

A hands-free bottle has been designed to improve hydration in hospital patients. Qualitative data showed it was more acceptable to certain groups of patients

Does hands-free drinking improve patient hydration?

In this article...

- › What is the Hydrant?
- › Evaluation of the device
- › Patient and staff opinions on the device

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Abstract Sutton D, Stroud M (2013) Does hands-free drinking improve patient hydration? *Nursing Times*; 109: 29, 14-16. Hospital patients are at risk of dehydration, especially if they cannot drink unaided due to physical or mental incapacity. Dehydration may lead to complications and result in costly interventions.

A sports-style bottle has been developed into a hands-free drinking system by fitting a drinking tube into the screw top. We trialled the bottle on acute wards and in the community to test claims that it improves hydration and reduces infection risks and length of hospital stays.

The Hydrant is useful and even transformative for some patients. However, it is less suitable for older people, especially those in rehabilitation programmes.

The Hydrant hands-free drinking system is a sports-style bottle, similar to those used by long-distance athletes. It was adapted for use by immobile patients by fitting a drinking tube in the screw top; patients can suck fluid through the tube and mouthpiece using a bite-and-suck technique. The mouthpiece is designed to only allow fluid to flow up and out.

A small trial showed promising results,

particularly in relation to decreasing hospital-acquired infection risks (Wakeling, 2011). Where the Hydrant has been promoted, its possible applications and benefits have been enthusiastically received.

Background

Hospital patients are at risk of dehydration if they are not able to drink normally due to physical or mental incapacity (Quinn et al, 2009). Many factors may contribute to inadequate fluid intake, including:

- » Reluctance to ask for help;
- » Increased fluid requirements due to their condition;
- » Too few staff with time to offer and administer drinks;
- » Increased fluid losses, such as from diarrhoea or vomiting;
- » Lack of cognitive ability;
- » Acute confusion associated with infection.

Dehydration can lead to further patient complications and result in expensive interventions (Maughan et al, 2012). These potentially include increases in:

- » Constipation, falls and pressure ulcers;
- » Urinary tract infections, which can lead to confusion;
- » Physical discomfort of dry mucous membranes, headache, lethargy and dizziness;
- » The need for intravenous or subcutaneous fluids.

Patients prone to dehydration may

5 key points

1 The Hydrant is a hands-free bottle designed to help patients who cannot drink without assistance to drink independently

2 Recognising the risks and consequences of dehydration is crucial to reducing risks of falls and skin breakdown

3 Older patients may prefer to drink from household-style cups and tumblers

4 Staff feel that patients in rehabilitation programmes should drink from the style of cups that they would use at home

5 Several patients found the bite-and-suck technique difficult

TABLE 1. NUMBERS OF PATIENTS IN EACH SITE

Elderly medicine	Elective surgery	Intensive care unit	Orthopaedic trauma	Medical	Hospice
8	6	1	16	20	8



The Hydrant allows patients to drink from a tube; water flows when the patient bites



“You need to be passionate about giving high standards of care”

Sarah Wheatland ▶ p24

TABLE 2. QUESTIONNAIRE – PATIENT RESPONSE

Patient questionnaires n=47	SD	D	N	A	SA	Percentage overall disagreeing	Percentage overall agreeing
Is easy to drink from	4	3	14	14	12	15%	53%
Helps me drink without assistance	5	5	12	11	14	21%	53%
Is an effective alternative to other drinking methods	4	5	13	14	11	17%	53%
Is easy to understand	4	3	13	17	10	15%	57%
Should be available to all patients	2	4	18	13	10	13%	49%
Helped me drink more	6	9	10	8	14	32%	47%
Is preferable to a tumbler	8	3	14	10	12	23%	47%

SD: strongly disagree; d: disagree; n: neither agree nor disagree; A: agree; SA: strongly agree

