Water for Health

Hydration Best Practice Toolkit for Hospitals and Healthcare

Royal College of Nursing

NHS
National Patient Safety Agency

part of the
nutrition now
campaign

"Water is a basic nutrient of the human body and is critical to human life"

World Health Organization - Water Sanitation and Health (WSH)

This toolkit has been created as a resource within the Royal College of Nursing Nutrition Now campaign. It aims to assist nurses, healthcare workers, caterers and other service providers to introduce good hydration and to implement the health benefits of drinking enough water.

This toolkit contains factsheets, checklists and advice to enable you to improve water consumption with patients and hospital staff. It contains:

For the sake of simplicity, we will use the word 'patient' throughout this toolkit to mean patients, clients, service users and residents. To protect their health, staff, families and friends should also observe the principles of good hydration.

This toolkit is supported by websites that contain the information included here, plus extra fact sheets, advice, supporting statements and additional advice on achieving hydration best practice. Visit:

- www.waterforhealth.org.uk
- www.rcn.org.uk
- www.npsa.nhs.uk
- www.hospitalcaterers.org
- www.supplychain.nhs.uk
- www.patients-association.org.uk
- www.healthcarecommission.org.uk

"Where clinically appropriate, patients should have access to fresh drinking water, at the correct temperature, at all times. It is recommended that patients are given assistance with their drinking while the water is at the correct temperature"

Water for Health Alliance

1 Introduction to the toolkit

Dear Colleague

Water is essential to health, and is one of the six basic nutrients (along with carbohydrates, fats, vitamins, proteins and minerals), but is often overlooked. This can result in vulnerable individuals missing out on the support they need to help maintain a healthy level of hydration.

This toolkit has been developed to help protect the well-being and safety of patients by encouraging hydration best practice in the hospital environment. It provides practical advice on how to minimize the risk and potential harm that poor hydration can cause, and offers solutions to improving the provision of water to patients in hospitals

Strong evidence on drinking water

Evidence from the National Patient Safety Agency's (NPSA) National Reporting and Learning System has identified dehydration as a patient safety issue - medical evidence shows that good hydration can assist in the management of diabetes and help prevent pressure ulcers, constipation, urinary tract infections and incontinence, kidney stones, heart disease, low blood pressure, cognitive impairment, falls, poor oral health, skin conditions and many other illnesses.

A fundamental aspect of nutritional care

The Royal College of Nursing (RCN) and the NPSA believe that if we are to make hydration a top priority, everybody in the hospital environment, from the catering staff through to the chief executive, needs to play a part. We are working with healthcare staff to continue to raise awareness of the importance of water and hydration to patient health, and ensure that the provision of water is a fundamental aspect of nutritional care.

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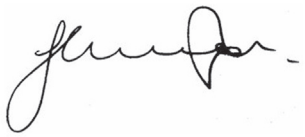
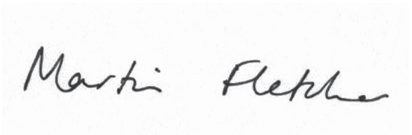
This toolkit, which builds on the RCN principles for Nutrition and Hydration, has been developed through partnership working with nurses, patient groups and key stakeholders. We hope that you find it useful, and would welcome your comments; please send these to www.rcn.org.uk/nutritionnow



Geraldine Cunningham
Head of Institute
Royal College of Nursing



Martin Fletcher
Chief Executive
National Patient Safety Agency

2 The health and economic benefits of providing water

Health benefits

Water is well known for its revitalising properties. Yet even though it is essential to health, it frequently gets overlooked as one of the six basic nutrients, along with carbohydrates, fats, vitamins, proteins and minerals. This can result in vulnerable individuals missing out on the support and guidance they need to help maintain a healthy level of hydration.

The medical evidence for good hydration shows that it can assist in preventing or treating ailments such as:

- pressure ulcers
- urinary infections and incontinence
- heart disease
- diabetes (management of)
- dizziness and confusion leading to falls
- skin conditions
- constipation
- kidney stones
- low blood pressure
- cognitive impairment
- poor oral health

Furthermore, dehydration has been shown to increase by two-fold the mortality of patients admitted to hospital with a stroke and to increase the length of hospital stay for patients with community-acquired pneumonia.

Improving hydration brings well-being and better quality of life for patients. It can allow reduced use of medication and prevent illness. It is good healthcare and dietary practice – and the right thing to do. Providing fresh water also demonstrates care of patients in a way that relatives and friends can see and enjoy.

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Economic benefits

Encouraging the drinking of fresh water makes good economic sense for healthcare professionals on tight budgets. By helping to reduce incidences of some of the more common ailments, better hydration improves well-being and can reduce the volumes of medicines that are required. It can also take away many hours of extra care time associated with illnesses and remove some of the higher cost professional involvement needed to prescribe and administer treatment.

Drinking more water may indeed encourage patients to go to the toilet more often, but the investment in staff time can be regained through patients achieving a healthy toilet function, fewer soiling incidents, prevention of urinary tract infections, less need for time-consuming enemas and less need for laxative products. The medicines that remain are proven to work more effectively when the patient is properly hydrated.

It is not often that a healthy option proves to be a cheaper solution, but taking drinking water from the tap is highly cost-effective. Available at around one tenth of a penny for each litre, tap water is as much as one thousand times cheaper than less healthy sugary and caffeinated drink options. Where patients can be encouraged to choose the healthy option and consume fresh water, hospitals can save directly on the costs of purchasing, storing and supplying more expensive drinks. Tap water in the UK is of the highest quality and is safe to drink. The costs of implementing good hydration and nutritional practice are more than balanced by the lower maintenance costs of healthier people.

WATER UK

Wise up on water!

Hydration and healthy ageing

Introduction

Water is well known for its revitalising properties. Yet even though it is vital to health, it frequently gets overlooked as an essential nutrient. This can result in vulnerable individuals missing out on the support and guidance they need to maintain a healthy level of hydration.

Older people are a diverse group with individual needs, desires, and aspirations, which include maintaining their own health and fitness. As we get older our body's needs and health concerns change due to an increasing susceptibility to degenerative disease.[1] Water can make a valuable contribution to health in old age.

Water requirements

Older people have very similar water requirements to those of younger adults. Although there is currently no agreed recommended daily intake level for water in the UK, estimates range from approximately 1.2 litres[2] to 3.1 litres per day.[3] A conservative estimate for older adults is that daily intake of fluids should not be less than 1.6 litres per day.[4] Unfortunately, many older people do not drink adequate amounts of water. A recent survey of water provision in UK care homes for the elderly found that most residents only consumed 2-4 glasses of water per day (480-960ml).[5]

Age as a factor in poor hydration

The two dietary sources of water are food and drink. About 80 per cent comes from drinks and 20 per cent is contained in food.[3] Some older people, however, have diminished appetites or poor nutrition and may miss out on the valuable component of their fluid intake contained in food.[6]

The kidneys play a vital role in regulating the amount of fluid in the body, but their function deteriorates with age. Age-related changes, such as alterations in hormone levels, also mean that water balance takes longer to be restored even after a drink has been consumed.[7] Although fluid balance can usually be maintained under normal circumstances, dehydration can occur as a result of:

- cognitive impairment
- changes in functional ability
- medication such as laxatives, diuretics or hypnotics
- illness, or
- stress arising from other factors.[8]

In addition, thirst, the body's natural response to dehydration, has been shown to be impaired in older people.[9] Patients with stroke or those who are suffering from Alzheimer's disease may be particularly insensitive to thirst.[10]

'Tis a little thing
To give a cup of water; yet its draught
Of cool refreshment, drain'd by fever'd lips,
May give a shock of pleasure to the frame
More exquisite than when nectarean juice
Renews the life of joy in happiest hours.

Sir Thomas Noon Talfourd (English dramatist, poet and jurist (1795 - 1854), Ion (act I, sc. 2), (Sonnet III)

Benefits of good hydration

Some of the medical evidence for the benefits of good hydration in older people is summarised below.

Pressure ulcers: Poorly hydrated individuals are twice as likely to develop pressure ulcers because dehydration reduces the padding over bony points.[11] Fluid intake to correct impaired hydration, increases levels of tissue oxygen and enhances ulcer healing.[12]

Constipation: Inadequate fluid intake is one of the most frequent causes of chronic constipation.[13] It is more frequent in incapacitated or institutionalised older people, affecting some 42 per cent of patients admitted to geriatric wards.[14] In individuals who are not adequately hydrated, drinking more water can increase stool frequency and enhance the beneficial effect of daily dietary fibre intake.[15]

Urinary infections and continence: Water helps maintain a healthy urinary tract and kidneys. Maintaining adequate hydration levels, rather than high fluid intake, per se, is important in the prevention of urinary tract infection.[16] Many older people are loath to drink during the evening to eliminate the need to go to the toilet during the night. Evidence shows, however, that the restriction of overall fluid intake does not reduce urinary incontinence frequency or severity.[17]

Kidney and gallstones: Good hydration can reduce the risk of kidney stone formation by 39 per cent because dilute urine helps to prevent crystallization of stone-forming salts.[18] Consumption of water at regular intervals can also help by diluting bile and stimulating gallbladder emptying, which in turn helps to prevent gallstone formation.[19]

Heart disease: Adequate hydration reduces the risk of coronary heart disease by 46 per cent in men and 59 per cent in women. It also protects against blood clot formation by decreasing blood viscosity.[20]

Low blood pressure: Many older people suffer a drop in blood pressure on standing, which sometimes causes them to pass out. Drinking a glass of water five minutes before standing helps stabilise blood pressure, and prevents fainting.[21]

Diabetes: Water is an essential part of the dietary management of diabetes since dehydration can worsen diabetic control.[3] In poorly controlled diabetic individuals, high urine output can increase the risk of dehydration.[22] Good hydration levels also help to slow down the development of diabetic ketoacidosis during insulin deficiency in Type 1 diabetes, and help maintain healthy blood sugar levels.[23]

Cognitive impairment: Dehydration adversely affects mental performance. Symptoms of mild dehydration include light-headedness, dizziness, headaches and tiredness,[24] as well as reduced alertness and ability to concentrate.[25,26] Once thirst is felt (0.8-2 per cent dehydration[24]), mental function may be affected by as much as 10 per cent.[25] Mental performance deteriorates progressively as the degree of dehydration increases. In older people this impacts on cognitive function leading to increasing frailty, functional decline, and a reduction in the quality of life.[27]

Falls: The risk of falls increases with age and in older people this can result in injury and fractures. A broken hip, for example, can lead to a reduced quality of life, over and above the trauma and hurt. Such individuals rarely get back to the same degree of independent living as they enjoyed before they fell.[28] Dehydration has been identified as one of the risk factors for falls in older people, since it can lead to a deterioration in mental state, and increase the risk of dizziness and fainting. The maintenance of adequate levels of hydration in older people could be effective in preventing falls, particularly as part of a multifactoral falls prevention strategy.[29] In addition, in hard water areas, tap water provides a significant proportion of dietary calcium, which is essential for good bone mineral density and the prevention of osteoporosis and fractures.[30]

