



The Hydrant Project

Promoting good hydration at East and North Hertfordshire NHS Trust

Introduction

Good hydration within the acute hospital setting is currently a headlining issue within today's NHS, and is recognised as a serious healthcare issue among acute and primary healthcare Trusts. It has been identified that among hospital patients the need for adequate hydration is paramount with failings leading to patient deterioration, delayed discharges and associated healthcare costs.

Dehydration causes not only physical distress to individual patients and their families by impacting on clinical stability, resulting in an increase in the mortality of patients admitted to hospital (Sansevero, 1997, 3. Water UK, 2005, 4) but that subsequently there is a significant impact on the healthcare system with an enormous financial impact (Sansevero, 1997, 3). Dehydration has been linked to urinary tract infections, increased need for urinary catheterisation, constipation and increased use of laxatives. The risk of pressure ulcers increase and wound healing is delayed. Dehydration is also associated with the exacerbation of chronic conditions such as poor control of diabetes and heart disease. It can lead to an increased mortality in stroke patients and can be directly linked to acute patient deterioration related to acute kidney injury (AKI).

There are numerous causes of dehydration in patients admitted to hospital including inappropriate clinical assessment combined with staff not monitoring fluid intake and output appropriately. The Royal College of Nursing stated that '46% of nurses say there are not enough staff to ensure patients get the help they need to eat and drink' (RCN, 2007, 2).

Historical data demonstrates that between 2000 and 2010 the Office of National Statistics identified 8762 deaths where dehydration was indicated as a contributing factor and 1444 deaths where dehydration was the primary underlying cause. In the year 2012, within the East of England 84 patient were documented to have died where dehydration was mentioned on their death certificates with 12 patients documented as having died as a direct result of dehydration (Office of National Statistics 2010).

Increasing incidents are being reported within the local and national media putting the NHS and individual Trusts that under pressure to solve the problem, East & North Hertfordshire Trust mentioned in the national media this year.

"Hip-op patient died from lack of water in hospital" Metro 2011

"Police probe death of hospital patient who begged for water" Telegraph, 2010

"Revealed: How two patients a day die of thirst on hospital wards" Daily Mail, 2011

"Scandal of great-grandfather left to die of dehydration by 'neglectful' hospital staff" Daily Mail, 2010

The CQC have issued press releases demanding action on dehydration commenting the "people were at risk of malnourishment and dehydration due to a lack of consistent guidance, leadership and staff knowledge in how to assess and maintain suitable levels of nutrition and hydration".

Better hydration can improve the wellbeing of patients and potentially reduce the volume of medicines required. It could also reduce a patients length of hospital stay by preventing further illness or contributing to clinical deterioration and removing some of the costs of professional involvement needed to prescribe and administer treatment (Taylor, 2005, 5).

An NHS patient reflecting on their hospital experience strongly believed that was not necessarily a lack of fluids that caused dehydration but the easy access to fluids independently that caused the biggest barrier to them hydrating themselves adequately. As a result of their hospital experience they designed a hands free drinking system called The Hydrant.

With a view to improving and promoting good hydration at East and North Hertfordshire NHS Trust a project was undertaken to ascertain if this hands free drinking system could aid patients good hydration.

The following evaluation discusses the project and the impact upon patients, their hospital experience and the potential healthcare benefits to patients and the organisation.

All data used within this evaluation were sought through the Trusts information department, ICE reporting, BIMS management system and the supplies systems. Photographs were taken by medical photography with patient consent.

The Hydrant

“Simply brilliant and brilliantly simple”

It is believed that one of the biggest causes of dehydration is not necessarily a lack of fluids but a lack of easy access to fluids. The Hydrant is a hands free drinking system which would work effectively alongside the Trusts ‘red Jug lid’ system, allowing patients who were able to use it successfully to access fluids independently whenever they needed to without the need of calling for assistance.

The hands free drinking system comprises of a one litre bottle with lid specifically designed to clip onto the patients bed frame or chair, enabling them to drink from a long flexible hose by using a bite valve, which opens and closes under pressure.



The Hydrant has a 100mls graduated scale on the side of the bottle which facilitates accurate measurement of a patients fluid intake, positively impacting on the ability to accurately record a patient's fluid balance.



The Project

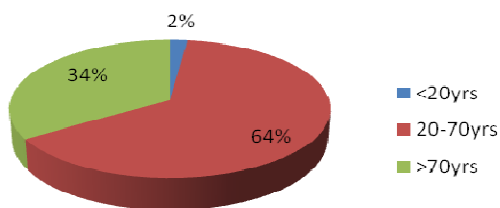
East and North Hertfordshire Trust have been piloting the use of The Hydrant drinking system on four ward areas over a two month period. It involved orthopaedic wards Princes and 5A, an ENT and plastic surgery ward 11BN as well as 6B ward caring for patients with renal disease and other medical problems.