TABLE 3. QUESTIONNAIRE – STAFF RESPONSE

Staff questionnaires n=26	SD	D	N	A	SA	Percentage overall disagreeing	Percentage overall agreeing
Allows patients to drink safely and independently	2	4	11	6	26	23.1%	34.6%
Is an effective alternative to a jug and cup	4	2	7	10	26	23.1%	50.0%
Is easy to explain to patients	3	1	8	11	26	15.4%	53.8%
Is easy to set up	0	0	4	13	26	0.0%	84.6%
Is easy to maintain	0	1	5	13	26	3.8%	76.9%
Encourages patients to drink more	3	4	7	11	26	26.9%	46.2%

SD: strongly disagree; d: disagree; n: neither agree nor disagree; A: agree; SA: strongly agree

spend longer in hospital, with higher costs of bed occupancy and treatment, and placing them at greater risk of hospital-acquired infections.

Those particularly at risk include patients who are older, acutely ill and trauma patients (Holdsworth et al, 2012). For many patients, the problem may be longstanding and they may already be dehydrated on admission. Once admitted, this may become worse due to inappropriate assessment and a lack of staff time to monitor fluid intake or to help those unable to eat or drink without help (Royal College of Nursing, 2007).

Aim

This study aimed to:

- » Test patient and staff experience and acceptability of the Hydrant system as an alternative to a jug and tumbler;
- » Test claims that the Hydrant system improves hydration and decreases infection and length of hospital stay.

Method

We planned this as a service development study that would measure quantitative

and qualitative outcomes. All acute sites in the south-central region were invited to take part. Participants were adult patients, the majority of whom were on acute hospital wards, with some in community settings with life-limiting conditions.

The project lead gave a presentation to every site that expressed interest, showing how the Hydrant could be used, explaining the purpose of the project and the work required from those taking part. A member of staff on each ward or unit would approach suitable patients and offer them the opportunity to try the Hydrant. The aim was that all wards would use the Hydrant for six weeks.

Suitable patients were those who were:

- » Not capable of accessing drinks themselves;
- » Too physically weak to lift a jug and pour water into a tumbler;
- » Immobile as a result of surgery or trauma;
- » Unable to move from a prone or sitting position without help;
- » Would need to ask for help if the Hydrant was not available;
- » Would need IV or subcutaneous fluids if the Hydrant was not available.

Patients who were unable to swallow safely or lacked the mental capacity to recognise and respond to thirst were excluded.

Suitable patients were shown how to use the Hydrant and the trial was explained to them. Each had a Hydrant filled with water and the tube attached in a position to allow easy drinking. The quantity of water in the Hydrant was recorded on a fluid chart. If patients had a daily fluid allocation, this was recorded on the chart and the maximum number of filled bottles allowed per day was clearly shown.

The bottles could be washed in a ward dishwasher in the same manner as tumblers and jugs. The drinking tube and mouthpiece were replaced daily.

Data collection

The Hydrant was introduced between March and September 2011. Data collection was kept to a minimum to avoid unnecessary paperwork. A simple form was used to record basic patient information on diagnosis, length of stay and fluid intake.

All participants were asked to complete a questionnaire that asked for their opinions on the Hydrant. Ward staff were also

asked to complete a questionnaire at the end of the trial period, exploring their response to the Hydrant and how it compared with current provision of fluids.

To test whether the Hydrant reduces infection rates and length of stay, data was extracted from hospital episode statistics on these areas. This information was matched with data from a comparable period of time before the Hydrant was introduced, aiming to choose a period with fewer confounding factors that could bias the results, such as seasonal variations in temperature that would influence thirst, or significant infection outbreaks. Since the trial start date for each ward could not be predicted, the aim was to select a suitable pre-Hydrant comparison period after the study.

Results

The number of patients who met the inclusion criteria but chose not to try the Hydrant was not collected. Demographic data on age and sex was not included in the questionnaire.