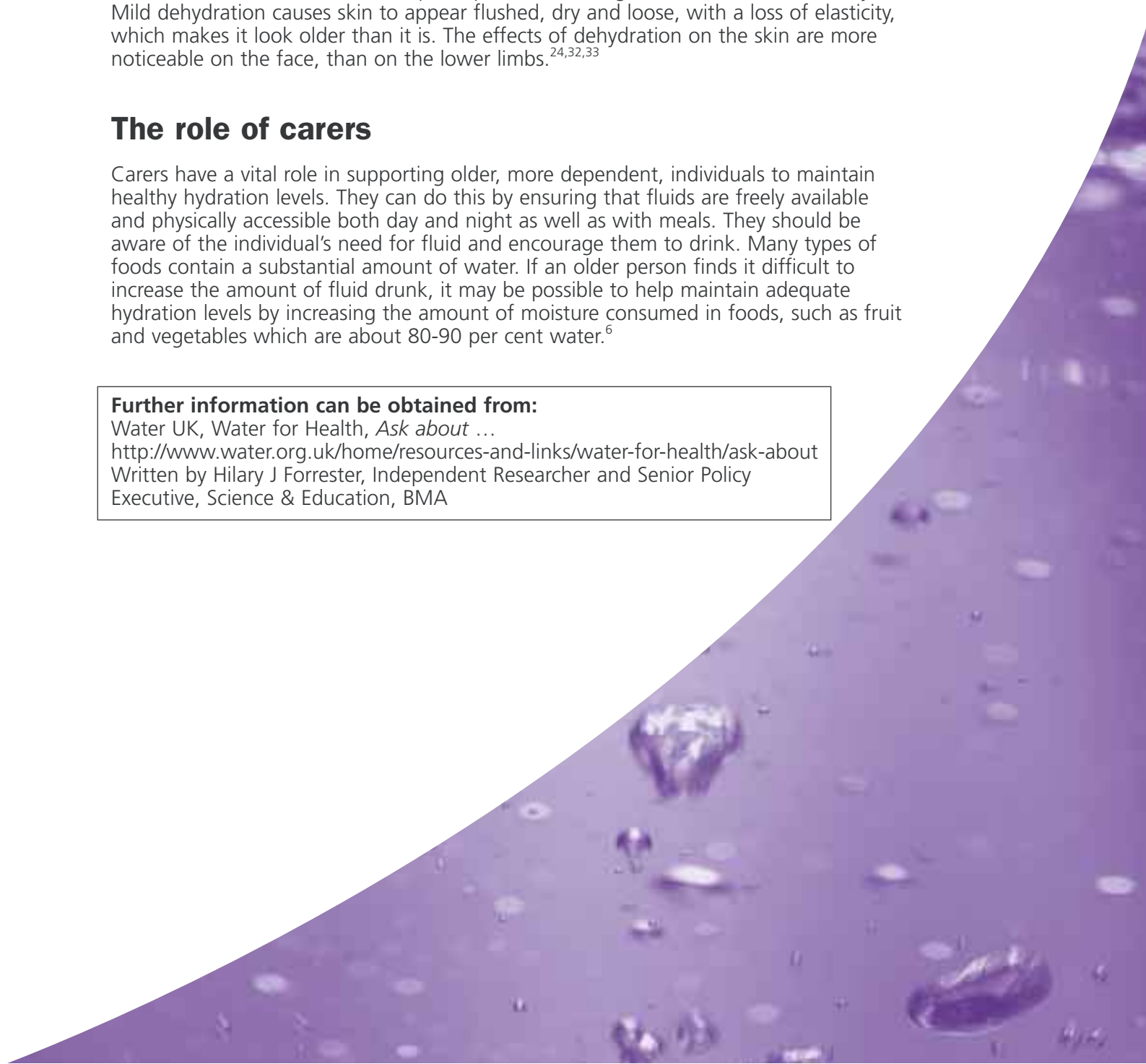
Hospitalisation in older people: Dehydration has been shown to increase by two-fold the mortality of patients admitted to hospital with stroke. It also increases the length of hospital stay for patients with community-acquired pneumonia.[31]

Skin: Being well hydrated is a good way to keep skin healthy and young-looking. The skin acts as a water reservoir and participates in fluid regulation for the whole body. Mild dehydration causes skin to appear flushed, dry and loose, with a loss of elasticity, which makes it look older than it is. The effects of dehydration on the skin are more noticeable on the face, than on the lower limbs.[24,32,33]

The role of carers

Carers have a vital role in supporting older, more dependent, individuals to maintain healthy hydration levels. They can do this by ensuring that fluids are freely available and physically accessible both day and night as well as with meals. They should be aware of the individual's need for fluid and encourage them to drink. Many types of foods contain a substantial amount of water. If an older person finds it difficult to increase the amount of fluid drunk, it may be possible to help maintain adequate hydration levels by increasing the amount of moisture consumed in foods, such as fruit and vegetables which are about 80-90 per cent water.[6]

Further information can be obtained from:
Water UK, Water for Health, *Ask about …*
http://www.water.org.uk/home/resources-and-links/water-for-health/ask-about
Written by Hilary J Forrester, Independent Researcher and Senior Policy Executive, Science & Education, BMA



1 British Medical Association. Health profiles of older people. In: Health and ageing web resource. London: BMA 2003. http://www.bma.org.uk/ap.nsf/Content/HAhlthprofile

2 Food Standards Agency. Eat well, be well. Drinking enough? http://www.eatwell.gov.uk/healthydiet/nutritionessentials/drinks/drinkingenough/#elem256315

3 Dietary Reference Intakes for Water, Potassium, Sodium, Chloride and Sulfate (2004) Institute of Medicine of the National Academies. Washington DC: The National Academies Press. http://books.nap.edu/catalog/10925.html

4 Hodgkinson B, Evans D, and Wood J. Maintaining oral hydration in older adults: a systematic review. International Journal of Nursing Practice 2003;9:S19-28

5 Water Provision in Care Homes For the Elderly. A survey by the Royal Society for the Promotion of Health, in cooperation with the Water for Health Alliance. October 2003. http://www.rsph.org/water/survey.asp

6 Royal Institute of Public Health. Eating for Health in Care Homes - A practical nutrition handbook. London: RIPH 2004

7 Luckey Ad, Parsa CJ. Fluid and electrolytes in the aged. Archives of Surgery 2003;138:1055-60

8 Stout NR, Kenny RA, Baylis PH. A review of water balance in ageing in health and disease. Gerontology 1999;45:61-66

9 Kenney WL, Chiu P. Influence of age on thirst and fluid intake. Medicine and Science in Sports and Exercise 2001;33:1524-32

10 Albert SG, Nakra BR, Grossberg GT, Carminal Er. Drinking behaviour and vasopressin responses to hyperosmolarity in Alzheimer's disease. International Psychogeriatrics 1994;6:79-86

11 Casimiro C, Garcia-de-Lorenzo A, Usan L. Prevalence of decubitus ulcer and associated risk factors in an institutionalzed Spanish elderly population. Nutrition 2002;18:408-414

12 Stotts NA, Hopf HW. The link between tissue oxygen and hydration in nursing home residents with pressure ulcers: preliminary data. Journal of Wound, Ostomy & Continence Nursing 2003;30:184-90

13 Klauser AG, Beck A, Schindlbeck NE, Muller-Lissner SA. Low fluid intake lowers stool output in healthy male volunteers. Zeitschrift fur Gastroenterologie 1990;28:606-9

14 Read NW, Abouzekry L, Read MG, Howell RP, PttewellD and Donnelly TC. Anorectal function in elderly patients with fecal impaction. Gastroenterology 1985;89:959-66

15 Anti M, Pignataro G, Armuzzi A, Valenti A, Iascone E, Marmo R, Lamaszza A, Pretaroli AR, Pace V, Leo P, Castelli A, Gasbarrini G. Water supplementation enhances the effect of high-fibre diet on stool frequency and laxative consumption in adult patients with function constipation. Hepato-Gastroenterology 1998;45:727-32

16 Eckford SD, Keane DP, Lamond E, Jackson SR, Abrams P. Hydration monitoring in the prevention of idiopathic urinary tract infections in premenopausal women. British Journal of Urology 1995;76:90-3

17 Gray M, Krissovich M. Does fluid intake influence the risk for urinary incontinence, urinary tract infection, and bladder cancer? Journal of wound ostomy and continence nursing 2003;30:126-31

18 Curhan GC, Willett WC, Speizer FE, Spiegelman D, Stampfer MJ. Comparison of dietary calcium with supplemental calcium and other nutrients as factors affecting the risk for kidney stones in women. Annals of Internal Medicine 1997;126:497-504

19 Math MV, Rampal PM, Faure XR and Delmont JP. Gallbladder emptying after drinking water and its possible role in prevention of gallstone formation. Singapore Medical Journal 1986;27:531-2

20 Chan J, Knutsen SF, Blix GG, Lee JW, Fraser GE. Water, other fluids, and fatal coronary heart disease. American Journal of Epidemiology 2002;155:827-33

21 Lu CC, Diedrich A, Tng CS, Parajape SY, Harris PA, Byrne DW, Jordan J, Robertson D. Water ingestion as a prophylaxis against syncope. Circulation 2003;108:2660-5

22 The kidney at a glance. Eds C O'Callaghan and BM Brenner. London: Blackwell Science 2000

23 Burge MR, Garcia N, Qualis CR, Schade DS. Differential effects of fasting and dehydration in the pathogenesis of diabetic ketoacidosis. Metabolism 2001;50:171-177

24 Kleiner SM. Water: An essential but overlooked nutrient. Journal of the American Dietetic Association 1999:99:201-7

25 Rogers PJ, Kainth A, Smit HJ. A drink of water can improve or impair mental performance depending on small differences in thirst. Appetite 2001;36:57-58

26 Sherriffs SM, unpublished data, as quoted in Maughan RJ. Impact of mild dehydration on wellness and on exercise performance. European Journal of Clinical Nutrition 2003;57 (Suppl 2):S19-23

27 Wilson M-MG and Morley JE. Impaired cognitive function and mental performance in mild dehydration. European Journal of Clinical Nutrition 2003;57 (Suppl 2):S24-S29

28 Calcium and vitamin D for preventing hip fractures. Bandolier 1997; 37-4. http://www.jr2.ox.ac.uk/bandolier/band37/b37-4.html

29 American Geriatrics Society, British Geriatrics Society and American Academy of Orthopaedic Surgeons Panel on Falls Prevention. Guidelines for the prevention of falls in older persons. Journal of the American Geriatrics Society 2001;49:664-672. www.americangeriatrics.org/products/positionpapers/Falls.pdf

30 Expert Group on Vitamins and Minerals. Review of calcium. Food Standards Agency. EVM/01/12.REVISEDMAR2002. http://www.food.gov.uk/multimedia/pdfs/evm0112p.pdf

31 Thomas DR, Tariq SH, Makhdomm S, Haddad R, Moinuddin A. Physician misdiagnosis of dehydration in older adults. Journal of the American Medical Directors Association 2004;5:S31-34

32 Eisenbeiss C, Welzel J, Eichler W and Klotz K. Influence of body water distribution on skin thickness: measurements using high-frequency ultrasound. British Journal of Dermatology 2001;144:947-951

33 Katayama S. Aging mechanism associated with a function of biowater. Physiological Chemistry & Physics & Medical NMR 1992;24:43-50

WATER UK

Water UK represents UK water and wastewater service suppliers at national and European level.

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Telephone: 020 7344 1844. Web: www.water.org.uk
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Wise up on water!

Water and cancer prevention

Introduction

Next time you feel thirsty - have a drink of water. Not only will you be quenching your thirst, but you will also be helping to protect yourself against three of the biggest killer cancers.

During our lifetime one in three of us will be diagnosed with cancer and one in four will die from cancer. Of the many different types of cancer, the four most common are cancer of the breast, lung, large bowel and prostate. These four alone account for over half of all cases diagnosed. They are also reflected in the most common causes of cancer death. In 2002, 22 per cent of all cancer deaths were from lung cancer, followed by cancer of the large bowel (10 per cent), breast cancer (8 per cent), and prostate cancer (6 per cent).[1] Research suggests that drinking enough water every day, could reduce your risk of developing cancer of the large bowel, breast and prostate.

Cancer of the large bowel

Large bowel cancer, or colorectal cancer, is the third most common cancer in men, and the second most common cancer in women in the UK. Every year there are 18,500 new cases of colorectal cancer in men, and over 16,000 cases in women.[2]

Water plays a major role in digestion and gut function and yet it is frequently overlooked in studies considering diet and the risk of cancer of the large bowel. Three studies in which the effect of water was considered, found that people who maintained good levels of hydration had a reduced risk of large bowel cancer compared with people whose water intake was low. The extent to which the cancer risk was reduced varied between the studies. In one study, the risk of colon cancer was reduced by 45 per cent in women and 32 per cent in men who drank four or five glasses of water per day, compared to those who drank only two or less glasses per day.[3] In the other two studies the protective effect was found to be greatest for men, with risk reductions for rectal cancer of 92 per cent[4] and for colorectal cancer 42 per cent.[5] The studies support the potential beneficial effect of adequate water intake in reducing colorectal cancer risk.