The project aims were to ascertain whether;

- Dehydration could be managed or avoided in patients using the hydrant drinking system
- To assess as to whether The Hydrant could assist in reducing infection rates
- To assess whether The Hydrant is an effective delivery method of drinking fluid for patients
- To assess whether The Hydrant could assist in the reduction of time patients spent in hospital

The inclusion criteria for patients were that The Hydrant would be available to all patients on the pilot wards who were physically and mentally capable of using the hydrant. An assessment tool (appendix 1) was adapted from Swindon NHS Trust which promoted an 'opt out' philosophy rather than an 'opt in'. This assessment criterion was displayed in the ward area for easy access by nursing staff.

During the pilot period 271 patients were given The Hydrant, an average uptake of approximately 25% of the inpatients within these areas during the months of March and April 2012. There was no age restriction in the use of The Hydrant with the distribution usage according to age displayed below, with the biggest uptake being in the 20 – 70yrs age group.



Patients utilised The Hydrant from one to seven days with one patient who commenced using it at the beginning of March and continued to use it for the full length of the project period and throughout his hospital stay.

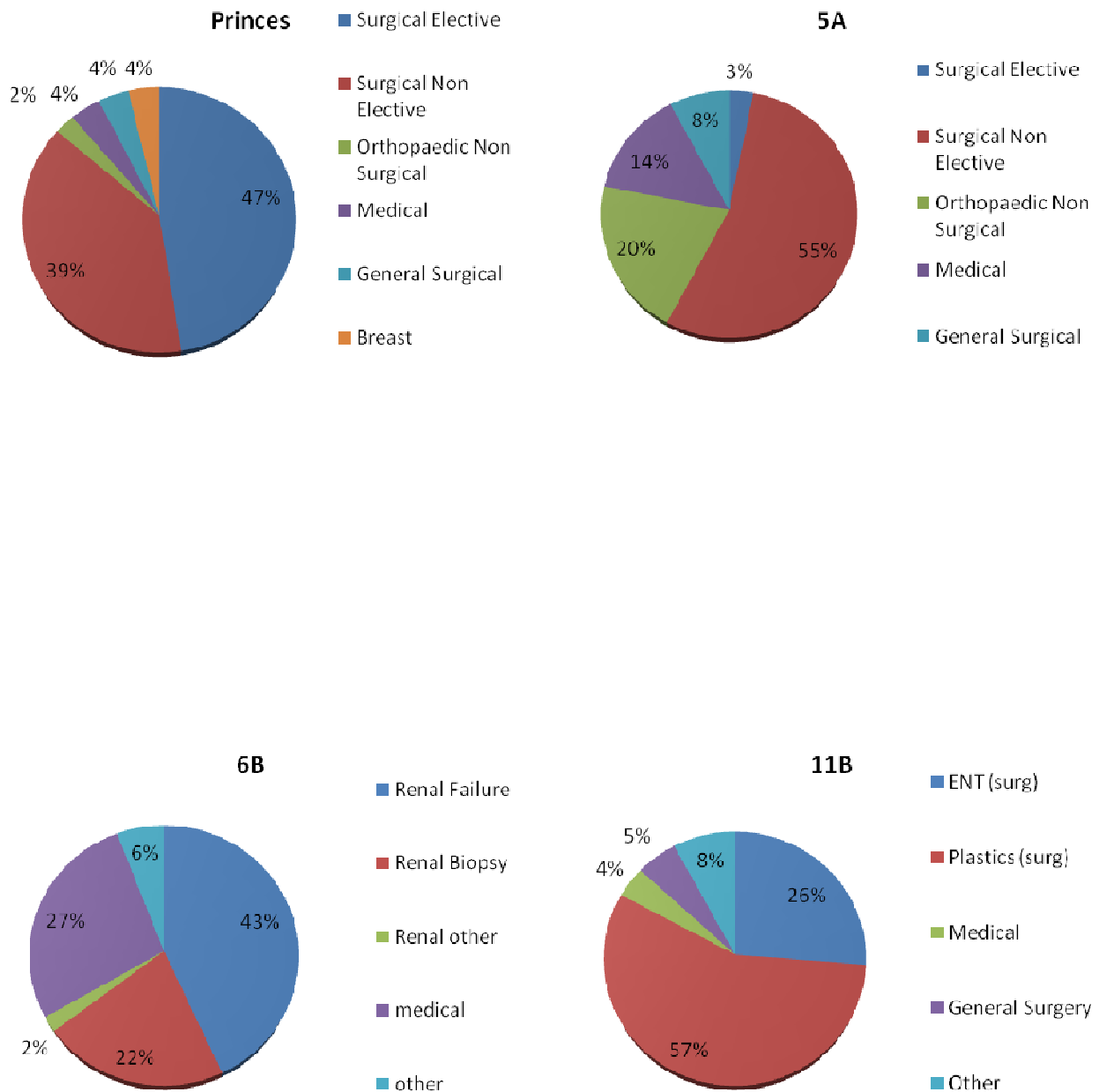
At the start of the project the ward areas were given an adapted protocol for using The Hydrant that had been adapted from the protocol issued by the company 'Hydrate for Health' (appendix 2). They were also issued with instructions on how to use the Hydrant which could be issued to patients as well as used as a resource for staff (appendix 3). Ward Housekeepers and nursing staff were taught how to set up and use the system and continual support for staff was available throughout the project period.

