

Dehydration affects patients across all areas of care. All nurses need to be proactive in diagnosing and treating dehydration swiftly to prevent deterioration

# Hydration – the missing part of nutritional care

## In this article...

- › The importance of good hydration and associated risks
- › Analysis of incident reports relating to poor hydration
- › Recommendations for future practice

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**Abstract** Lecko C, Best C (2013) Hydration – the missing part of nutritional care. *Nursing Times*; 109: 26, 12-14.

Dehydration contributes to poor patient outcomes and can lead to avoidable harm. This article analyses incident reports from National Reporting and Learning System (NRLS) relating to hydration and shows that this area of care continues to be frequently neglected. Reasons for this are suggested with recommendations for changing practice to reduce the negative impact this has on patient outcomes.

It is only in the last few years that hydration and dehydration in particular have been included in the same sentence as nutrition – the two have often been considered in isolation, with far more attention being paid to nutrition.

The issue of good hydration in health-care is complex and often complicated further by patients' pre-existing medical conditions.

Although it is commonly quoted in popular press that all adults should consume eight glasses of water or two litres of fluid a day, these volumes are not standard across populations. Requirements will vary according to height, weight, age and medical comorbidities.

Consideration should also be given to how fluid is taken. If oral intake is insufficient or unsafe, fluid may need to be provided by an enteral feeding tube or via an intravenous (IV) route. Health professionals working in acute care must have the skills and competencies to

be able to provide fluids through either of these routes.

This article discusses a review of National Reporting and Learning System (NRLS) data. This aimed to identify the number of patient safety incidents related to hydration – both dehydration and over hydration – reported to the NRLS. We aim to establish any recurrent themes that may assist in developing a strong evidence base to link good hydration with the prevention of avoidable harm.

## Search criteria

To understand where we are today, we first looked at the background (Table 1). Our review of the NRLS considered all reported patient safety incidents from inception of the NRLS in 2003 until 31 March 2012. We searched for the keywords “dehydration” and “over hydration” in the free text and identified 7,856 incidents through these search criteria.

Because a large number of incidents was identified, it was not possible to review all 7,856 of them. We therefore reviewed all reported deaths (142) and incidents of severe harm (257), as well as a

## 5 key points

**1** Dehydration affects people in all care settings

**2** Dehydration is linked to patient safety issues such as pressure ulcers, falls, urinary tract infections, kidney injury and sepsis

**3** Hydration requirements vary and depend on height, weight, age and medical condition

**4** Acute care clinicians must have the skills and competencies to provide fluids through enteral feeding tubes and intravenously

**5** Dehydration needs to be recognised and treated at an early stage in the community before hospital admission becomes necessary

FIG 1. CARE SETTING OF INCIDENTS



sample of 50 moderate, 50 low-harm and 50 no-harm incidents, leading to a total of 549 incidents being reviewed. The sample of 150 reported incidents that resulted in a lower degree of harm was selected only to see if there were any additional themes that had not been identified in the review of the reports of severe harm and death incidents.

From the 549 incidents reviewed, 173 were excluded because they did not meet the search criteria (were not related to dehydration or over hydration) and eight were excluded because they were duplicate reports. The remaining 368 were identified as relevant to the search criteria – they reported harm associated with dehydration – and were included in the review.

Due to the complexity of establishing dehydration as a cause of death, we focused on identifying common themes reported within the incident reports. The first theme considered the care setting in which the incident occurred (Fig 1).

Each of the reported incidents was then analysed to identify sub-themes within the free text (Fig 2).

The vast majority of the incidents reviewed appeared to occur within the acute sector. It is well recognised that there is under-reporting of patient safety incidents from primary/social care and we found that often the reporting organisation, generally an acute care provider, had received a patient from another care setting who was already in a state of dehydration.

**Statements**

The following statements are from reports received by the NLRs and are recorded as having been received. They have not been amended to provide clarity.

*“Patient was admitted on... to ward... with dehydration and x 3 pressure sores. Grade 3. Wounds can be found on patients left buttock and thigh.”*

There are examples of staff failing to act appropriately to treat the dehydration that had been identified and documented on admission once a person had been admitted into their care.

*“Patient came in with diarrhoea and dehydration did not receive any fluids overnight.”*

There are also examples in which this failure to act had a detrimental effect on the continuing management and potential outcome for patients.