One explanation as to why good hydration protects against large bowel cancer is that water may help to dilute toxic compounds in the bowel and speed up the passage of stools so that any harmful substances (carcinogens) spend less time in contact with the bowel lining. The cancer-protective benefits do not appear to be due to the source of water consumed, but it is possible that other unidentified lifestyle or dietary factors are relevant.[6]

Breast cancer

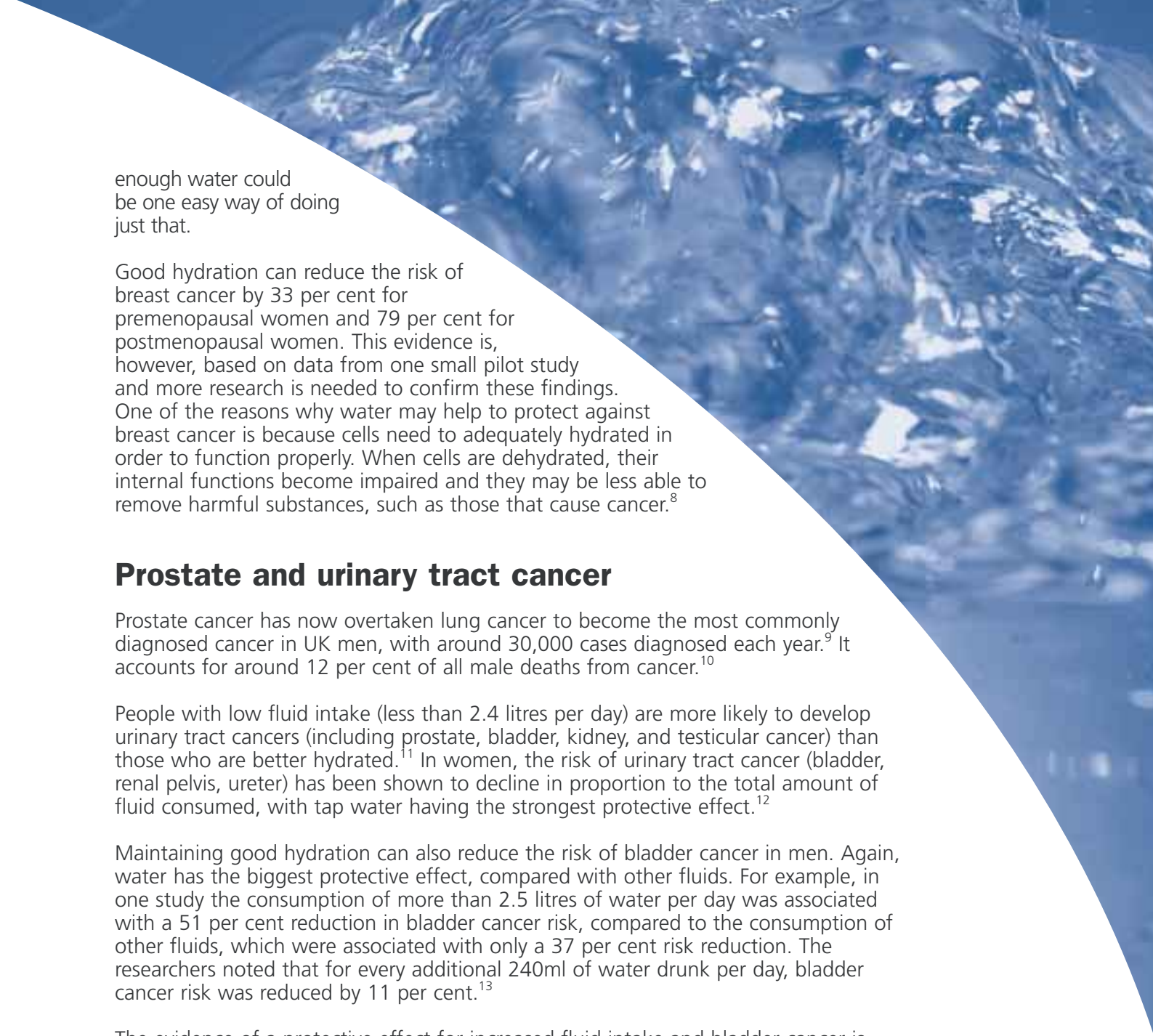
Breast cancer claims the lives of over 13,000 women a year – 8,000 pre-menopausal women are diagnosed, of which 15 per cent are from the 20-30 age group.[7] Most women would welcome any opportunity to reduce their chances of developing breast cancer. Drinking

1. On a sedentary day, try to drink around two litres of water.
2. Start by drinking a glass of fresh water when you get up in the morning.
3. If you are not used to drinking water regularly, try initially replacing just one of your other drinks a day with fresh water, increasing your consumption as the weeks go by.
4. Ask for a glass of tap water to go with your coffee and tea in cafes.
5. Drink a glass of water before and during each meal.
6. Hot water with a piece of fruit in - like lemon, lime, orange etc.- often helps those who want a hot drink.
7. Carry a bottle filled with chilled tap water with you whenever you leave the house.
8. During exercise, drink at 10 to 15 minute intervals or think of it as a full glass every 30 minutes - drink slowly and drink early, it's physically easier to do this when you are still feeling fresh.
9. Keep a check on your urine. As a general guide to hydration, it should be plentiful, pale in colour and odourless.
10. Ask for a jug of iced tap water with your meal when in restaurants and with your alcohol when in bars – good establishments will be happy to provide this.

All relevant medical practice and care guidance must be observed before considering these suggestions.

In conclusion …

The benefits of good hydration to protect against cancer have not been well studied and the current findings are considered to be inconclusive.[6] More research is urgently needed in this area. The evidence that does currently exist, suggests that good hydration makes good sense as part of a healthy lifestyle. Most of us would agree that any opportunity to protect ourselves against three of the biggest cancer killers would be well worth taking.



enough water could be one easy way of doing just that.

Good hydration can reduce the risk of breast cancer by 33 per cent for premenopausal women and 79 per cent for postmenopausal women. This evidence is, however, based on data from one small pilot study and more research is needed to confirm these findings. One of the reasons why water may help to protect against breast cancer is because cells need to adequately hydrated in order to function properly. When cells are dehydrated, their internal functions become impaired and they may be less able to remove harmful substances, such as those that cause cancer.[8]

Prostate and urinary tract cancer

Prostate cancer has now overtaken lung cancer to become the most commonly diagnosed cancer in UK men, with around 30,000 cases diagnosed each year.[9] It accounts for around 12 per cent of all male deaths from cancer.[10]

People with low fluid intake (less than 2.4 litres per day) are more likely to develop urinary tract cancers (including prostate, bladder, kidney, and testicular cancer) than those who are better hydrated.[11] In women, the risk of urinary tract cancer (bladder, renal pelvis, ureter) has been shown to decline in proportion to the total amount of fluid consumed, with tap water having the strongest protective effect.[12]

Maintaining good hydration can also reduce the risk of bladder cancer in men. Again, water has the biggest protective effect, compared with other fluids. For example, in one study the consumption of more than 2.5 litres of water per day was associated with a 51 per cent reduction in bladder cancer risk, compared to the consumption of other fluids, which were associated with only a 37 per cent risk reduction. The researchers noted that for every additional 240ml of water drunk per day, bladder cancer risk was reduced by 11 per cent.[13]

The evidence of a protective effect for increased fluid intake and bladder cancer is controversial, and other studies have found no association between total fluid intake and the risk of bladder cancer,[14,15] or even a slightly increased risk.[16] These findings may arise because the cause of bladder cancer is not well understood. One explanation is that higher levels of fluid consumption may reduce contact between the bladder and carcinogens by diluting the urine and increasing the frequency of urination.[13] But, if the fluids taken in contain substances that are carcinogenic to the bladder, any increase in the total consumption of such drinks would also increase the amount of carcinogens to which the bladder was exposed.[16] Coffee and alcohol are examples of substances that can increase the risk of bladder cancer.[17,18]

There has been some concern that long-term exposure to chlorinated water may increase the risk of bladder cancer. Chlorine is used to disinfect drinking water. The amount of chlorine in water leaving treatment works is safe and well within the World Health Organisation guidelines for drinking-water quality.[19] Where there is evidence of an association between chlorinated water and bladder cancer, the increased risk, compared to individuals with no exposure, appears to be small.[13]

Further information can be obtained from:
Water UK, Water for Health, *Ask about …*
http://www.water.org.uk/home/resources-and-links/water-for-health/ask-about
Written by Hilary J Forrester, Independent Researcher and Senior Policy Executive, Science & Education, BMA

1 Cancer statistics from: Cancer research UK: http://www.cancerresearchuk.org/
Office for National Statistics: http://www.statistics.gov.uk/default.asp
Breast cancer care: http://www.breastcancercare.org.uk/Breastcancer/Breastcancerfactsandstatistics
2 Cancer research UK. Specific cancers. Bowel (colorectal) cancer. Page updated 20/12/2004.
http://www.cancerresearchuk.org/aboutcancer/specificcancers/colorectal_cancer?version=1
3 Shannon J, White E, Shattuck AL, Potter JD. Relationship of food groups and water intake to colon cancer risk. Cancer Epidemiology, Biomarkers & Prevention 1996;5:495-502
4 Tang R, Wang J-Y, Lo S-K and H L-L. Physical activity, water intake and risk of colorectal cancer in Taiwan: a hospital-based case-control study. International Journal of Cancer 1999;82:484-9
5 Slattery ML, Caan BJ, Anderson KE and Potter JD. Intake of fluids and methylxanthine-containing beverages: association with colon cancer. International Journal of Cancer 1999;81:199-204
6 Altieri A, La Vecchia C and Negri E. Fluid intake and risk of bladder and other cancers. European Journal of Clinical Nutrition 2003;57 (Suppl 2):S59-S68
7 Breast Cancer Care. Breast Cancer Facts and Statistics. Statistics updated October 2004.
http://www.breastcancercare.org.uk/Breastcancer/Breastcancerfactsandstatistics
8 Stookey JD, Belderson PE, Russell JM, Barker ME. Correspondence re: J. Shannon et al. Relationship of food groups and water intake to colon cancer risk. Cancer Epidemiology, Biomarkers & Prevention 1997;6:657-658
9 Cancer research UK. Specific cancers. Prostate cancer. Page updated 20/12/2004.
http://www.cancerresearchuk.org/aboutcancer/statistics/incidence?version=1
10 Cancer research UK. Statistics. Mortality. Page updated 12/01/2005
http://www.cancerresearchuk.org/aboutcancer/statistics/mortality?version=1
11 Bitterman WA, Farhadian H, Abu S-C, Lerner D, Amoun H, Krapf D, Makov UK. Environmental and nutritional factors significantly associated with cancer of the urinary tract among different ethnic groups. Urologic Clinic of North America 1991;18:501-8
12 Wilkens LR, Kadir MM, Kolonel LN, Nomura AM, Hankin JH. Risk factors for lower urinary tract cancer: the role of total fluid consumption, nitrites and nitrosamines, and selected foods. Cancer Epidemiology, Biomarkers & Prevention 1996;5:161-166
13 Michaud DS, Spiegelmann D, Clinton SK, Rimm EB, Curham GC, Willett WC. Fluid intake and the risk of bladder cancer in men. New England Journal of Medicine 1999;340:1390-7
14 Risch HA, Burch JD, Miller AD, Hill GB, Steele R, Howe GR. Dietary factors and the incidence of cancer of the urinary bladder. American Journal of Epidemiology 1988;127:1179-91
15 Bruemmer B, White E, Vaughn TL, Cheney CL. Fluid intake and the incidence of bladder cancer among middle-aged men and women in a three-county area of western Washington. Nutrition and Cancer 1997;29:163-8
16 Geoffroy-Perez B, Cordier S. Fluid consumption and the risk of bladder cancer: results of a multicenter case-control study. International Journal of Cancer 2001;93:880-887
17 Clavel J, Cordier S. Coffee consumption and bladder cancer risk. International Journal of Cancer 1991;47:207-12
18 Kunze E, Chang-Claude J and Frentzel-Beyme R. Life style and occupational risk factors for bladder cancer in Germany. A case-control study. Cancer 1992;69:1776-90
19 Drinking Water Inspectorate. Information leaflets. Chlorine, smell, taste. Updated 10 July 2002.
http://www.dwi.gov.uk/pubs/chlorine/index.htm

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Water in the workplace

Introduction

Water is a vital nutrient for life, but in a busy working environment it is easy to overlook the importance of good hydration for our daily health. Everybody wants to be healthy at work and a healthier workforce leads to improved productivity and lower sickness absence. Figures from the CBI show that sickness absence costs UK employers £12bn a year, with 168 million working days lost in 2004.

Good hydration contributes to workers' health and safety. Even mild levels of dehydration adversely affect both physical and mental performance, but these effects can be made worse by the physical demands of the job, a hot working environment, intake of caffeinated drinks, or the need to wear protective clothing.[1] Good hydration also has many long-term health benefits, making it an essential part of any healthy lifestyle.

What is good hydration?