The ward housekeepers became central to the successful use of The Hydrant by being responsible for the maintenance of the bottles and the changing of the drinking tubes. The bottles were cleaned using the same processes as the normal ward jugs, and the drinking tube was labelled to ensure single patient use

and changed every twenty four hours as per company instructions. There were no known reported infection control issues during or after the project period.

The project areas were supported by a project nurse who worked with the wards by recruiting patients for the pilot by asking them if they would use The Hydrant during their hospital stay. The project nurse spent time with patients and staff to ensure that the patients who were utilising the systems were doing so correctly and effectively. The project nurse was also involved in the collection of baseline data and promoting completion and return of the patient experience questionnaire.

Reasons for admission

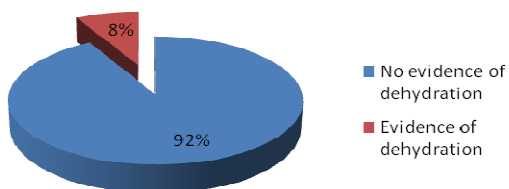


Dehydration could be managed or avoided in patients using the hydrant drinking system

Blood results were looked at in order to ascertain if the patients who had utilised The Hydrant during the project period had shown evidence of dehydration. From the 271 patients who used the hydrant 213 had bloods taken to measure their urea and creatinine levels (78.5%). 14% of the patients had a history of chronic renal disease and therefore had raised urea and creatinine levels making the bloods results difficult to interpret.

For the purpose of data analysis the chart below demonstrates the occurrence of dehydration with the chronic renal failure patients and those who did not have bloods taken removed.

Cummulative Blood Results



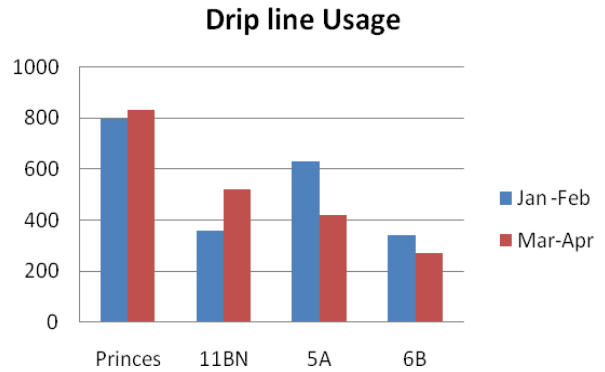
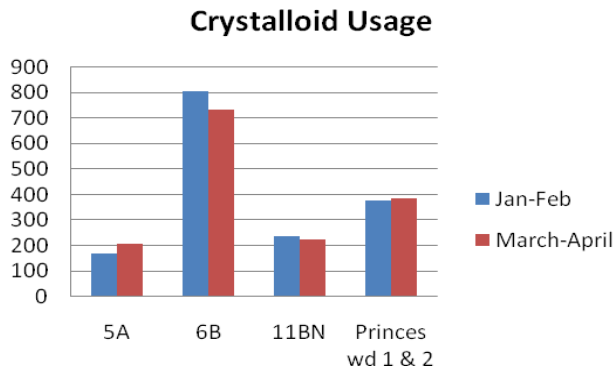
From the remaining 176 patients using the hydrant 92% of patients showed no evidence of dehydration during their hospital stay. This includes the patient who used The Hydrant for the full duration of the two month project. The 8% of patients who demonstrated evidence of dehydration did so on admission to hospital. Their dehydration was medically treated which included oral fluids as well as intravenous rehydration. These patients utilised the Hydrant system in order to access oral fluids as part of their nursing care.

To assess as to whether The Hydrant could assist in reducing infection rates

Base line data about the occurrence of hospital acquired urinary tract infections related to the project areas was requested from the Trusts information department. Whilst these numbers showed no decrease in the occurrence of UTI it should be noted that when checking blood results there was no evidence of microbiology confirmation of a UTI occurring in patients who had been given The Hydrant. Baseline usage data received from pharmacy also demonstrated that within these ward areas there was no consistent drop in the use of UTI specific antibiotics.