*“Frail patient with critical limb ischaemia, admitted dehydrated and in pain. Overnight plan was to heparinise and*

**TABLE 1. HISTORY OF HYDRATION**

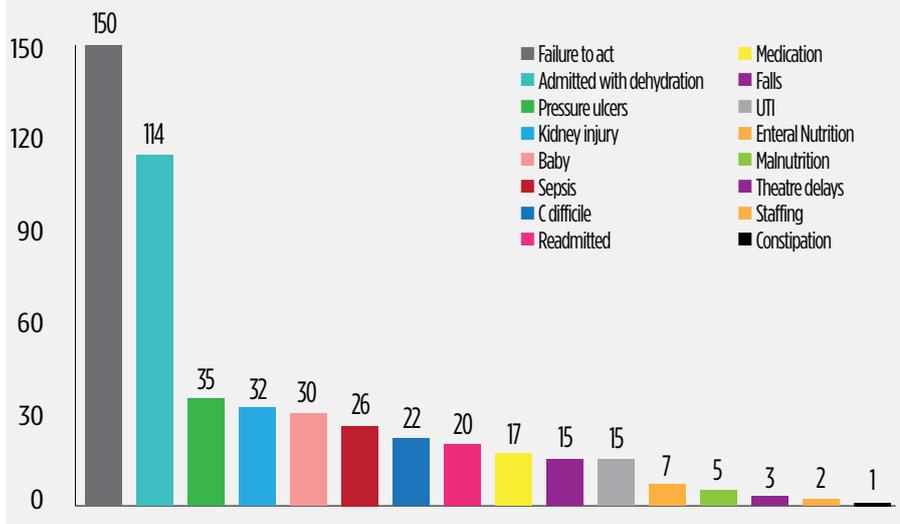
<b>2004</b>	<ul style="list-style-type: none"> <li>Water UK and the Water for Health Alliance undertake early work in raising awareness of the importance of good hydration in the general population</li> </ul>
<b>2005</b>	<ul style="list-style-type: none"> <li>Water for Health Alliance publish the <i>Water for Healthy Ageing. Hydration Best Practice Toolkit for Care Homes</i> (Water for Health Alliance, 2005) in association with National Association of Care Catering (NACC)</li> </ul>
<b>2006</b>	<ul style="list-style-type: none"> <li><i>Water the Forgotten Nutrient - from Pipe to Patient</i> poster is published by the National Patient Safety Agency (2006)</li> <li>The NPSA goes on to work in with the Royal College of Nursing on its Nutrition Now campaign; they jointly publish the <i>Hydration Best Practice Toolkit for Healthcare</i> (2007)</li> </ul>
<b>2007</b>	<ul style="list-style-type: none"> <li>NPSA sponsors two annual Hydration Best Practice Patient Safety Awards to raise awareness of the <i>Hydration Best Practice Toolkit for Healthcare</i> (NPSA and RCN, 2007), which are hosted by the National Association of Care Catering and the Hospital Caterers Association. NACC continues to include a hydration award in its annual awards.</li> </ul>
<b>2009</b>	<ul style="list-style-type: none"> <li>The Parliamentary Hydration Forum is established to consider issues of dehydration in the older population. The forum undertakes a number of activities, including surveying care homes to gain an understanding of attitudes, behaviours and practice in relation to hydration</li> </ul>
<b>2010</b>	<ul style="list-style-type: none"> <li>Meeting Nutritional Need, also known as outcome 5, which includes both nutrition and hydration, is introduced as part of the Care Quality Commission's <i>Essential Standards for Quality and Safety</i> (2010)</li> <li>The CQC undertakes a series of themed unannounced inspections that focus on the dignity and nutritional care of older people in acute hospitals, after a number of high-profile reports highlight problems experienced by older people in hospital in obtaining appropriate levels of hydration and nutrition (Patients Association, 2011). The reports of these inspections record inadequacies in nutritional care provided to patients and highlights that hydration is often given a low priority</li> </ul>
<b>2012</b>	<ul style="list-style-type: none"> <li>The CQC expands the dignity and nutrition inspections to nursing care homes (the outcomes of these inspections are due to be published imminently)</li> <li>The NPSA continues to promote awareness of hydration as a patient safety issue through its Nutrition and Hydration Patient Safety Week (Patient Safety First, 2012)</li> <li>A webinar by Dr Donal O'Donoghue, the national clinical director for kidney care, highlights the association between acute kidney injury and dehydration</li> </ul>
<b>Today</b>	<ul style="list-style-type: none"> <li>There is a gradual increase in the acknowledgement that dehydration is a healthcare issue among clinical staff, and a greater understanding that dehydration is a significant patient safety and quality issue for health and social care providers</li> <li>Even with an increase in awareness in 2012, there are further high-profile media reports relating to the poor management of hydration (Patients Association, 2012)</li> </ul>

*rehydrate. Instead of the planned rehydration and close monitoring of fluid balance, the hourly urine measurements were changed to 4 hourly measurements, and no action was taken when the urine output remained dangerously low. Moreover, the IV fluids were running considerably behind, but this was not picked up until the morning ward round. Overnight she has received 1000ml in 14 hours and she is still dry and making*

*very little urine. This morning her [right] leg is worse and probably will be non-salvageable.”*

*“Cardiac arrest. Asystole. Died. Review of notes. Patient admitted with dehydration. Slow IVI given, 2 litres over 48 hours! No one looked at admission U+E G473, Ur 68.6, C+, haemolysed and not repeated. U+E were normal (date), slightly raised (date) not documented in notes. Was*

FIG 2. SUB-THEMES



continued on Perindopril and Bendrofluazide. BP down, U O down (documented), nil done, patient arrested and died. Potentially preventable death. IMMEDIATE ACTION: Incident reported. FURTHER ACTION: Needs actioning to prevent recurrence.”

