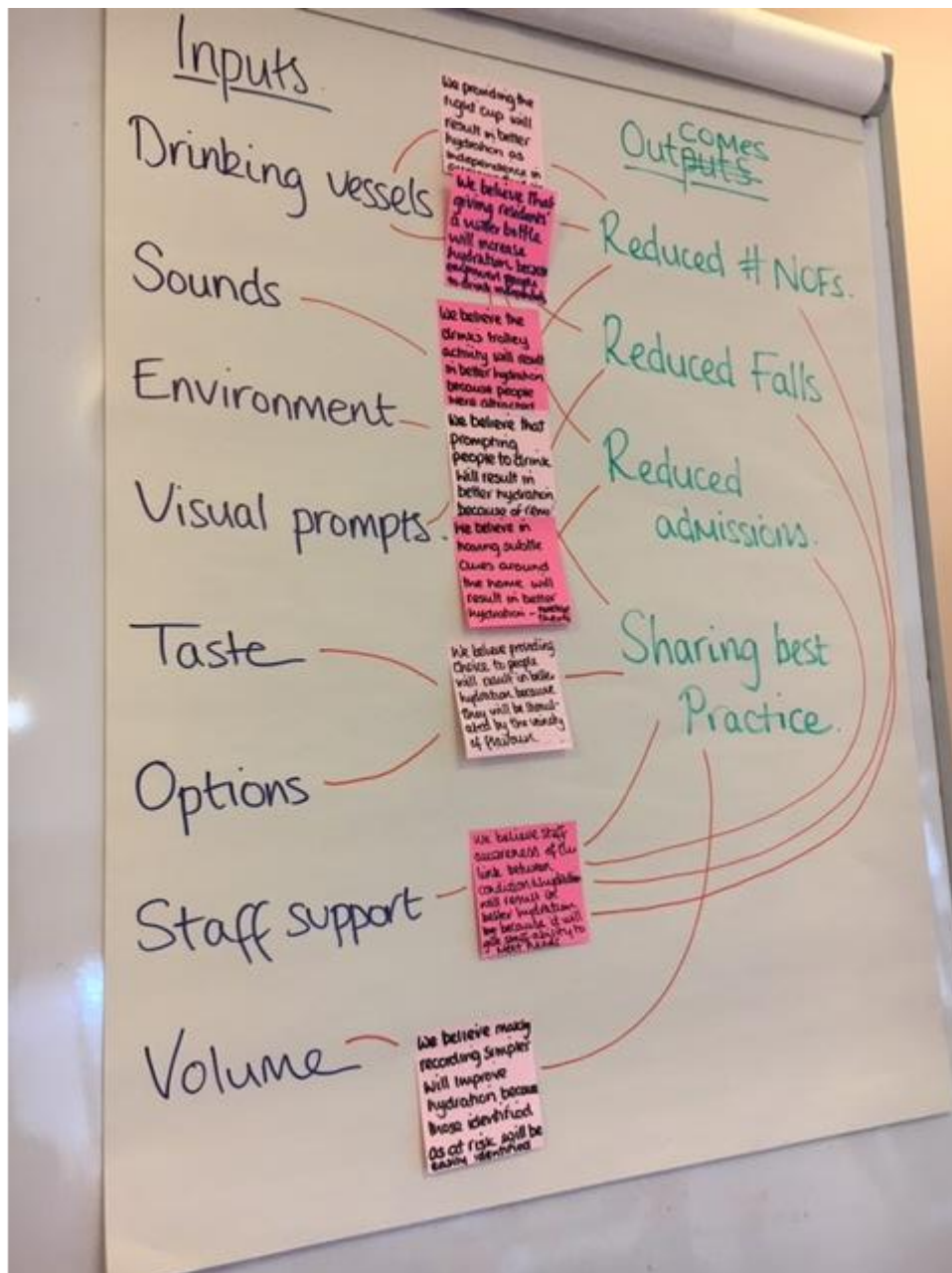
- Good hydration practice embedded into care home ethos
- A good initial assessment of the hydration needs of each individual resident, including functional ability, specialist equipment requirements and personal preferences
- Focus on meeting the needs identified in assessment
- Effective and accurate monitoring resulting in action





## Hypothesis Development

Following the discovery phase the project team embarked on hypotheses development with the aim of improving hydration for residents based on the learning from the discovery phase. Focusing on the key emergent theme that the individual's needs, preferences and engagement are at the heart of good hydration practice a plan of prototyping activities was created and implemented during August and September 2019.