Reduction in Intravenous hydration

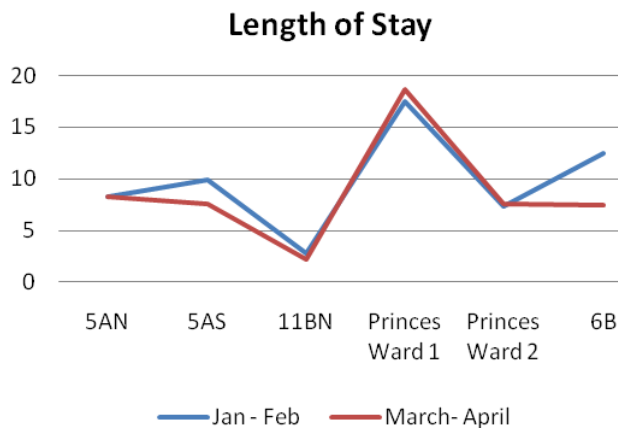
The ward areas usage of Intravenous crystalloid and drip lines was looked at. For this purpose crude usage numbers of one litre bags of Plasmalyte and Sodium Chloride was requested. This did not take into account fluid bags and equipment being lent and borrowed between areas. Crystalloid bags of less than one litre were not included as these are often used for drug administration rather than for maintaining hydration. There was a small decrease in the use of IV hydration fluid noted in two out of the four clinical areas with small increases in the other two. Again there were decreases in the use of drip lines in two out of the four areas but consistency in all four areas was not seen.



In terms of the treatment of constipation there was no consistent evidence to suggest that there had been a significant reduction in the usage of laxatives within the ward areas.

Length of Stay

The length of stay from the project period was compared with data from the preceding two months and is represented in the graph below. Minor fluctuations in length of stay were seen with slight decreases in the average length of patient stay noted on 5AS, 11BN and 6B. However there are multiple work streams currently being undertaken that are working towards a reduction in length of stay and it is therefore unclear if the slight decreases could be attributed to the use of The Hydrant.



Patient Experience

Patient A

Patient A was admitted to the Lister hospital towards the end of February 2012 after sustaining significant leg injuries as a result of a road traffic accident. The nature of his injuries meant that he required numerous surgical procedures during the project period. He was completely immobilised spending the majority of March and April in bed. By the nature of being restricted to bed his access to oral fluids became difficult due to being unable to pour water from a jug with ease due to restricted movement and pain.

Patient A was commenced on The Hydrant at the beginning of March and continued to utilise it for the entire duration of the project period. At no point during the project period did Patient A develop UTI despite having a urinary catheter in situ; he did not show signs of dehydration from his blood tests and did not require IV hydration to treat dehydration. Patient A believes that The Hydrant has helped him to maintain his hydration whilst he has been recovering from his injuries, not wanting to be without it. Patient A remains an inpatient at Lister and continues to use The Hydrant.

Patient B

Patient B sustained significant injuries after following falling from a considerable height. As a result he was unable to use a lift a jug and to pour water into a cup independently. According to current hospital practice Patient B had been issued a Jug with a red lid so that staff were visually reminded that he was unable to eat and drink independently. However this only solved part of the problem as he said that he didn't like to disturb the nursing staff to pour him a drink or to hold the cup and straw to enable him to drink. He stated that drinking out of a cup independently was impossible. Once he had been given a Hydrant he stated that he was able to help himself easily to fluid without having to ask anyone to help him. He reported that accessing fluids at night was very easy as he clipped the mouth piece to his pyjamas and as a result could find it easily in reduced light. Patient B was issued The Hydrant at the beginning of March and utilised it until his discharge home 3 days later.

These patients are not isolated in the experiences they have had with The Hydrant. Renal biopsy patients on 6B need to remain flat following their procedure for eight hours. These patients were recruited to the hydrant project and fed back that they would not have been able to drink or would have struggled to drink during that time. A patient on 11BN who had undergone extensive breast reconstruction surgery who could not lift a jug post procedure again stated that she would have struggled to remain hydrated without assistance in her immediate post operative period. Patient undergoing elective orthopaedic surgery on Princes Ward who again were confined to bed postoperatively found their hospital stay made easier by their easy access to fluids by using The Hydrant.

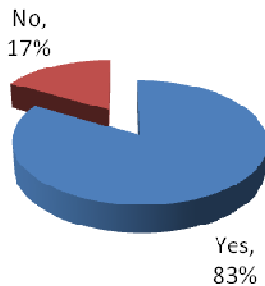
Comments from numerous patients have been included in the following feedback from the patient questionnaires. 83% of patients reported that The Hydrant was easy to use and 90% felt that it enabled them to drink without assistance stating that it was as effective as a jug and cup. Just over half of the patients preferred it to a normal jug and cup but reported that if they were having difficulty or unable to access fluids independently by using a jug or cup then they would use The Hydrant. 62% of patients believed that they drank more fluid than they would have done if they had not had the opportunity to use a

Hydrant with 78% reporting that it helped them to maintain independence whilst in hospital. 73% of patients felt that the Hydrant should be available to all patients and some considered that they would utilise the system following discharge from hospital. The results from the patient feedback questionnaires are displayed below.