There is currently no agreement about how much water we should drink each day.[2] Some estimates do exist and these range from 1.2 litres,[3] to 3 litres (for men) or 2.2 litres (for women). These amounts represent about 81 per cent of our total daily water requirement, since on average about 19 per cent of the water we need comes from the food we eat.[4]

Dehydration is defined as a 1 per cent or greater loss of body weight as a result of fluid loss. We usually feel thirsty when dehydration reaches 0.8-2 per cent.[5] This means that you can't rely on thirst to tell you when it is time to have a drink, because by the time you feel thirsty, you are already slightly dehydrated. The key is to keep topping up with water throughout the day.[6]

Look out for some of the early signs of dehydration which include light-headedness, dizziness, tiredness, irritability, headache, sunken features (particularly the eyes), flushed skin, heat intolerance, dry mouth, throat and eyes, and skin that is loose and lacks elasticity. There may be a burning sensation in the stomach, urine output will be reduced, and may appear darker than usual.[7,8,9,10]

Water is mainly lost from the body as urine, but we also lose water through evaporation from our lungs and skin when we breathe and sweat. A small amount of water is lost in faeces. In hot weather, or when we are active, the body loses more water and so we need more to drink. In order to remain healthy, water gains and losses must be balanced – this is what constitutes good hydration. Our bodies are very efficient at regulating daily water balance provided adequate food and the right fluids are available.

Benefits of good hydration

Preventing and relieving headaches

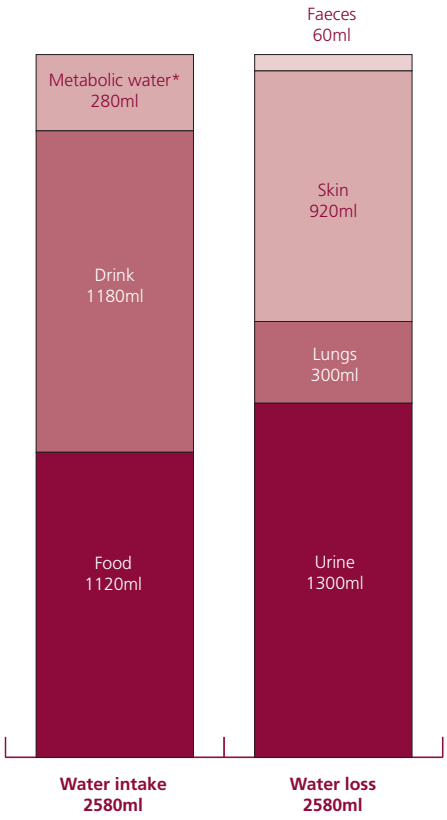
Getting a headache is one of the early signs of dehydration, together with feelings of tiredness and light–headedness.[5] Headaches resulting from mild dehydration can often be relieved quickly (within 30 minutes) by drinking between 200ml and 1.5 litres of water.[12] Drinking an extra litre of water per day, has been shown to help reduce headache duration and intensity in individuals who are susceptible to headache, or migraine.[13]

Concentration and mental performance

Mild dehydration adversely affects mental performance, reduces alertness, and increases feelings of tiredness and perceived effort.[14,2] Once thirst is felt, mental performance can decrease by about 10 per cent.[15] The functions affected include memory, attention, concentration and reaction time. As the degree of dehydration increases, mental

performance deteriorates further[16,2] and this may compromise safety particularly for those operating machinery or driving. Hand-eye motor coordination is also impaired even at 1 per cent dehydration, making it more difficult to perform delicate or detailed work.[17] Drinking water can have an immediate "alerting" and "revitalising" effect.[15]

Example of average daily water gains and losses[11]



*water produced when the body uses food for energy

Prevention of cancer and the risk of chronic diseases

Drinking enough water can help to protect the body against certain chronic diseases. Individuals who maintain good hydration levels have been shown to have a reduced risk of developing the following conditions:

- breast,[18] colorectal,[19] urinary tract cancer[20,21]
- coronary heart disease[22]
- thrombosis[23]
- stroke[23]
- gallstones[24]
- kidney and bladder stones[25,26]

Maintaining a healthy workforce and helping employees avoid long term health problems will become increasingly important as the Employment Equality (Age) Regulations 2006 come into force in Great Britain.[27] These will introduce a national default retirement age of 65 and make compulsory retirement below age 65 unlawful (unless objectively justified). The regulations will widen the age range of the workforce by placing a duty for employers to consider an employee's request to continue working beyond retirement. They will help to ensure that the contribution of older individuals is valued in the workplace and put an end to age discrimination at work.

Preventing urinary tract infections

Water helps to keep the urinary tract and kidneys healthy. Urine is formed by the kidneys to get rid of water-soluble waste products. Adults normally pass about 1.5-2 litres of urine per day. The kidneys play a vital role in controlling the amount of water in our bodies by increasing urine dilution to remove excess water and reducing urine dilution to retain water and prevent dehydration.[28]

Urinary tract infection (UTI) is more common in women than men, with some 5-10 per cent of women suffering from recurrent attacks. In the majority of cases, UTI is confined to the lower urinary tract, the bladder and urethra and although uncomfortable, does not cause serious harm. Occasionally, the infection may spread to the kidneys where other complicating factors such as kidney stones or urinary obstruction can lead to kidney damage.[29]

When fluid intake and urination frequency are reduced the risk of getting a UTI can be doubled.[30] Low urine output is also associated with recurrent UTI.[23] These observations are of particular concern for individuals, such as call centre staff and drivers, whose access to drinking water or toilet facilities may be restricted during working hours. One of the most important measures for preventing recurrent UTI is to maintain good hydration levels throughout the day.[31] Water intake should be at least two litres in 24 hours, or enough to pass two litres of urine daily. Frequent and complete bladder emptying is also necessary to prevent the establishment of bacteria in the bladder. If symptoms are severe or do not disappear completely within 24-36 hours you should consult your doctor.[29]

Relief of constipation

Inadequate fluid intake is one of the most frequent causes of chronic constipation.[32] In individuals who are not adequately hydrated, drinking more water can increase stool frequency and enhance the beneficial effect of daily dietary fibre intake.[33] Water intake should be maintained if saline laxatives are used to treat constipation, because these can have a dehydrating effect which reduces the effectiveness of the treatment.[34]

Maintaining a healthy weight

Water is a vital component of any healthy diet, including weight loss regimens. Drinking more water is often recommended to help weight loss[35,36] because, for example, drinking water before a meal can help to fill the stomach and decrease appetite.[37] Early signs of dehydration may include a burning sensation in the stomach,[5] stomach pain[38] or the feeling of an 'empty stomach'[8] which can be mistaken for hunger pangs. Water is the ideal alternative to soft drinks because it contains no calories. In addition, it has been found that drinking 500ml of water can increase the metabolic rate by 30 per cent. This means that drinking an extra 1.5 litres a day could increase daily energy expenditure by approximately 200kJ. Although only a small increase, over the course of a year, this additional metabolic activity would burn 17,400kcal.[36] Some of these calories are used by the body to warm the water from 22 to 37°C, so drinking colder water could use up even more calories! There is also some evidence to suggest that increased hydration encourages the body to breakdown fat.[39,2]

One theory linking mild dehydration to obesity suggests that low fluid intake may stimulate a preference for a high fat diet. Of all the nutrients, fat generates the most metabolic water when it is broken down by the body. A high fat diet could, therefore, be part of a compensatory mechanism to deal with perpetually low water intakes.[40]

Physical performance and exercise

Mild dehydration of 1-2 per cent can reduce physical work capacity by a quarter. Both aerobic and endurance activities are affected and the drop in performance becomes worse in a hot environment and as the level of dehydration increases.[4,41] Muscle strength is relatively unaffected by moderate dehydration, but when muscle strength does decline, the upper body muscles are affected more than the lower body muscles.[41] Individuals with physically active jobs may experience a reduction in work capacity and could be more susceptible to heat stress when they are dehydrated. In physically demanding circumstances workers should ensure proper hydration by drinking water before, during and after the job.[1]

Health-conscious employers often provide access to gym and sports facilities for their staff. In addition, more individuals are choosing to visit the local gym before or after work because of the health benefits of exercise. The amount of water lost during exercise depends on sweating rates and evaporative water loss from exhaled air. Water loss can be quite high, particularly during long periods of exercise or if the environment is hot. This can quickly lead to dehydration and a decline in physical performance.[42]

It is important to be well hydrated before you begin exercising, and then during exercise, aim to drink at frequent intervals (about every 10 to 15 minutes). There is no standard recommended amount of water consumption during exercise, but estimates suggest that you should consume about the equivalent of a full glass every 30 minutes (approximately 200ml) for most forms of recreation and competitive exercise. More would be required for superior athletes competing at higher intensities in warmer environments.[43] For exercise up to an hour, water is adequate for fluid replacement as long as sufficient salt is available from a balanced diet. You should continue to drink water after exercising to ensure sweat losses are fully replenished.[44] Swimmers also need to maintain good hydration levels since water immersion makes you less sensitive to thirst. This coupled with exercise means that you could be more susceptible to dehydration.[45]

Oral health

Having a dry mouth is one of the early signs of dehydration, but a reduction in saliva production can be a risk factor for dental disease. Saliva is essential for good oral health because:

- it neutralizes the acid created by the bacteria which cause tooth decay
- lubricates oral membranes
- contains minerals that enable tooth repair, and
- contains antibacterial agents that inhibit the growth of oral bacteria and help prevent gum disease.[46]

Water is the best alternative to fizzy drinks, squashes and "juice drinks" because these contain a lot of sugar which can damage teeth. Sports drinks can also contribute to tooth decay and are usually very high in calories.[47]

Healthy pregnancy

Pregnant women have a slightly increased water requirement due to the needs of the fetus and the amniotic fluid. This has been calculated to be an extra 30ml of total fluid intake per day (including water in foods), or approximately 2.3 litres consumed as beverages. The actual amount is likely to vary between individuals and would be higher in hot weather.[4]

Poor hydration during pregnancy can reduce the amount of amniotic fluid surrounding the baby in the womb. As a result, the baby may receive too few nutrients and oxygen, and may not be able to turn to the head-down position before birth. Good hydration during pregnancy is very important, since drinking water is an effective way of restoring amniotic fluid volume.[48]

Caffeine and alcohol

Caffeine

Ninety three percent of workers drink at least one caffeinated beverage a day.[49] Caffeine acts as a stimulant to the nervous system, and whilst its mild action may help to prevent a feeling of fatigue, it is also a weak diuretic. This means that it makes the body produce more urine, which in turn can lead to dehydration.

- A cup of fairly strong coffee contains about 60-100mg caffeine.
- The average cup of tea made from 5g tea contains 50-80mg caffeine.
- Cocoa also has about 20mg of caffeine in an average cup.
- Caffeine is also present in some carbonated soft drinks.[11]

The extent to which caffeine acts as a diuretic varies between individuals, and regular caffeine drinkers appear to be least susceptible to the dehydrating effects.[50] However, large doses of caffeine (eg 350mg or 3-4 cups of coffee) can also cause lapses in concentration and increased stress levels.[49] Since the process of drinking has been shown to alleviate the feeling of thirst, consumption of caffeine can not only result in mild dehydration, but also reduces the desire to drink.[51] Coffee drinking can also increase the risk of bladder cancer.[52] If you like to enjoy a cup of coffee at work, just be sure to drink plenty water or other non-caffeinated drinks in order to help counteract any negative effects of the caffeine.

Caffeine consumption during pregnancy increases the risk of having a miscarriage or a baby of low birth weight. The Food Standards Agency advises pregnant women not to consume more than 300mg of caffeine a day.[47]

Alcohol

Alcohol is a diuretic and, taken in excess, can lead to dehydration. For every 1g of alcohol consumed, urine excretion increases by 10ml.[53] In addition, long-term, habitual consumption of alcoholic beverages blunts the thirst response. This means that you won't feel thirsty until you are much more dehydrated than normal.[54]

Ways to cut down your drinking:

- don't start drinking alcohol if you are thirsty – quench your thirst with water or a non-alcoholic drink first
- avoid salty snacks such as crisps and nuts because these make you thirstier
- drink water or non-alcoholic drinks throughout the evening
- always have a glass or bottle of water with you as well as your alcoholic drink
- think about the strength of your drink – choose beers or lagers that contain less alcohol and are less dehydrating.

Drinking alcohol in moderation is not harmful, but problems can occur if

you drink too much. Alcohol is also high in calories and so it can make you put on weight. Heavy drinking can lead to a wide range of health problems, including cancer, liver disease, stroke, high blood pressure and can affect mental health. In order to counteract the dehydrating effect of alcohol, you should have plenty of other non-diuretic drinks such as water.[55] If you are susceptible to a hang-over, try drinking a glass of water before going to bed and when you get up, then have another glass every hour during the day.