There is an apparent link between dehydration and well-recognised patient safety issues, such as pressure ulcers, falls, urinary tract infections, kidney injury and sepsis. Within the incidents reviewed, these patient safety issues were often seen as part of a complex situation. The following incident reports highlights this:

“On (date & time) whilst on (ward name) I was asked to view an ABG (arterial blood gas) result by on call surg HO. Based on these results I decided to assess the pt. I was never referred. Since (date & time), pt had persistently low BP, low urine output and low O<sub>2</sub> saturations. For over 24hrs minimal intervention was given to treat this pt appropriately. Drs were aware of the pts condition. Pt became severely dehydrated, leading to acute renal failure and septic. Needing HDU admission, leading to ITU admission and having 2 cardiac arrests in ITU. Pt RIP (date).”

“Patient nursed in resus. On arrival, patient’s bandage on her left leg was coming loose. Dressing removed, which consisted of dry dressings and a crepe bandage. Underneath this dressing was a wound roughly 20-25cm long, 2-3cm wide. Tibia bone visible for 10cm the rest necrotic tissue, foul smelling. Medical and ortho doctors have seen the wound. Photos of the wound taken and scanned in pt’s notes. Pt also had necrotic pressure sores to sacrum

as documented in patient’s notes and left heel. Diagnosis acute renal failure secondary to dehydration sepsis? from pressure sores AF, micro anaemia.”

### Enteral tube feeding

The vast majority of the patient safety incidents reviewed related to people who were able to take oral hydration or needed intravenous fluid management. From the sample of NRLS data reviewed, only seven made reference to enteral tube feeding, these highlighted a failure to give enteral feeds and fluids or incorrect amounts of fluid being given as areas of concern.

“IV fluids prescribed for dehydration, (date) and PEG feeding advised to be restarted as written in notes – No IV fluids given, PEG feeding not restarted – Consultant ward round on (date) advised again regarding fluids and PEG again not implemented – Patient’s dehydration continued to worsen – Patient died on (date) without receiving any of the treatment for dehydration despite being prescribed and asked to do so.”

“Patient not given correct water flushes through his PEG tube, causing dehydration. This is despite a written feeding regimen outlining flushes required.”

### Implications for practice

This review has highlighted several areas of care that need to be considered by both health providers and professionals:

- » There is a need to recognise the development of dehydration at an early stage in the community (including in care homes and people’s own homes) and treat it before hospital admission becomes necessary;

- » Dehydration needs to be recognised early on admission to an acute hospital, with timely implementation of appropriate nursing and medical management plans for treatment, which should be regularly monitored and adapted according to clinical need;
- » There is need to recognise that dehydration affects people across all care settings. Systems need to be designed and delivered that reflect the needs of individuals – one solution will not suit all;
- » Good hydration plays a role in the prevention of avoidable harm associated with other known patient safety issues.

### Conclusion

Good hydration is a core element of clinical care, yet our review of incident reports from the NRLS suggests that this aspect of care is all too frequently overlooked or poorly addressed.

There appear to be several reasons for this, including poorly designed systems, a lack of local guidance, failures in recognition, failures in the implementation of management plans, poor awareness, a lack of monitoring, unclear lines of responsibility and excessive demands on nursing time.

Dehydration can lead to avoidable harm, such as pressure ulcers, falls and urinary tract infections, and can contribute to poor patient outcomes resulting from acute kidney injury and sepsis. Unfortunately, dehydration is a fairly common event, affecting some of the most vulnerable patients in our care, including older people, people with dysphagia and long-term conditions, and those experiencing trauma – yet we continue to neglect this aspect of care by failing to manage hydration well. **NT**

### References

- Care Quality Commission (2010) *Essential Standards for Quality and Safety*. [tinyurl.com/CQC-Section20](http://tinyurl.com/CQC-Section20)
- National Patient Safety Agency (2006) *Water the Forgotten Nutrient – From Pipe to Patient*. [tinyurl.com/NPSA-water](http://tinyurl.com/NPSA-water)
- National Patient Safety Agency and Royal College of Nursing (2007) *Hydration Best Practice Toolkit for Healthcare*. [tinyurl.com/NPSA-hydration](http://tinyurl.com/NPSA-hydration)
- Patient Safety First (2012) *Nutrition and Hydration Week – a Taste of Patient Safety*. [tinyurl.com/PatientSafety-Nutrition](http://tinyurl.com/PatientSafety-Nutrition)
- Patients Association (2011) *Listen to Patients, Speak up for Change*. [tinyurl.com/PA-SpeakUp](http://tinyurl.com/PA-SpeakUp)
- Patients Association (2012) *We’ve Been Listening, Have You Been Learning?* [tinyurl.com/PA-speaking-out](http://tinyurl.com/PA-speaking-out)
- Water for Health Alliance (2005) *Water for Healthy Ageing. Hydration Best Practice Toolkit for Care Homes*. [tinyurl.com/WaterUK-CareHomes](http://tinyurl.com/WaterUK-CareHomes)