Patient Survey Results

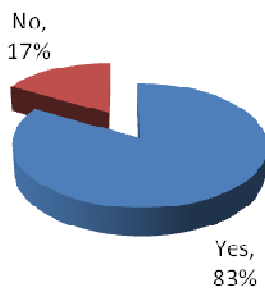
(From 250 survey responses)

83% of patients felt that The Hydrant was easy to use



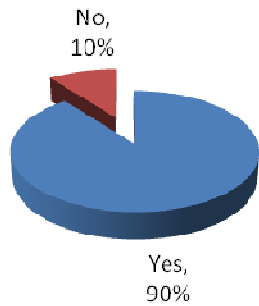
“So much easier than a cup and jug. I drank lots more than I would normally. Doesn’t spill and you don’t have to keep filling it up every 2 seconds. Loved it!”

83% of patients felt that the drinking valve was easy to drink from



“I found it very easy to use, especially in the night....a very useful aid”

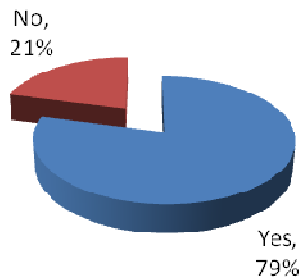
90% of patients felt that it helped them to drink without assistance



“A great alternative and very useful at night as it was filled up and didn’t have to call the nurses. An excellent idea!”

“I didn’t have to bother staff to pour a drink”

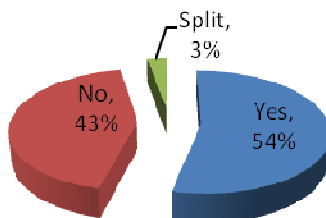
79% of patients felt that The Hydrant was an effective alternative to a jug and cup



“An extremely good idea for all patients, or for those who find it difficult to manage a jug and cup after surgery”.

“I think this method is far more effective than the jug and cup method.....I wish I had had this for my whole stay as I was completely bedbound and struggled with getting a drink myself”.

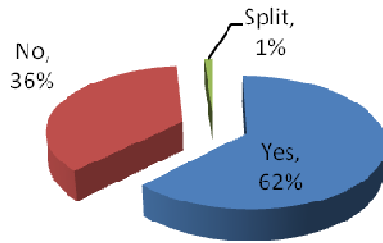
54% of patients preferred The Hydrant to the normal jug and cup



“I think this method is far more effective than the jug and cup method.....I wish I had had this for my whole stay as I was completely bedbound and struggled with getting a drink myself.”

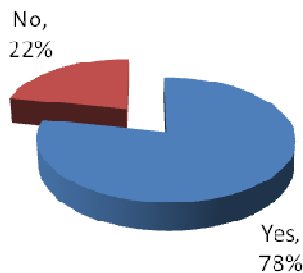
Patients who didn’t prefer The Hydrant to the normal jug and cup stated that given the choice they would rather use the cup but if they were unable to get themselves a drink due to immobility or surgery then they would use a Hydrant.

62% of patients felt that The Hydrant helped them to drink more



“After having my back surgery the Hydrant has given me independence. I don’t think I would have drunk as much if I did not have the Hydrant.”

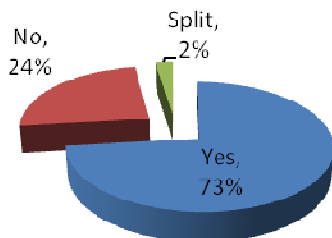
78% of patients felt that The Hydrant helped them to maintain their independence



It means I didn’t have to ask a nurse for such a basic and easy thing as a drink. It makes me feel more independent.”

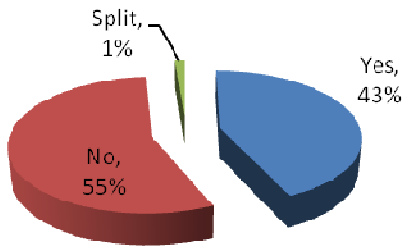
“After having my back surgery the Hydrant has given me independence. I don’t think I would have drunk as much if I did not have the Hydrant.”

73% of patients felt that The Hydrant should be available to all patients



“An extremely good idea for all patients”,

43% of patients stated that they would use The Hydrant at home

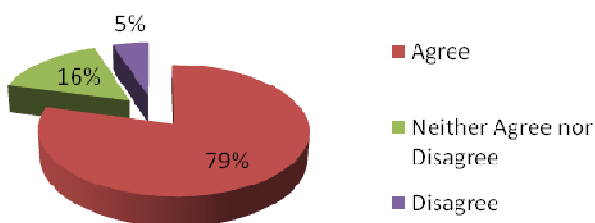


“I was given the Hydrate for Health at Lister hospital a few weeks ago during a short stay, but since I have MS and have to up my fluid intake I thought I'd try it. **It was invaluable to me in the hospital** and thought was such a good idea I'd buy one for home. If it helps me drink more I might buy a second for by my armchair as well as my bed. Think it's great”.