Environmental factors

Hot environments

Prolonged work in a hot environment leads to water loss as a result of sweating, and increased respiration. The rate of sweating varies among individuals and depends on environmental conditions, but in protective clothing and very hot conditions, sweating rates can reach 2.25 litres per hour.[56] Such high levels of sweating can quickly lead to dehydration if fluid is not replaced. However, sweating will only cool the body if the moisture is removed from the skin by evaporation. Some forms of protective clothing, particularly full encapsulation, may prevent evaporation and lead to overheating.[57]

Dehydrated workers are more likely to suffer heat exhaustion because without adequate water, the body's sweating ability is impaired.[58] 'Voluntary dehydration' is said to arise when thirst does not stimulate sufficient fluid intake, but 'involuntary dehydration' may also result if, for example, fluids are not readily available, or if workers are unable to drink because of the need to wear a protective mask or in other hazardous environments.[56]

In hot and humid conditions some individuals have a tendency to pant in order to get rid of excess heat. This hyperventilation can cause the person to become blue, have tingling sensations in the lips, muscle cramps, feel dizzy or even collapse. Hyperventilation may also lead to dehydration due to excessive water lost in exhaled air. Drinking a small amount of water and taking deep slow breaths is recommended to help recovery.[59]

Access to drinking water at work: The law requires employers to provide an adequate supply of wholesome drinking water for all persons at work in the workplace. This must be readily accessible at suitable places and conspicuously marked by an appropriate sign. Drinking water taps should not be sited where contamination is likely, eg in a workshop where lead is handled, or in toilet facilities or washrooms.[60] Workers should be encouraged to drink water regularly in small amounts throughout the day, rather than just responding to thirst, or drinking at mealtimes.[61]

Workers and their supervisors need to be vigilant about recognising and treating the signs of dehydration and heat stress. Education about the importance of good hydration is vital for anyone exposed to a hot working environment.

It should also be noted that the consumption of large volumes of water for prolonged periods could lead to hyponatraemia, where there is a low concentration of sodium in the blood. This is because both water and salt are lost in sweat, but if you only replace the water, particularly by drinking large quantities in one go, your body does not have time to adjust and so your body fluids can become more dilute. This can result in feelings of lethargy, muscle cramps and nausea.[62] Frequent re-hydration with smaller volumes, is better than one large intake of liquid.[63] This should be accompanied by a balanced diet to replace lost salts.

In hot environments where heat stress is likely, a risk assessment should be carried out. More information is available from the Health and Safety Executive (www.hse.gov.uk). Some possible solutions include:

- Controlling the temperature using engineering solutions.
- Providing mechanical aids where possible to reduce the work rate.
- Regulating the length of exposure to hot environments.
- Preventing dehydration.
- Providing personal protective equipment, eg personal cooling systems or breathable fabrics.
- Teaching workers about the risks of heat stress associated with their work, what symptoms to look out for, safe working practices and emergency procedures.
- Allowing workers to acclimatise to their environment.
- Identifying employees who are more susceptible to heat stress.
- Monitoring the health of workers at risk.[63]

Cold environments
Our bodies can lose as much fluid in cold environments as in hot environments because of the high rates of energy expenditure to keep warm and the use of heavy clothing. Fluid losses are commonly thought to result from increased urination induced by the cold, and greater respiratory water losses due to higher rates of evaporation from the lungs in exhaled air. If exercise or heavy work is carried out whilst wearing highly insulating clothing, heat stress can occur.[4]

Indoor environments
In some indoor environments there may be a risk of low relative humidity, for example, if there is a poor air conditioning system, or a large number of computers operating on one room, such as in call centres. This can dry the air to unacceptable levels leading to dehydration which, in turn, can contribute to sore eyes, voice loss and headaches. Skin rashes may also appear. The relative humidity for an office should be between 40 per cent and 70 per cent with the lower end being the most comfortable in warmer offices.[64]

A similar occupational hazard occurs in aircraft where cabin air may have a low water content, leading to dehydration. In addition, low atmospheric pressure in the cabin forces more water to be stored under the skin, contributing to dehydration of the central organs. These conditions may be linked to an excess risk of breast cancer which has been observed in airline cabin attendants.[65]

Maintaining a good level of hydration is important in these environments. Employees should be provided with information on the risks of low relative humidity, their potential effects on physical and mental well-being, and how these risks may be reduced.

Ten tips for drinking more water

1. On a sedentary day, try to drink around two litres of water.
2. Start by drinking a glass of fresh water when you get up in the morning.
3. If you are not used to drinking water regularly, try initially replacing just one of your other drinks a day with fresh water, increasing your consumption as the weeks go by.
4. Ask for a glass of tap water to go with your coffee and tea in cafés.
5. Drink a glass of water before and during each meal.
6. Hot water with fresh mint, lemon balm or a piece of fruit in - like lime, lemon, orange etc - often helps those who want a hot drink.
7. Carry a bottle filled with chilled tap water with you whenever you leave the house.
8. During exercise, drink at 10 to 15 minute intervals or think of it as a full glass every 30 minutes - drink slowly and drink early, it's physically easier to do this when you are still feeling fresh.
9. Keep a check on your urine. As a general guide to hydration, it should be plentiful, pale in colour and odourless.
10. Ask for a jug of iced tap water with your meal when in restaurants and with your alcohol when in bars – good establishments will be happy to provide this.

All relevant medical practice and care guidance must be observed before considering these suggestions.

Further information can be obtained from:
Water UK, Water for Health, *Ask about …*
http://www.water.org.uk/home/resources-and-links/water-for-health/ask-about
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1 Burke ER. Healthy hydration. Occupational Health & Safety. 2000;69(5): 52-4
2 Ritz P and Berrut G. The importance of good hydration for day-to-day health. Nutrition reviews. 2005;63(6 Pt 2):S6-S13
3 Food Standards Agency. Eat well, be well. Drinking enough? Available at: www.eatwell.gov.uk/healthydiet/nutritionessentials/drinks/drinkingenough Last accessed 23td January 2006
4 Institute of Medicine (U.S.). Panel on Dietary References Intakes for Electrolytes and Water. Dietary reference intakes for water, potassium, sodium, chloride and sulphate. Washington DC: National Academies Press, 2004.
5 Kleiner SM. Water: An essential but overlooked nutrient. Journal of the American Dietetic Association. 1999:99:200-206
6 Shirreffs S. Hydration – Essential for your well being. FoodToday Articles. Food Today No 22-1 2005 Available at: www.eufic.org/gb/food/pag/food22/food221.htm Last accessed 23rd January 2006
7 Eastwood, MA, ed. Principles of Human Nutrition. Chapter 8: Water, electrolytes, minerals and trace elements. London: Chapman & Hall, 1997
8 Kenney WL, Chiu P. Influence of age on thirst and fluid intake. Medicine and Science in Sports and Exercise. 2001;33:1524-1532
9 Shirreffs SM, Merson SJ, Fraser SM, Archer DT. The effects of fluid restriction on hydration status and subjective feelings in man. British Journal of Nutrition 2004;91:951-958
10 Shah SI, Aurangzeb, Khan I, Bhatti AM, Khan AA. Dehydration related abdominal pain (DRAP). Journal of the College of Physicians and Surgeons – Pakistan. 2004;14: 14-17
11 Fox BA, Cameron AG, eds. Food science, nutrition and health. 6th edition. London: Edward Arnold, 1995
12 Blau JN, Kell CA, Sperling JM. Water-deprivation headache: a new headache with two variants. Headache 2004;44:79-83
13 Spigt MG, Kuijper EC, Schayck CP, Troost J, Knipschild PG, Linssen VM, Knotterus JA. Increasing the daily water intake for the prophylactic treatment of headache: a pilot trial. European Journal of Neurology 2005;12:715-718
14 Szinnai G, Schachinger H, Arnaud MJ, Linder L, Keller U. Effect of water deprivation on cognitive-motor performance in healthy men and women. American Journal of Physiology – Regulatory Integrative & Comparative Physiology 2005;289:R275-280
15 Rogers PJ, Kainth A, Smit HJ. A drink of water can improve or impair mental performance depending on small differences in thirst. Appetite 2001;36:57-58
16 Gopinathan PM, Pichan G, Sharma VM. Role of dehydration in heat stress-induced variations in mental performance. Archives of Environmental Health 1988;43:15-17
17 Sharma VM, Sridharan K, Pichan G, Panwar MR. Influence of heat-stress induced dehydration on mental functions. Ergonomics 1986;29:791-799
18 Stookey JD, Belderson PE, Russell JM, Barker ME. Correspondence re: J. Shannon et al. Relationship of food groups and water intake to colon cancer risk. Cancer Epidemiology, Biomarkers & Prevention 1997;6:657-658
19 Shannon J, White E, Shattuck AL, Potter JD. Relationship of food groups and water intake to colon cancer risk. Cancer Epidemiology, Biomarkers & Prevention 1996;5:495-502
20 Bitterman WA, Farhadian H, Abu Samra C, Lerner D, Amoun H, Krapf D, Makov UE. Environmental and nutritional factors significantly associated with cancer of the urinary tract among different ethnic groups. Urologic Clinics of North America 1991;18:501-508
21 Wilkens LR, Kadir MM, Kolonel LN, Nomura AM, Hankin JH. Risk factors for lower urinary tract cancer: the role of total fluid consumption, nitrites and nitrosamines, and selected foods. Cancer Epidemiology, Biomarkers & Prevention 1996;5:161-166
22 Chan J, Knutsen SF, Blix GG, Lee JW, Fraser GE. Water, other fluids, and fatal coronary heart disease: the Adventist Health Study. American Journal of Epidemiology 2002;155:827-833
23 Manz F, Wentz A. The importance of good hydration for the prevention of chronic diseases. Nutrition Reviews 2005;63(6 Pt 2):S2-S5
24 Math MV, Rampal PM, Faure XR, Delmont JP. Gallbladder emptying after drinking water and its possible role in prevention of gallstone formation. Singapore Medical Journal 1986;27:531-532
25 Curhan GC, Willett WC, Rimm EB, Stampfer MJ. A prospective study of dietary calcium and other nutrients and the risk of symptomatic kidney stones. New England Journal of Medicine 1993;328:833-838
26 Siener R, Hesse A. Fluid intake and epidemiology of urolithiasis. European Journal of Clinical Nutrition 2003;57(Suppl 2):S47-S51
27 Department of Trade and Industry. Draft Employment Equality (Age) Regulations 2006 Available at: http://www.dti.gov.uk/er/equality/age.htm Last accessed 23rd January 2006
28 National Kidney Research Fund. Helping you to understand…: Keeping your kidneys healthy. Peterborough: NKRF, April 2002
29 National Kidney Research Fund. Helping you to understand…: Cystitis. Peterborough: NKRF, April 2002
30 Nygaard I, Linder M. Thirst at work - an occupational hazard? International Urogynecologoy Journal and Pelvic Floor Dysfunction 1997;8:340-343
31 Eckford SD, Keane DP, Lamond E, Jackson SR, Abrams P. Hydration monitoring in the prevention of recurrent idiopathic urinary tract infections in premenopausal women. British Journal of Urology 1995;76:90-93
32 Klauser AG, Beck A, Schindlbeck NE, Muller-Lissner SA. Low fluid intake lowers stool output in healthy male volunteers. Zeitschrift fur Gastroenterologie 1990;28:606-609
33 Anti M, Pignataro G, Armuzzi A, Valenti A, Iascone E, Marmo R, Lamazza A, Pretaroli AR, Pace V, Leo P, Castelli A, Gasbarrini G. Water supplementation enhances the effect of high-fiber diet on stool frequency and laxative consumption in adult patients with functional constipation. Hepato-Gastroenterology 1998;45:727-732
34 Arnaud MJ. Mild dehydration: a risk factor of constipation? European Journal of Clinical Nutrition 2003;57(Suppl 2):S88-S95
35 Appleby M. Why drinking water really is the key to weight loss. Inch-aweigh.com: weight loss through fitness. Available at: www.inch-aweigh.com/water.html Last accessed 23rd January 2006
36 Boschmann M, Steiniger J, Hille U, Tank J, Adams F, Sharma AM, Klaus S, Luft FC, Jordan J. Water-induced thermogenesis. Journal of Clinical Endocrinology and Metabolism 2003;88:6015-6019
37 Bourne LT, Seager JR. Water – the neglected nutrient. South African Journal of Clinical Nutrition 2001;14(Suppl):S64-70
38 Shah SI, Aurangzeb, Khan I, Bhatti AM, Khan AA. Dehydration related to abdominal pain. Journal of the College of Physicians and Surgeons – Pakistan. 2004;14: 14-17
39 Ritz P, Salle A, Simard G, Dumas, JF, Foussard F, Malthiery Y. Effects of changes in water compartments on physiology and metabolism. European Journal of Clinical Nutrition 2003;57(Suppl 2):S2-S5
40 Stookey JD. Another look at fuel + O2 -> CO2 + H2O. Developing a water-oriented perspective. Medical Hypotheses 1999;52:285-290
41 Shirreffs SM. The importance of good hydration for work and exercise performance. Nutrition reviews. 2005;63(6 Pt 2):S14-S21
42 Sawka MN, Cheuvront SN, Carter R. Human water needs. Nutrition Reviews 2005;63(6 Pt 2):S30-S39
43 Noakes TD. Overconsumption of fluids by athletes. BMJ 2003;327:113-114
44 Naghii MR. The significance of water in sport and weight control. Nutrition and Health 2000;14:127-132
45 Convertino VA, Armstrong LE, Coyle EF, Mack GW, Swaka MN, Senay LC Jr, Sherman WM. American College of Sports Medicine position stand. Exercise and fluid replacement. Medicine & Science in Sports and Exercise 1996;28:i-vii
46 Smith AJ, Shaw L. Mild dehydration: a risk factor for dental disease? European Journal of Clinical Nutrition 2003;57(Suppl 2):S75-80
47 Food Standards Agency. Eat well, be well. Water and soft drinks. Available at: www.eatwell.gov.uk/healthydiet/nutritionessentials/drinks/waterandsoftdrinks Last accessed 23rd January 2006
48 Hofmeyr GJ, Gulmezoglu AM. Maternal hydration for increasing amniotic fluid volume in oligohydramnios and normal amniotic fluid volume (Cochrane Review). In: The Cochrane Library, Issue 1, 2002. Oxford: Update Software
49 Lewis D. Research carried out for Volvic, as reported in BBC News, Health. Caffeine 'reduces productivity' 29 Jan 2001. Available at: http://news.bbc.co.uk/1/hi/health/1142492.stm Last accessed 23rd January 2006
50 Maughan RJ, Griffin J. Caffeine ingestion and fluid balance: a review. Journal of Human Nutrition and Dietetics 2003;16:411-420
51 Neuhauser-Berthold M, Beine S, Verwied SC, Luhrmann PM. Coffee consumption and total body water homeostasis as measured by fluid balance and bioelectrical impedance analysis. Annals of Nutrition & Metabolism 1997;41:29-36
52 Clavel J, Cordier S. Coffee consumption and bladder cancer risk. International Journal of Cancer 1991;47:207-212
53 Eggleton MG. The diuretic action of alcohol in man. Journal of Physiology 1942;101:172-191
54 Eisenhofer G, Johnson RH. Effects of ethanol ingestion on thirst and fluid consumption in humans. American Journal of Physiology. 1983;244:R568-572
55 Food Standards Agency. Eat well, be well. Alcohol. Available at: www.eatwell.gov.uk/healthydiet/nutritionessentials/drinks/alcohol Last accessed 23rd January 2006
56 Clap AJ, Bishop PA, Smith JF, Lloyd LK, Wright KE. A review of fluid replacement for workers in hot jobs. AIHA Journal 2002;63:190-198
57 Montain SJ, Sawka MN, Cadarette BS, Quigley MD, McKay JM. Physiological tolerance to uncompensatable heat stress: effects of exercise intensity, protective clothing, and climate. Journal of Applied Physiology 1994;77:216-222
58 Donoghue AM, Sinclair MJ, Bates GP. Heat exhaustion in a deep underground metalliferous mine. Occupational and Environmental Medicine 2000;57:165-174
59 Powell S, Bethea D. Dehydration review. Report Number HSL/2005/29. Buxton: Health and Safety Laboratory, 2005 Available at: http://www.hse.gov.uk/research/hsl_pdf/2005/hsl0529.pdf Last accessed 23rd January 2006
60 Health and Safety Executive. FAQs Does my employer have to provide drinking wter at work? Available at: www.hse.gov.uk/contact/faqs/water.htm Last accessed 23rd January 2006
61 Brake DJ, Bates GP. Fluid losses and hydration status of industrial workers under thermal stress working extended shifts. Occupational and Environmental Medicine 2003;60:90-96
62 O'Callaghan CA, Brenner BM, editors. The kidney at a glance. Oxford: Blackwell Science, 2000
63 Health and Safety Executive. Dehydration. Available at: www.hse.gov.uk/temperature/issuesandrisks/dehydration.htm Last accessed 23rd January 2006
64 Health and Safety Executive/Local Authorities Enforcement Liaison Committee. Advice regarding call centre working practices. LAC No. 94/1 rev. 2001 Available at: www.hse.gov.uk/lau/lacs/94-1.htm Last accessed 23rd January 2006
65 Barker ME, Stookey JD. Flight attendants, breast cancer, and melatonin. Lancet 1998;352:1389