## Prototyping Activities - Summary

| Prototypes  | Why are we testing?  | Who?<br>Test with?                             | Testing method and dates   | Evaluation Method?   | Initial Observations  |
|---|--|--|--|--|---|
| Create and play a matching game to understand what has meaning to residents about choices for drinks                                    | Working out what choices to include when creating options boards to test the idea that offering choice will improve hydration levels | Project team,<br>Activities team,<br>Residents | 22/08/19 play the game.<br><br>Develop the options boards based on the most popular preferences<br><br>28/08/19 Activities coordinator to use hot and cold options boards to offer drinks to residents | Observation of 9 residents on the day<br><br>Hydration charts 27 and 28th August | M I – Coffee, drank straight away<br>A – Coffee and strawberry milkshake<br>E – Fixed on blackcurrant but didn't drink it<br>Barbara – chose lemon but didn't drink<br>R – reduced choice as 3 was enough to manage, added straw to cup, drank 2 drinks and carried on through the night<br>J – chose OJ but didn't drink<br>L – no engagement<br>I – Chose apple juice twice and drank both<br>H – no engagement |
| Create a music bingo game to understand if residents are familiar with music which could prompt them to drink, use to create a music CD | Working out if music or sound prompts people to drink  | Project team,<br>Activities team,<br>Residents | Testing: 27/08/2019 with no music and 30/08/2019 from 2.30-4.30pm with music   | Observation on two occasions and hydration chart comparison                      | No impact seen through observation  |
| Create individual cup holders to understand if people are likely to be prompted to drink if they have items which are personal to them  | To establish if ownership is important in supporting people to drink more  | Project team,<br>Activities team,<br>Residents | Testing: Release 13/08/2019<br><br>Activities coordinators to observe if people remember them and respond to using them  | Observation and hydration records  | When the cup holders were returned to the residents most remembered them and were pleased with their work, staff reported that they were aware of residents keeping the holder with them if not using it conjunction with a cup   |
| Droplet smart hydration reminder, flashes and speaks to prompt hydration  | To test if visual and auditory prompts remind people to drink  | Project team,<br>Care team,<br>Residents       | Wednesday 4th September – all day<br>1 middle and 1 top floor residents  |  | Care staff reported that residents engaged and reacted well to the flashing light which successfully prompted them to drink. The light also prompted carers to remind residents to drink. They reported they would use the cup again.   |

| <b>Prototypes</b>  | <b>Why are we testing?</b>  | <b>Who?</b><br><b>Test with?</b>               | <b>Testing method and dates</b>  | <b>Evaluation Method?</b>  | <b>Initial Observations</b>   |
|--|---|--|--|--|---|
| Create wall art with residents to establish if engaging them in creative activity and then putting the art into their environment prompts them to drink more | To test if nudge theory is relevant to how much people drink  | Project team,<br>Activities team,<br>Residents | Test in the same lounge area with the art on 28/08/2019 and without on 29/08/2019                          | Observation and hydration records  | No impact seen through observation  |
| Ulla hydration reminder, flashes to prompt an individual to drink  | To test if a visual prompt reminds people to drink  | Project team,<br>Care team,<br>Residents       | Wednesday 4 <sup>th</sup> September – all day<br>1 middle and 1 top floor residents                        | Feedback questionnaire about the light from users and staff.<br>Hydration records before and on the day    | 1 resident was annoyed by the light and didn't like it on her cup   |
| Smart Cup which connects to an app and records how much water is consumed  | To understand if a visual prompt is successful in reminding an individual to drink and to record the volume | Project team,<br>Care team,<br>Residents       | Wednesday 4 <sup>th</sup> September – all day<br>Test with one middle floor resident                       | User and staff feedback<br><br>Hydration charts for day before and the day after                           | Unfortunately care staff haven't succeeded in setting up the app to correspond with the cup, although they reported resident engagement with the flashing light which prompted people to drink.             |
| Issue hydration bottles in a range of styles to residents and staff, staff with model drinking from a bottle   | To understand if issuing people with their own bottle encourage better hydration?                           | Project team,<br>Care team,<br>Residents       | Wednesday 4 <sup>th</sup> September – all day<br><br>Test with 5 top 5 middle and 2 ground floor residents | Observation recorded using feedback questionnaire<br><br>Hydration charts for day before and the day after | Staff reported that when they modelled drinking from a hydration bottle residents copied them and drank from their bottle. They reported that they would support use of hydration bottles in the care home. |
| Create a prototype assessment app to trial with staff  | To understand staff views about using an app to inform them of an individual's hydration needs              | Project team,<br>Care team,                    | 19 <sup>th</sup> and 20 <sup>th</sup> September<br><br>Hold 4 focus groups with staff                      | Feedback gained within the group and ideas for future planning   | Please see next section   |

## Initial Quantitative data from hydration records

| Prototype                             | Increase in liquid intake recorded | Decrease in liquid intake recorded | Cohort size |
|---------------------------------------|------------------------------------|------------------------------------|-------------|
| Options boards for choosing drinks    | 3                                  | 3                                  | 6           |
| Personalised bottle holder and bottle | 3                                  |                                    | 3           |
| Droplet smart hydration reminder      | 1                                  |                                    | 2           |
| Ulla hydration reminder               | 1                                  |                                    | 2           |
| Hydration bottles                     | 1                                  | 2                                  | 12          |

### Limitations

- The tests completed to date are very small scale and need to be repeated over a longer period with more residents to establish any patterns and validity. Although the results above are promising, more data is needed.