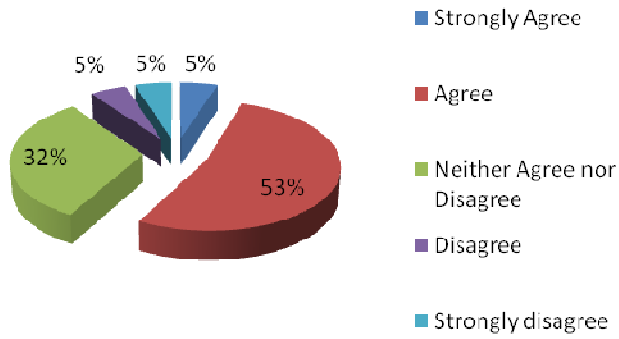
(Discharged Lister patient who emailed the company to purchase a Hydrant for his home)

The nursing staff were also given a questionnaire to complete and 19 responses were received out of a possible 161 (12% return). 79% of staff felt that the Hydrant enabled patients to drink more effectively whilst 58% felt it was as effective as a jug and cup with only 10% stating that it was not as effective. 42% of staff agreed that patients who utilised the Hydrant drank more whereas 37% neither agreed or disagreed. Only 10% disagreed with this statement. The responses to the staff questionnaire are displayed below.

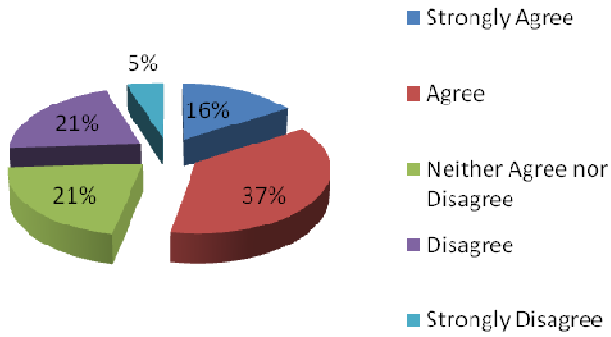
79% of staff felt that the Hydrant helps patients to drink more effectively.



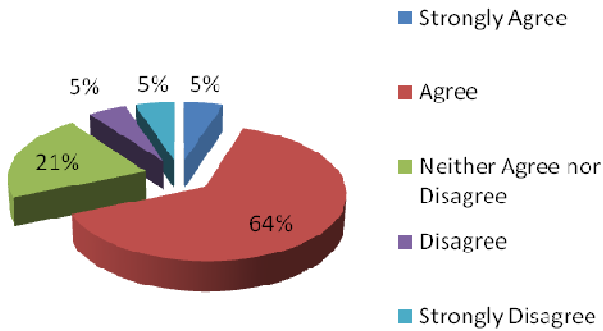
53% of staff agreed and 5% strongly agreed that the Hydrant was an effective alternative to a jug and cup.



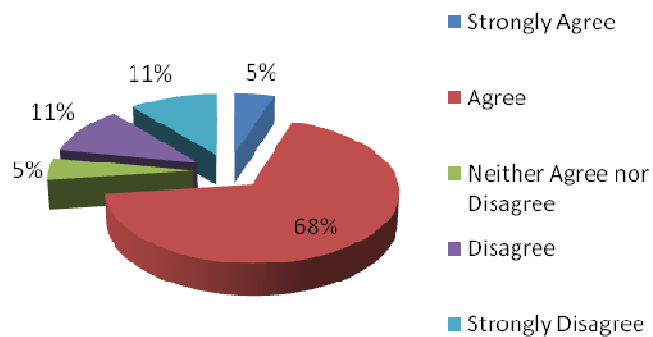
37% of staff agreed and 16% strongly agreed that the Hydrant was easy to explain to patients.



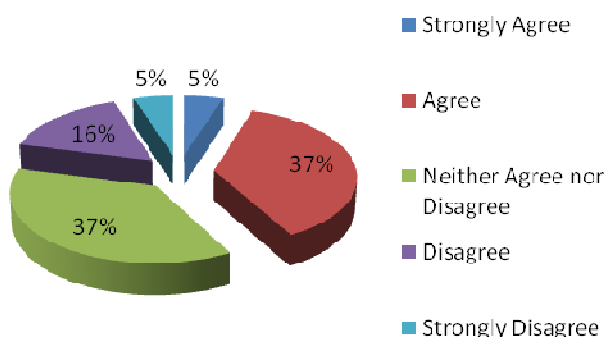
63% of staff agreed and 5% strongly agreed that the Hydrant was easy to set up.



68% of staff agreed and 5% strongly agreed that the Hydrant was easy to maintain.



37% of staff agreed and 5% strongly agreed that patients drunk more when they used the hydrant.



Problems

Initially there were problems in the nursing staff actively recruiting patients to use The Hydrant. This was overcome by the project nurse attending handovers and discussing the potential benefits of this system on patient care and nursing time. The decision was made to increase the involvement of the ward housekeeper in giving out The Hydrants and maintaining them and as a result an increase in the uptake was seen.