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4 Frequently asked questions

Q1. After the lifelong experience of drinking tea and coffee rather than water, how can I get my patients to ask for and drink water?

A1. Of course it is a free choice if a patient will not consume water, but increasing consumption is often just a matter of good presentation of tap water, and nurses can and should set the tone. Often patients will agree to make improved health choices if they are helped to understand the benefits. Have a look at the facts and tips included in this toolkit for ideas (factsheet 9). Do remember that one of the reasons for leading change is that nowhere in public health guidance will you find caffeinated, high sugar soft drinks and fizzy drinks recommended.

Q2. How should I serve tap water to make it taste as good as possible?

A2. Taste tests have shown that tap water is enjoyed when it is served chilled – not too cold, not warm – and that it must be fresh. Change water jugs regularly (a minimum of three times a day) and ensure that they are covered with lids to reassure the patients on cleanliness. Serving tap water through water coolers can make a feature of water provision, and it allows the water to be served chilled or at a regular temperature. Appropriate water coolers are available to healthcare providers at keen commercial rates through the NHS Supply Chain Purchasing and Supply Agency. Be cautious when offering squash or cordials. They are very useful when they are well diluted and fortified (i.e. with Vitamin C), and they can be provided sugar-free. However, avoid serving strong, high-sugar solutions.

Q3. What can I do if patients insist on drinking mostly hot drinks?

A3. That's fine as long as they are drinking plenty of appropriate fluids. For hot drinks, and where it is clinically acceptable, promoting hot water with pieces of fruit in it works well. If you feel you have to provide other drinks, avoid strong and caffeinated drinks and offer caffeine-free and low-sugar options instead. Quality of life is vital, so it is not a case of drinking water or drinking nothing, but it is important that patients, and indeed staff and visitors, have access to healthy options.

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Q4. Is tap water safe to drink?

A4. Yes. The UK mains tap water supply is totally safe to drink and of extremely high quality – one of the best in the world. In taste tests across the UK, people can rarely tell the difference between bottled water and tap water if they are served the same way (fresh and cool). Always make sure that the tap water you are serving is fresh from the mains and not from stored water tanks. If in doubt about the water quality in the building, always check with your facilities management team. Water companies are also willing to give supportive advice wherever appropriate.

Q5. Do I need to filter or treat my tap water before I serve it to drink?

A5. No. The tap water you receive is carefully monitored and tested and is supplied ready to drink straight from the tap. Sometimes filters will polish the taste slightly, but the same effect can normally be achieved by leaving the water to stand. Adding a little ice, using mains fed water coolers or chilling the water in the fridge will help take away any chlorine taste.

Q6. If my patients drink more water, will they have an increased toilet function?

A6. Yes, for a while, and that's a very positive change. Patients will use the toilet more often if they drink more, and while there are perceived problems in the extra effort of more frequent visits, there is also a lack of awareness of the serious ill-effects of not drinking enough and not going to the toilet enough. Patients can be embarrassed to make it known that they need to go to the toilet, but when shown the health facts, they can see that it can be more embarrassing and traumatic to suffer the effects of poor hydration, such as falls, bed-wetting, bedsores, urinary tract infections (UTIs) and many other conditions.

Start patients drinking early with a fresh glass of water. Promote the fact that water 'flushes through' the system and helps to prevent kidney stones, UTIs and constipation. Increased toilet function may also help reduce the need for additional medication. For more information, see the medical evidence on the leaflets 'Wise up on water!' that are included in this toolkit.

Q7. How do I provide for patients who cannot serve themselves?

A7. Patients should be given access to fresh tap water throughout the day so that they can drink as often as they wish. This is especially important for those who cannot choose to serve themselves and those who have an impaired thirst response. Providing options for patients to help themselves is vital. There are many ways to achieve this, including providing regular covered jugs of fresh tap water at bedsides and tables, having mains-fed water coolers at accessible heights, serving water regularly and giving patients their own water vessels. When providing water as a beverage, patients will want a dignified way of taking their drink. Paper cups and plastic cups are often unappealing. Above all, however, make sure that even the least mobile have access to healthy choices.

Q8. To save water wastage, should I wait until the water jugs are empty before I serve more water?

A8. No. There are many ways to save water wastage in hospitals, but hanging on to unappetising water is not one of them. Keep changing the jugs regularly (at least three times a day – before each meal, and more if possible) so that drinking water is always available, appealing, fresh and cool. One tonne of tap water will only cost the hospital around one pound, so whilst drinking water is precious and should not be wasted, you can afford to refresh jugs as often as possible to help patients enjoy drinking water.

Q9. Is there proof that introducing positive hydration will benefit the patients and the operation of the hospital?

A9. Yes. Water is an essential nutrient and dehydration is a common problem in hospital patients. As you will find in this toolkit, there is evidence that improving water intake:
reduces constipation and subsequent medication
reduces confusion (with reduced risks of falls and fractures)
reduces headaches
reduces urinary tract infections
improves skin integrity and reduces the risk of pressure sores
improves blood pressure
reduces consumption of unhealthy caffeine, alcohol, soft drinks and sparkling drinks
reduces the cost of providing other commercial beverages.

Q10. How much water should patients drink?

A10. The most helpful answer is "more than they do now".
Surprisingly, while we know a great deal about the requirements of the other main nutrients (fats, proteins etc.), there is very little information on our primary nutrient. Most professionals agree that around 8 decent-sized glasses a day is about right. That's around 2 litres. What we do know is that most people, especially older people, drink nowhere near that amount, and mild dehydration is very common. It is vital to encourage patients (and staff) to drink more. Within reason, with appropriate medical guidance and with a balanced diet, it is difficult to drink too much water.

Q11. Is it true that the colour of urine can be used as a guide to how much water to drink?

A11. As a general rule, this is a very useful guide to good hydration. Urine that is plentiful, odourless and pale in colour generally indicates that a patient is well hydrated. Dark, strong-smelling urine could be a sign of too little water. However, since a few medical conditions, certain medicines and some vitamins can add colour to urine, it is best to use this method only as a guide. Monitoring fluid intake is definitely the best way forward.

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Q12. What is the recommendation for drinking water provision in the hospital standards?

A12. At this time, there is little guidance available to support healthcare professionals on hydration provision within nutrition. It is likely that this will change to include water provision when the Standards are reviewed. This toolkit has been produced to help develop best practice outside of regulations and standards. Drinking enough water is fundamental to good health and dietary practice. It is the right thing to do for the well being of patients, visitors and staff.

5 Did you know? Facts about water as a nutrient

- Water is the main constituent of the body and forms 50-60% of body weight and around 75% of volume. The exact amount varies with age and sex and also depends on body fat content.
- Water contains no fats, no proteins, no carbohydrates and therefore no calories.
- Water is the perfect complement for a nutritionally balanced meal.
- There are no health advantages to drinking expensive bottled water instead of tap water from the public water supply.
- Even in the absence of any visible perspiration, approximately half of water loss occurs through the operation of our lungs and skin.
- The NHS advises that where clinically appropriate, patients should be drinking 2.5 litres of water a day, or half a litre with each meal.
- The Thirst 4 Life hydration initiative undertaken by Buckinghamshire NHS and Buckinghamshire County Council led to a 45% reduction in A&E attendances at Wycombe General Hospital from nursing and residential homes between November 2004 and March 2005.
- Unless there is specific medical advice against it, everybody can benefit from practicing good hydration.
- Remember that consuming sugary drinks slows down the rate at which water can be absorbed from the stomach.
- Fresh tap water does not need to be filtered or treated in any way.