A total of 700 Hydrant bottles were distributed. From the six sites that trialled the Hydrant, we received 73 responses (47 patients, 26 staff) and three written or oral reports from staff. Table 1 shows the number of patients in each site (not all patients completed questionnaires).

Questionnaire responses

Questionnaire answers showed that where the bottles were used, both staff and patients found them to be helpful in the majority of cases (Tables 2 and 3).

Acceptability was high. However, some important variations arose from the comments made by staff and patients and between different patient groups.

At one site the Hydrant was trialled on a medical ward. The patients who used the device increased their oral fluid intake to one litre daily or more within 2-3 days of using the Hydrant with a corresponding reduction in the need for IV fluids.

Patients on trauma and orthopaedic wards, some of whom had spinal injuries, found the Hydrant very helpful and it is rapidly being adopted in usual practice.

Older patients appeared to prefer more traditional drinking methods. Staff reported that they preferred using a tumbler and straw and many said that they found the bite-and-suck technique difficult. The Hydrant made one feel different from other patients, which the patient did not like. Staff reported that a few older patients refused outright to use the bottle once they saw it, although the reason for the refusal was not given.

BOX 1. PATIENT FEEDBACK

Comments from medical, trauma and orthopaedic wards:

"I could get a drink without disturbing nurses; it's simple and effective."

"Very good. I have transferred from a hospital abroad where I had a beaker and kept spilling water down myself."

"This gave me independence and enabled me to drink without assistance."

Comments from older patients:

"I like to hold a beaker, this made me feel less independent."

"It is a young person's thing." (This may explain why the design is attractive to many staff but not to older people.)

"I don't want this now." (On seeing the bottle.)

"I think these are wrong for older patients."

Infection and length of stay

It proved impossible to collect quantitative data on length of stay, infection rates and use of IV fluids. The number of patients recruited to the trial was too small and the time needed to collect pre- and post-intervention data was too short.

Discussion

Uptake was lower than expected. Enthusiasm for the Hydrant, regard for its simplicity and awareness of its availability made it easy to attract interest and support for the project at managerial level. However, it took longer than hoped to arrange opportunities to visit the sites and meet those in a position to agree to trialling the bottle and identify units willing to take part. As a result, it was not possible to coordinate the trial so that all units were introducing the Hydrant at the same time.

The majority of patients who tried the Hydrant found it easy to use and of great benefit; it met all claims of promoting independence.

The decision to offer the Hydrant only to patients unable to use a jug and tumbler resulted in far fewer taking part than would be needed to establish meaningful data around length of stay or infection rates. Realistically, whole wards would have had to use the Hydrant, regardless of whether patients needed it. This option was rejected during the design stage as being inappropriate because patients who can drink independently from a cup are unlikely to have their risk of infection or length of stay affected by dehydration, and it would not be justifiable to attribute a

reduction in either to the Hydrant.

One staff comment indicates that out of sight became out of mind, and patients might have drunk more with a visual reminder of the tumbler on their table.

Rehabilitation issues are very significant. There was a strong feeling among staff from rehabilitation units that patients being rehabilitated for home should be drinking from cups similar to those they will be using at home. Best practice guidelines encourage strong links between acute and community rehabilitation networks (South London Cardiac and Stroke Network, 2009).

Conclusion

Qualitative data from this trial suggests that the Hydrant is a useful and indeed transformative device for some patients. Over 50% of patients and staff who used the device agreed with questionnaire statements that asked if they found it helpful.

To be aware of the device and have it available could support some groups of patients, but many do not appear to need it. Qualitative data from questionnaires from staff and patients indicate that it does not appear to be suitable for solving the hydration problems of older patients, especially those who are part of a rehabilitation programme.

Recommendations for research

More demographic information on the patients who find the bottle difficult to use would be helpful. It may be worth investigating whether a smaller bottle with a shorter tube might be more successful.

Testing of length of stay reduction and reduced infection rates would need to be carried out in a setting where all patients were using the Hydrant. **NT**

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