Confused patients and those suffering from dementia clearly did not have the capacity to utilise The Hydrant effectively. Some elderly patients who had been offered the use of the didn't like the idea of drinking from a tube and bottle as they felt it was step towards them losing their independence. When the drinking tube is first used there is a slight 'plastic taste' which some patients didn't like. This was overcome by prepriming the drinking tube for them and rinsing the bite valve under cold running water. Patients were also advised that they could add squash to the water which aided in clearing the slight taste. Patients reported that once the tube had been consistently used the taste cleared quickly. The issues with the plastic taste have been fed back to the company.

Conclusion

Despite there only being an uptake of approximately 25% across four ward areas in terms of patient numbers this resulted in 271 patients using The Hydrant. When comparing this to other organisations who have run similar projects this was a high number of patients.

Despite no consistent reduction in the use of UTI specific medication, IV hydration fluids and laxatives baseline data demonstrated no consistent drop in usage across all four areas, patient blood results demonstrated that a large group of patients who used The Hydrant didn't show any signs of dehydration, or microbiology confirmed urinary tract infections.

What has been evident from this project was the benefits and the positive impact that The Hydrant has had on the experience of the patients who utilised it as part of their care. A majority of surgical patients who used The Hydrant in the post operative period stated that they found that it enabled them to maintain their hydration independently and that they wouldn't have 'drunk as much' as they did if they hadn't had the use of a Hydrant. 62% of patients reported that they 'drank more' because they had the use of a Hydrant. Patients believed that utilising The Hydrant improved their time in hospital, with 43% of patients wanting to be discharged home with the opportunity to utilise the system post discharge.

Recommendations

The Hydrant demonstrated benefits for patients undergoing surgery and should be used for post operative patients from those restricted to free fluids up to those who are able to eat and drink normally. A recommendation is made that it is used as part of the enhanced recovery pathway across the organisation.

The Hydrant has had a positive impact upon the hospital experience of these patients and should therefore be considered as a choice option for all capable patients.

The Hydrant should be used with all pre and post operative orthopaedic patients specifically those who are confined to bed.

Further work needs to be done expanding the use of this product within the divisions of medicine, surgery and critical care, with potential role out throughout Surgery, Medicine and Critical Care.

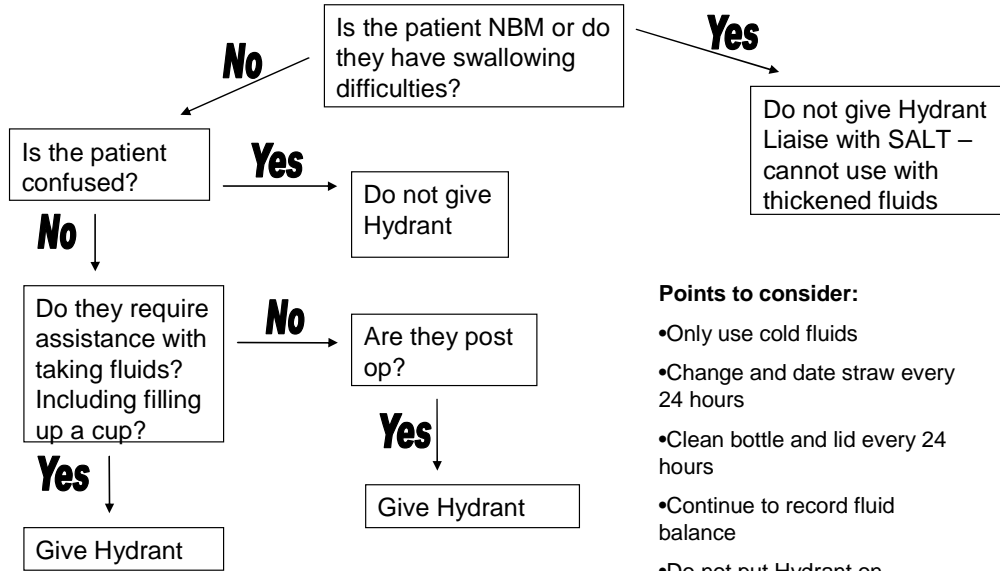
The Hydrant should be used for all patients who are experiencing restricted mobility particularly those who are having difficulty in using a jug and cup. This would include considering all patients who have a red topped jug with the capacity to use the system.

The company Hydrate for Health are involved in a national programme, funded by the Department of Health QUIPP programme, to assess the use of this product within the health care system. From the feedback we have had from patients who have used this product, it would be a good opportunity for this Trust to be part of that programme.

Appendix 1



Hydrant Assessment Tool



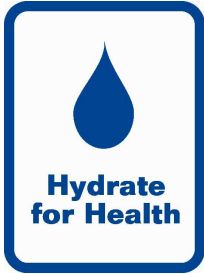
Points to consider:

- Only use cold fluids
- Change and date straw every 24 hours
- Clean bottle and lid every 24 hours
- Continue to record fluid balance
- Do not put Hydrant on floor at any point

If you have any patients who are not addressed on this assessment tool, but who can provide us feedback on The Hydrant – please also include them in the trial.