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- Water is one of the six basic nutrients. It is widely seen as the most important because the body requires it constantly and all the important chemical reactions – such as the production of energy – take place in water.
- A hospital patient could drink two litres of tap water a day for nearly five months, and cost the NHS just the price of a first class stamp.
- 10 litres of tap water costs around one penny – that can be as much as 1,000 times cheaper than soft drinks, caffeinated drinks and bottled water.
- Simply breathing in and out uses more than a pint of water a day. Without water, you would only expect to live for around one week.
- Tap water quality in the UK is among the highest in the world.
- Drinking water helps keep the body flushed of waste products.
- Strange as it sounds, drinking more water actually helps to reduce water retention.
- We each use around 150 litres of water a day, but national surveys show us that we currently drink as little as one litre – that's around half the amount we need.
- We lose lots of water when we suffer from diarrhoea, sickness or infections that cause a fever. It is vital to drink more water at these times.
- Tap water tastes best when it is served fresh and chilled.
- It is generally recommended that adults should drink around two litres of water daily and considerably more when they perform exercise and/or the weather is hot. 6-8 good-sized glasses of water a day should give you this amount.
- Being well hydrated helps medicines to work more effectively and helps combat the diuretic effect of some medicines.
- If your tap water tastes of chlorine, put it in the fridge or leave it to stand for a short while and the taste will go.

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- Of the total amount of water on the planet, just 3% is fresh water. Much of that is currently frozen, leaving just 1% available to drink.
- When the body is not adequately hydrated, it responds by conserving its stocks, shifting water to where it is most needed and causing thirst.
- Fluid loss corresponding to 2.5% of body weight has been shown to reduce an athlete's physical performance capacity by 45%.
- For the price of one cup of coffee (£1), you can drink the equivalent of 1,000 litres of tap water.
- Water is the drink of choice for protecting your teeth and gums.

6 Practical tips for encouraging water consumption

1. Start by encouraging your hospital team to develop a policy on how you will provide water and monitor intake for your patients. Consider nurses' understanding of the issue, and how to explain the benefits of good hydration.

2. To remind nurses to encourage water intake for those at higher risk, hang a picture of a drop of water in wards and near patients' beds.

3. Some people may need to be reminded, encouraged and even convinced to drink more water. Using a positive approach often helps. "Here is some nice cool refreshing water for you" is often more productive than "Do you want something to drink?"

4. Water is best served fresh and chilled – not left in open jugs.

5. Many people prefer to drink 'little and often'. Try to offer water at mealtimes and also between meals.

6. Patients tend to drink all the water in their glass when they are swallowing their tablets. Offering slightly larger volumes of water at this time encourages them to drink more.

7. Serve small quantities of water alongside coffee and tea and explain why it would be beneficial to drink more water.

8. Patients often worry about increased toilet visits in the night, so encourage water consumption from when the patients wake in the morning.

9. Older people and those who are unwell can lose their thirst response and their taste sensation. Never take it for granted that they will know when they need to drink.

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10. Where possible, inform families and friends about the importance of promoting hydration when they visit. They can help in meeting that important hydration target.

11. NHS procurement agreements already exist to provide hospitals with access to mains fed water coolers at competitively negotiated prices. Information is available from the NHS Supply Chain www.supplychain.nhs.uk

12. During the day, try serving glasses of cool water with slices of orange, lime, lemon and ice cubes. Make sure you keep refilling glasses, so patients can drink little and often. By providing citrus fruit with water, you are also helping the consumption of Vitamin C.

13. Hot water with a piece of fruit – such as lemon, lime or orange – can appeal to those who want a hot drink.

14. The Hospital Caterers Association have produced Healthcare, Food and Beverage Service Standards to guide hospitals. It advises that "free, fresh water should be available to hospital patients, staff and visitors throughout the day".

15. NHS Quality Improvement Scotland (Food, Fluid and Nutritional Care in Hospitals) asks that where clinically appropriate, patients should have access to fresh drinking water at all times. Food and fluid should be provided to patients at the correct temperature and texture.

16. As the weather gets warmer, increase the availability of drinking water and encourage patients to drink more. Older people perspire more in warmer weather.

17. Offer water and fluids at all mealtimes. Make sure that those who are less able can choose to drink.

18. Identify those patients at risk of dehydration or those that require assistance with drinking, and monitor and record their fluid intake.

19. Think of an easy counting system to help those with mild memory problems, confusion or dementia to consume enough water.

20. Persevere! Helping people to recognise and choose healthy options will take time and patience.

These suggestions are un-attributed and have kindly been offered by nurses, dieticians, catering teams, patient organisations and related charities. All medical practice and healthcare guidance must be observed before considering these suggestions. Suggestions are reproduced with the kind permission of the Royal Institute of Public Health, Kingston Hospital, the Hospital Caterers Association, the National Patient Safety Agency, the Royal College of Nursing, the National Association of Care Catering, Surrey NHS Primary Care Trust and Water UK.

7 Sample menu for providing adequate fluids within healthcare

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Early drink	Tea or juice	Tea or juice	Tea or juice	Tea or juice	Tea or juice	Tea or juice	Tea or juice
Full glass of water given out with early morning medication							
Breakfast	Cereals/porridge Fruit juices Egg and bacon Toast or bread Preserves Tea or coffee	Cereals/porridge Fruit juices Scrambled egg Toast or bread Preserves Tea or coffee	Cereals/porridge Fruit juices Sausage/tomato Toast or bread Preserves Tea or coffee	Cereals/porridge Fruit juices Boiled egg Toast or bread Preserves Tea or coffee	Cereals/porridge Fruit juices Bacon/tomato Toast or bread Preserves Tea or coffee	Cereals/porridge Fruit juices Poached egg Toast or bread Preserves Tea or coffee	Cereals/porridge Fruit juices Scrambled egg Toast or bread Preserves Tea or coffee
Water and fruit squashes / cordials available throughout the morning							
Mid-morning	Tea or coffee	Tea or coffee	Tea or coffee	Tea or coffee	Tea or coffee	Tea or coffee	Tea or coffee
Water and fruit squashes / cordials served with meal							
Lunch	Roast lamb & mint sauce/ Poached salmon & parsley sauce Roast/new potatoes Broccoli/parsnip Apple pie & custard	Pork/vegetable casserole/ Tuna and pasta bake Creamed potatoes Carrots/peas Lemon meringue pie Tea or coffee	Steak and kidney pie/ Grilled plaice & lemon sauce Boiled potatoes Green beans/leeks Rice pudding Banana custard Tea or coffee	Chicken & white wine sauce/ Shepherds pie Creamed potatoes Savoy cabbage/carrots Plum crumble & custard Fruit/ice-cream Tea or coffee	Lancashire Hot Pot/ Cod Mornay Parsley potatoes Mixed vegetables/ broccoli Spotted dick & custard Yoghurt jelly Tea or coffee	Fried cod/ Cauliflower cheese Chips/mashed potatoes Peas/sweetcorn Fruit compote & custard Blancmange Tea or coffee	Boiled bacon & pease pudding/ Fish pie Boiled potatoes Carrots/swede Bread/butter pudding Peach melba Tea or coffee
Water and fruit squashes / cordials available throughout the afternoon							
Mid-afternoon tea	Tea/coffee/juice Iced fancies	Tea/coffee/juice Fairy cake	Tea/coffee/juice Lemon cake	Tea/coffee/juice Fruit scone	Tea/coffee/juice Ginger cake	Tea/coffee/juice Banana cake	Tea/coffee/juice Fruit loaf
Water and fruit squashes / cordials served with meal							
Evening	Cheese and tomato flan & salad/ Sandwiches (salmon/egg) Peaches & cream Tea or coffee	Welsh rarebit & tomato/ Sandwiches (sardines/ham) Cherry flan & cream Tea or coffee	Sausage and baked beans on toast/ Sandwiches (cheese with marmite/tuna) Peaches & cream Tea or coffee	Jacket potato (tuna or cheese) Sandwiches (ham/egg) Apricot & almond tart Tea or coffee	Macaroni cheese & tomato/ Sandwiches (bacon/turkey) Sherry trifle Tea or coffee	Ham with mixed salad/ Sandwiches (salmon/ chicken) Lemon cheesecake Tea or coffee	Broccoli & cheese flan with salad/ Sandwiches (egg/pilchards) Chocolate cake Tea or coffee
Late-evening	Milky drinks Biscuits	Milky drinks Biscuits	Milky drinks Biscuits	Milky drinks Biscuits	Milky drinks Biscuits	Milky drinks Biscuits	Milky drinks Biscuits

Adapted from Eating for Health in Care Homes: A Practical Nutrition Handbook (RIPH)

8 Hospital guidance and standards

This fact sheet provides information on the advice and best practice currently available to healthcare professionals.

Hospital Caterers Association, Good Practice Guide - Healthcare Food and Beverage Service Standards

"In a wholesome diet, water must be considered as one of the six basic nutrients…….It might properly be called the 'first nutrient', since all of the body's important chemical reactions – such as the production of energy – take place in it…..Chilled water should be available at ward level for patients throughout the 24 hour patient day. It is recommended that patients should be drinking 2.5 litres of water a day, or half a litre with each meal."

NHS Quality Improvement Scotland, Clinical Standards – Food, Fluid and Nutritional Care in Hospitals.

(4.4) Food and fluid are provided to patients at the correct temperature and texture. Where required, patients are given assistance with eating/drinking while the food/fluid is at the correct temperature.
(4.6) Patients are provided with the equipment/utensils for eating/drinking that meet their individual needs.
(4.8) Where clinically appropriate, patients have access to fresh drinking water at all times.
(4.9) Where clinically appropriate, patients are given the opportunity to choose whether to eat/drink at or away from their bed.

National Patient Safety Agency, Water: the Forgotten Nutrient - From Pipe to Patient

"Water is well known for its revitalising properties. However, although it is essential to health and it is one of the six basic nutrients (along with carbohydrates, fats, vitamins, proteins and minerals), the importance of water often gets overlooked. Providing fresh water to patients helps to keep them hydrated and improves their wellbeing. Providing fresh water also demonstrates care of patients in a way that relatives and visitors can see."

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Royal College of Nursing, Nutrition Now - Principles for nutrition and hydration

"Food and water are essential elements of care - as vital as medication and other types of treatment. Ensure that there are enough nursing staff on wards and in the community to ensure patients receive the right food and hydration at the right time with the right supervision and assistance. It is our responsibility as members of a multi-disciplinary team to ensure patients in our care have the right nutrition and hydration at the right time. Working practices that prioritise nutrition and hydration can overcome the challenges that stand in the way of excellence".

Welsh Assembly Government: Guidance for Health and Social Care Staff - Improving the quality of fundamental aspects of health and social care for adults, Eating and Drinking.

Proper nutrition, that is food and drink, is important for recovery from illness, for the healing of wounds and for good health……. People must be offered a choice of food and drink that meets their nutritional and personal requirements and provided with any assistance that they need to eat and drink. Make sure that fresh drinking water is always available. If you are unsure about how long water has been in a glass or jug, change it.

Inappropriate levels of nutrition and hydration can lead to rapid deterioration in frail, vulnerable people. If you have any worrying observations about your patient, report these and seek further advice. Always provide the direct help that people need in order to eat and drink. Never leave a drink out of the reach of your patient. Always tell your patient when you have refreshed their glass or mug and tell them where you have placed it.

(9.1) People's nutritional needs and physical ability to eat and drink are regularly assessed. If necessary, they are provided with specialist advice and support.

(9.3) Food and drink are served in an acceptable setting. They are at the right temperature and attractively presented.

(9.7) If eating and/or drinking cause people difficulties, they receive prompt assistance, encouragement and appropriate aids or support.

Department of Health - Independent Health Care, National Minimum Standards Regulations, Catering Services for Patients, Standard C19 (3)

"Drinking water is available in all inpatient and outpatient areas."

World Health Organization, Water, Sanitation and Health Guidance

"Water is a basic nutrient for the human body and is critical to human life. It supports the digestion of food, absorption, transportation and use of nutrients and the elimination of toxins and wastes from the body."

9 How good are your water facilities?

Take a look at your existing drinking water facilities for yourself. Photocopy this check list and record your answers to the following:

- ☐ Do you have facilities available for drinking water provision?
- ☐ How many outlets / facilities are there?
- ☐ Are facilities situated in safe and suitable areas for nurses, doctors, caterers and patients?
- ☐ Are facilities clean and well maintained?
- ☐ Do patients have access to fresh water throughout the day?
- ☐ Can able bodied patients serve themselves?
- ☐ Can less able bodied patients serve themselves?
- ☐ Are clean cups and vessels provided?
- ☐ Would you be happy to drink solely from these facilities every day?
- ☐ Are facilities supplied with fresh water and visibly labelled as such?
- ☐ The water should taste fresh and palatable – taste it – is it?
- ☐ How much flow of water can you realistically expect to get from the facilities you have in place – a slow trickle, a glass, a jug, a plentiful supply? (underline as appropriate)

How did you do? – Is fresh and wholesome water available to your patients, staff and visitors throughout the day?