## App Prototype discussion

The learning from the discovery phase has led the project team to conclude that the development of an app, which would hold details of a resident's hydration story is a viable solution to improve hydration in care home residents. The app would hold information gathered from 3 detailed assessments to provide carers with all necessary information to support them in their caring role. A prototype of the app was shared with 4 staff groups to gather their feedback.

“Great Idea”

“Really useful, particularly for agency staff”

“There should be one mobile device per unit”

“Residents could look at their own profile with staff”

“The app would free up time”

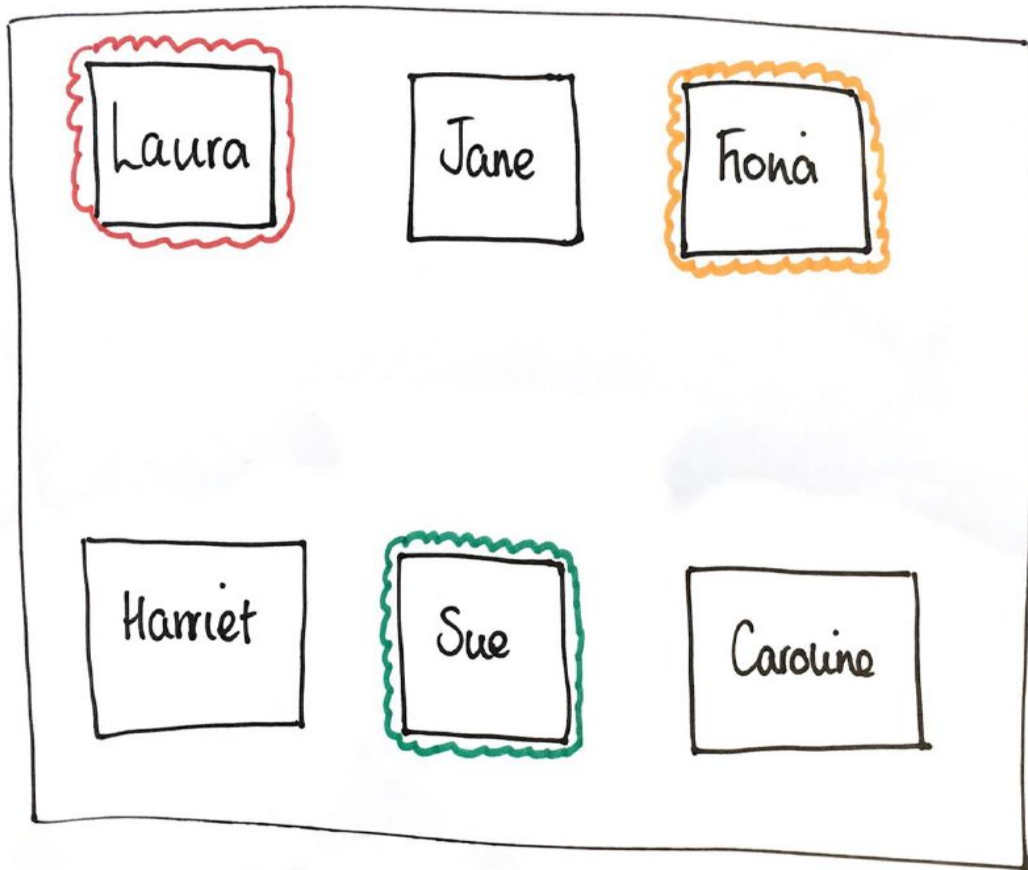
“If the app could monitor it could be used in handover so that staff would know immediately if a resident had drunk enough”

Concerns were also raised about what would happen if the internet went down and they were reliant on the app, they were also concerned about people remembering to charge the device when not in use.

The size of the device was discussed, some felt a tablet would be better while other suggested a phone sized device would be more convenient.


The idea that the app could contain photos or text within the resident's profile for quick identification was well received. It was acknowledged that the photo should be recent. Front screen images could be RAG rated to highlight the amount of support needed.

Future iterations of the app could include visual references for hydration monitoring based on information entered manually or from information sent by blue tooth or WIFI to the app.




Front Screen

...



Hydration  
Info



- China Cup for Hot drinks
- Water Bottle for Cold Water
- Low Sugar diet
- Hates tea
- Clear cup for Cold drinks
- One handed cups
- Needs 2,100 mls per day
- Poor Swallow**

Resident Profile 2.

## **Conclusion**

Horizon scanning and networking has taught the project team about the impact of dehydration on both individuals and health and care systems. There are vast amounts of expertise regarding hydration and yet the same problems exist as 10 years ago. There is currently a move for action to prompt real and sustainable changes in the way care is provided so that dehydration is prevented rather than treated.

Our discovery phase has led us to believe that the development of an app to support carers in their role will help them to improve an individual's most basic human need, to be hydrated.



Hydration innovation discovery phase project team