Assessing Nurse.....

Appendix 2



The Hydrant - Putting Dehydration to bed in the NHS

The Catering and housekeeping staff are critical to this project and its success. Their role will be to ensure that the operational side is fully set up and understood by everyone involved.

The Hydrant bottles will be filled on the ward as the water jugs currently are.

The tubing will be placed into the bottle by the ward housekeeper

The Hydrant will be taken away and cleaned as the water jugs currently are

The replacement tubing for the hydrant will be located on the ward

There will be laminated cards regarding the use of the hydrants available in the bed side folders

PROTOCOL FOR USE OF HYDRANT

The Hydrant Drinking System is a drinking system for individuals who are unable to drink independently (without assistance) or use a jug and tumbler. It is a system that both promotes self-sufficiency and facilitates hydration for these individuals.

The system comprises a bottle, lid and drinking straw, all of which are disposable. The bottles and lids can be cleaned by putting them through a dishwasher cycle. The straw must be disposed after 24 hours and replaced with a new one.

It is recommended that each patient have at least 2 bottles allocated – in order that they can be alternated for washing purposes. There should be no need to label the bottles themselves, but the straws should be date labeled to ensure they are managed appropriately.

The ward staff should disconnect the straw tubing and discard. They should then ensure that the ward host/ess takes the dirty Hydrant bottle to be processed through the dishwasher and replace it with a clean one full one.

It is the ward staff's responsibility to reattach the lid and a new drinking straw and ensure that a date label is applied. The drinking straws must be disposed of in a clinical waste bag.

The Hydrant should be used for cold fluids only. Hot fluids are not be used due to the risks of scalding.

If anything other than clear fluids is put into the Hydrant, the bottle and straw should be changed once the drink has been consumed. Whilst it can be used with thickened fluids, it is advised to consult Speech and Language therapists first for advice.

The Hydrant must at all times be attached to either the patient's bed or chair. It must not be allowed to drag on the floor.

The Hydrant is not suitable for agitated or confused patients or those who are at risk of self harm.

Isolation patients

The Hydrant can be used for isolated patients. Treat the bottle as ordinary ward crockery and put through the dishwasher as above. The drinking straw must be changed and date labeled daily and disposed of as clinical waste as stated above.

Please note, in line with Trust policy, any untoward incidents should be reported via the Datix Incident Reporting System.

A) Instructions for using the Hydrant

Remove all packaging and fill the bottle with your drink, replace the cap, and slide the tube into the bottle until it reaches the bottom. Use only cold or warm drinks. They hydrant is not designed for boiling hot liquids.

1. Attach the Hydrant to a bed, wheelchair, or chair using the clip/handle/hanger so it stays as vertical as possible.



2. Place the bite valve on the end of the tube in your mouth.
3. Gently bite to open the valve (it's worth practicing this with your fingers to see how it works) and suck to bring fluid through the tube.
4. If the Hydrant is positioned above head height then once fluid is in the tube it becomes a siphon and no further sucking is needed, simply bite the valve and the drink will gently flow out.
5. When you finish drinking simply release the bite valve, it will seal closed and will not drip.
6. Use the clothing clip to attach the tube to clothes as required.

Caring for the Hydrant

- Do not immerse in boiling water
- Wash bottle and cap in warm soapy water
- Dishwasher safe to a maximum temperature of 65 degrees
- Solutions such as Milton may be safely used to sterilize
- **Change the tube and valve every 24hrs**

Clare-Suzanne Thorogood

Senior Clinical Nurse Specialist Critical Care Outreach Services & Hydrant project manager.

E-mail: clarethorogood@nhs.net

Appendix 3

Instructions for using the Hydrant

One of our staff will remove all packaging and fill the bottle with your drink, replace the cap, and slide the tube into the bottle until it reaches the bottom. Use only cold drinks; the hydrant is not designed for hot liquids.

1. One of our staff will attach the Hydrant to your bed, wheelchair, or chair using the clip/handle/hanger so it stays as vertical as possible.



2. Our staff will help place the bite valve on the end of the tube in your mouth if you are unable to do so.
3. Next gently bite to open the valve (it's worth practicing this with your fingers to see how it works) and suck to bring fluid through the tube.
4. If the Hydrant is positioned above your head then once fluid is in the tube it becomes a siphon and no further sucking is needed, simply bite the valve and the drink will gently flow out.
5. When you finish drinking simply release the bite valve, it will seal closed and will not drip.
6. Use the clothing clip to attach the tube to clothes as required.

Clare-Suzanne Thorogood Senior Clinical Nurse Specialist Critical Care Outreach Services & Hydrant project manager clarethorogood@nhs.net

Caroline Kirby Senior Sister Critical Care Outreach Team carolinekirby@nhs.net

This is a pilot project and we would welcome your views. Please complete our questionnaire which is available from the ward staff