Format supplied courtesy of ERIC. www.enuresis.org.uk/ Additional material courtesy of the Royal College of Nursing, Royal Society for the Promotion of Health, Royal Institute of Public Health, Department of Health, National Patient Safety Agency, Hospital Caterers Association, Patients Association, NHS Purchasing and Supply Agency, Northumbrian Water, The Welsh Assembly, The Scottish Executive, The European Point of Use Drinking Water Association, National Association of Care Catering, Leicestershire County Council and South Staffordshire Water

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FACTFILE – Facts and Tips on Providing Fresh Water

- The UK mains drinking water supply is safe to drink and of extremely high quality. Through strict regulation, the UK has one of the highest quality tap waters in the world.
- Make sure you always take your drinking water fresh from the mains water supply. (Facilities management can advise you if unsure).
- Avoid taking drinking water from taps that are fed by storage systems and tanks (as above).
- Every hospital building has access to fresh water somewhere in its infrastructure. Normally the tap in the kitchen will be the one providing fresh, wholesome and cool water.
- Provide a variety of options for patients to help themselves, and support it with freshly served water throughout the day.
- If you choose to use water coolers, mains fed systems are the most sustainable. They don't run out, are more cost effective, remove the health and safety concerns regarding the lifting and changing of replacement bottles and save the inconvenience of storing them.
- Mains fed water coolers are the best option for saving money. Bottle fed machines can cost healthcare providers around £6 for each 19 litre bottle or around £1000 each year to run each machine. The equivalent cost of supplying mains fed water through a cooler would be less than 2p for each 19 litres.
- Consider purchasing water coolers that serve both chilled water and water at its natural temperature.
- If you are not sure whether your water supply is safe or wholesome, contact your facilities management team, local water company, or the Drinking Water Inspectorate. Contact details are available through the web area of this Toolkit HYPERLINK "http://www.waterforhealth.org.uk" www.waterforhealth.org.uk

10 Try the hydration awareness quiz

A tool to assist in the training of junior nursing and non clinical staff

What is the chemical formula for drinking water?

- ☐ H_20
- ☐ C_3PO
- ☐ He_3

How many glasses of water should you drink each day for good health?

- ☐ 1-2
- ☐ 3-4
- ☐ 6-8

How much of your body is made up of water?

- ☐ 75%
- ☐ 40%
- ☐ 15%

How long can you live without water?

- ☐ About one week
- ☐ About one month
- ☐ About one year

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What is another name for water that is safe to drink?

- ☐ Portable
- ☐ Potable
- ☐ Passable

For one penny, how many glasses of fresh drinking water can you get directly from your tap?

- ☐ 1 glass
- ☐ 10 glasses
- ☐ 50 glasses
- ☐ 1000 glasses (or more)

Which would be the best drink to protect your teeth and gums?

- ☐ Fizzy Cola
- ☐ Coffee
- ☐ Water

How should you drink your daily water intake?

- ☐ All at once
- ☐ Little sips regularly
- ☐ Big mouthfuls

How much water does simply breathing in and out use up each day?

- ☐ A pint
- ☐ An egg cup full
- ☐ A bath full

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Which of these is not a sign of dehydration?

- [ ] Headache
- [ ] Irritability
- [ ] Tiredness
- [ ] Sprained ankle

We get some water from our food and drink, but from which one should we not get our water intake?

- [ ] Decaffeinated tea
- [ ] Weak squash
- [ ] Fruit juice
- [ ] Alcohol

What is the ideal colour for urine to be if you are well hydrated?

- [ ] Light brown
- [ ] Dark yellow
- [ ] Pale yellow/clear

Answers: H_20, 6-8 glasses a day, 75% of the body, About 1 week, Potable, 50 glasses, water, little sips regularly, a pint, sprained ankle, alcohol, pale yellow/clear

11 Hydration best practice – Hospital water audit

Photocopy this sheet and then tick off and count up the statements you can answer with a 'Yes'. Scores are analysed over the page.

- ☐ You are clear about the benefits of improving water provision on your ward.
- ☐ You have a clear strategy to promote water provision and consumption.
- ☐ You have consulted and involved the rest of your team.
- ☐ You are clear about what you want your hydration strategy to achieve.
- ☐ You have a simple and clear code of conduct for providing water.
- ☐ You have decided how and where water will be provided.
- ☐ You have managed to make water available to all patients and staff throughout the day.
- ☐ You are now actively encouraging consumption of water for patients.
- ☐ The patients are regularly informed about the health benefits of drinking more water.
- ☐ The patients have been consulted for their ideas on how water might be promoted and consumption increased.
- ☐ You have a procedure for recording whether patients drink enough.
- Your strategy allows for increased promotion of water:
  - ☐ In hot weather.
  - ☐ When patients are away from the ward area.
- ☐ You have established a system to ensure that all the water facilities are cleaned (including cups, glasses and jugs).

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- ☐ Patients can ask for and access toilet facilities when they need them.
- ☐ Toilets and toilet facilities are well maintained and clean.
- ☐ You have planned how you will now monitor and evaluate the impact of improved water provision for patients on your ward.

How did you do?

Count up the number of boxes you have ticked and assess your current hydration practice.

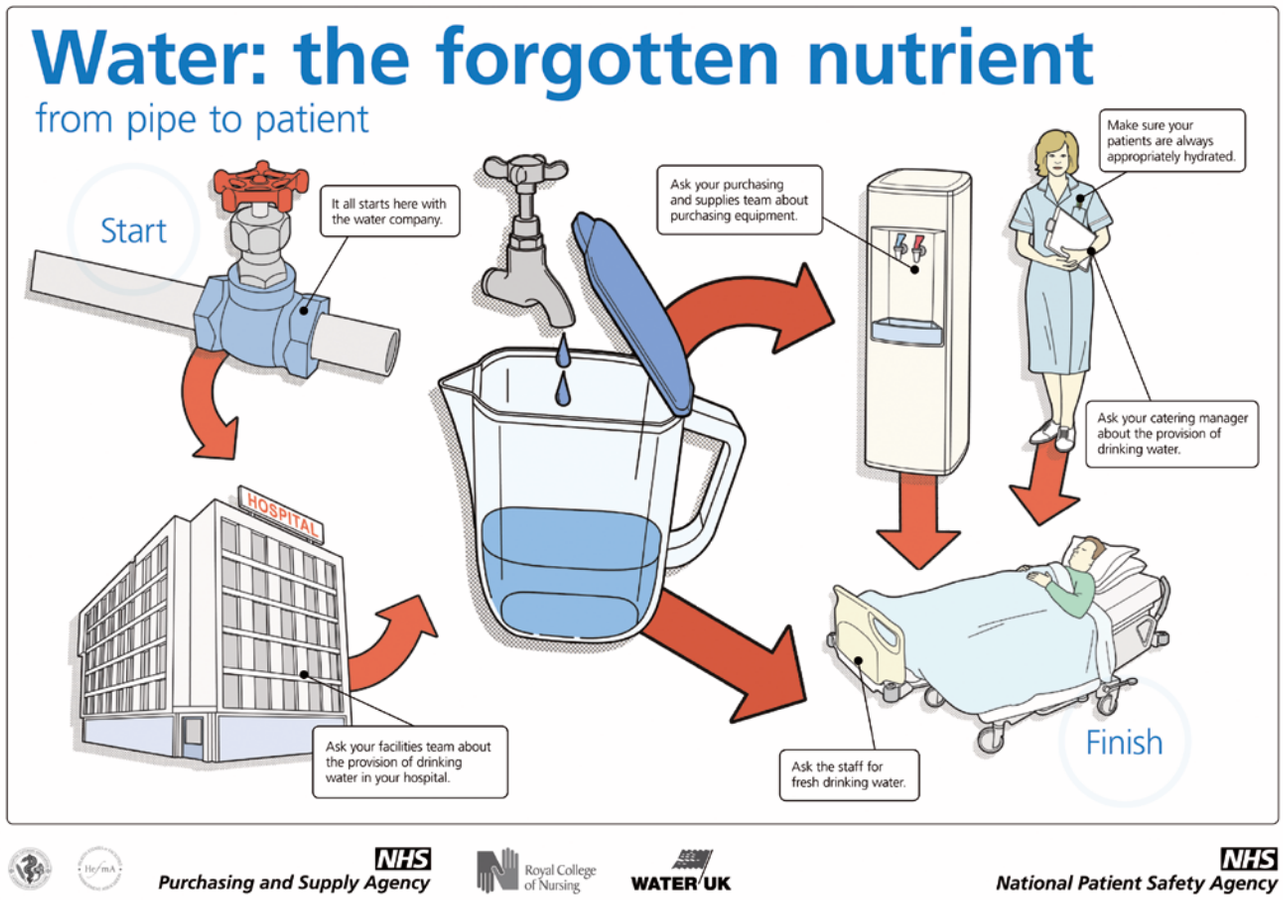
Score

0-5 – You are underway but more work needs to be done. To make sure that you and your patients get the health benefits of good hydration, you and/or your team should retrace their steps and look again at the areas you could not tick off. What needs to be changed to improve your score?

6-10 – Well done on getting this far. With this score you will soon be on the way to establishing a successful strategy for promoting good hydration and drinking water. You can use the toolkit fact sheets and check lists to work out where you can implement change and you will soon be able to help improve your patients' hydration and well being.

11-14 – You have come this far and are approaching the score for hydration best practice. With so much achieved, it is now simply a case of refining your efforts and looking at the individual areas for change.

15-17 – Congratulations, you have done very well and will now be making a real difference to the health and wellbeing of your patients. If you did not score the full marks, talk to your team about the areas you missed and how you can take the last few steps to good hydration for all.



"Water is well known for its revitalising properties. However, although it is essential to health and is one of the six basic nutrients (along with carbohydrates, fats, vitamins, proteins and minerals), the importance of water often gets overlooked. Providing fresh water to patients helps to keep them hydrated and improves their well-being. Providing fresh water also demonstrates care of patients in a way that relatives and visitors can see"

National Patient Safety Agency

Royal College of Nursing

National Patient Safety Agency

part of the nutrition now campaign

Royal College of Nursing

NHS
National Patient Safety Agency

Nurses care deeply about good patient nutrition and hydration, and it is vital for everyone, especially when we are ill. The Royal College of Nursing believes that if we are to make hydration a top priority, then everybody in the workforce from the catering staff through to chief executives will need to play a part. This hydration best practice toolkit will help to ensure that is achieved.
Geraldine Cunningham - Head of Institute, Royal College of Nursing

The National Patient Safety Agency (NPSA) have recognised that dehydration has the potential to cause unnecessary harm to patients, and we are delighted to have collaborated with key stakeholders on the development of this toolkit. Water is a basic nutrient which is essential to health - medical evidence shows that good hydration can assist in the management and prevention of many medical conditions that cause harm or distress to patients in hospitals.
Martin Fletcher – Chief Executive, National Patient Safety Agency

Poor hydration has been acknowledged as a serious problem by the NHS, and this is especially true for older hospitals that have little ventilation and warm, crowded wards. It is time to work together and make the change happen. We know that a better hydrated patient often uses fewer medicines, like laxatives, and can heal faster. The solutions for providing these patients, and of course doctors, nurses and visitors with fresh water are quite simple, and they are highly cost effective for healthcare
Pamela Taylor - Chief Executive, Water UK

Hospital caterers are acutely aware of how important it is for patients to have access to good quality, nutritious food at all times. Part of this requirement is also the availability of fresh tap water. Water is central to maintaining patient hydration and should be as fundamental to patient nutritional care as food. The Hospital Caterers Association is pleased to have been involved with the development of this toolkit.
Neil Watson-Jones, Chair, Hospital Caterers Association

NHS Supply Chain is committed to finding solutions to the problems and the challenges that the NHS faces, and we are delighted to be part of the team that has developed this hydration best practice toolkit for hospitals. Provision of fresh, well presented drinking water has been shown by our partners to be a vital part of nutrition and patient care – as vital as medicines. NHS Supply Chain has the strongest possible commitment to supporting patient healthcare, and demonstrating the important role we can play in helping the NHS to move forward.
Roger West, Procurement Director., NHS Supply Chain

Patient health has to be our number one priority. I would therefore urge all hospitals to adopt the principles of this hydration best practice toolkit, and to re-assess the limited water availability that we see for many patients in hospital wards. Water is a basic human need. We are not a third world nation, yet some of our hospital hydration facilities would lead us to believe this. The Patients Association support the principles of this toolkit, and commends the voluntary health partnership that created it. I believe it will make a valuable contribution to the health and quality of life of hospital patients and their families.
Claire Rayner - President of the Patients Association

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WATER UK www.waterforhealth.org.uk

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