

Hydration, Nutrition & Infection Prevention and Control Training

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**Developed by the ICB Infection Prevention & Control
Team**

Learning Outcomes

- Understanding the importance of optimal hydration and nutrition and how they impact infection prevention.
- Understanding the impact of poor hydration and nutrition on overall health
- Understanding the key principles of Infection Prevention and Control
- Understanding the wider public health implications of Poor Hydration, Poor Nutrition and Infection Prevention and Control

Dehydration

Dehydration occurs when the body loses more fluid than what is taken in and lacks sufficient water and other fluids to perform its normal functions (NHS, 2021).

The impact dehydration on the body: -

- Irregularly regulates body temperature
- Reduces lubrication in joints
- Weakens organ function
- Impacts the quality of sleep
- Impairs cognition
- Alters mood
- Constipation

Serious complications include: -

○ **Heat injury**

Not drinking enough fluids may cause heat injury, ranging in severity from mild heat cramps to heat exhaustion or potentially life-threatening heatstroke.

○ **Urinary and kidney problems**

Prolonged or repeated bouts of dehydration can cause urinary tract infections, kidney stones and even kidney failure.

○ **Seizures**

Electrolytes — such as potassium and sodium — help carry electrical signals from cell to cell. If electrolytes are out of balance, the normal electrical messages can become mixed up, which can lead to involuntary muscle contractions and sometimes to a loss of consciousness.

○ **Low blood volume shock (hypovolemic shock)**

This is one of the most serious, and life-threatening complications of dehydration. It occurs when low blood volume causes a drop in blood pressure and a drop in the amount of oxygen in your body.

Risk Factors

It is important to note that babies, children and older adults are more at risk of dehydration.

Dehydration can happen more easily if in individuals with: -

- Diabetes
- Experiencing vomiting or diarrhoea
- Prolong exposure to the sun (heatstroke)
- Excessive alcohol intake
- Profuse sweating
- High temperature
- Medication that increases urination (diuretics)

Signs and Symptoms

- Dry mouth/ lips/ tongue
- Thirsty
- Headache
- Dry skin
- Passing less urine/ Smelly urine/ Dark or cloudy urine
- Dizziness
- Lethargy
- Sunken eyes
- Nocturia (frequent urination at night)
- Pee that looks cloudy, dark or has a strong smell
- Sudden urges to urinate
- Confusion
- Low blood pressure
- Lack of tears or sweat
- Rapid heart rate
- Poor concentration
- Irritability

Signs of dehydration in a baby may include:

- A sunken soft spot (fontanelle) on top of their head
- Sunken eyes
- Few or no tears when they cry
- Fewer wet nappies
- Appearing drowsy or irritable

Optimal Hydration

Every cell, tissue, and organ requires fluid to perform functions such as maintaining temperature, disposing of waste products and lubricating joints. Hydration is the body's ability to absorb water.

How to reduce the risk of dehydration

Drinking fluids regularly can reduce the risk of dehydration. Water or diluted squash are good choices.

Drink enough during the day, so urine is a pale clear colour.

Drink more when there's a higher risk of dehydrating. For example, if you're being sick, sweating due to hot weather or exercise, or you have diarrhoea.

Eat foods high in water content.

Children under the age of 5 should get plenty of fluids to avoid dehydration.

Helping someone you care for

A person you care for may not have a sense of how much they're drinking.

You can help them by:

- making sure they drink at mealtimes and in between meals
- making drinking a social thing, like "having a cup of tea"
- offering them food with a high water content – for example, soup, ice cream, jelly and fruits like melon

Malnutrition

A state in which a deficiency of nutrients such as energy, protein, vitamins and minerals causes measurable adverse effects on body composition, function (including social and psychological) and clinical outcome (NICE, 2017). According to WHO (2013) Malnutrition in its various forms includes overweight and obesity.

The impact of malnutrition on the body: -

- weight loss
- Muscle loss
- In appropriate body weight for height- body mass index (BMI)
- Vitamin and mineral deficiencies
- Diet related non-communicable diseases, including:
 - cardiovascular disease
 - certain cancers
 - diabetes

Risk Factors

Some medical conditions can lead to your body being unable to absorb or use nutrients. These may include: -

- Persistent vomiting or diarrhoea
- Dysphagia – a condition that makes swallowing difficult or painful
- Dementia – people with dementia may be unable to communicate their needs, may use up a lot of calories pacing or may experience a loss of appetite
- Mental health conditions, like depression or schizophrenia, which may affect individual’s ability to look after themselves
- Individuals who are socially isolated, have limited mobility, or on a low income
- Cancer and liver disease that can cause a lack of appetite, persistent pain or nausea
- COPD, pulmonary fibrosis and emphysema, which cause your body to need more nutrients but can reduce your appetite
- Crohn's disease, ulcerative colitis or cystic fibrosis that disrupt your body’s ability to digest food or absorb nutrients
- Burns, fractures and post major surgery, due to increased demand for nutrients

Signs & Symptoms

- Loss of appetite and lack of interest in food or fluids
- Unplanned weight loss - this might cause clothing, rings, watches or dentures to become loose
- Tiredness or low energy levels
- Reduced ability to perform everyday tasks like showering, getting dressed or cooking
- Reduced muscle strength – for example, not being able to walk as far or as fast as usual
- Changes in mood which might cause feelings of lethargy and depression
- Poor concentration
- Taking longer to recover and poor wound healing
- Difficulty keeping warm
- Dizziness
- In children not growing or not putting on weight at the expected rate

Optimal Nutrition

The best way to prevent malnutrition is to eat a healthy, balanced diet. This must include a variety of foods from the main food groups, such as: -

- Plenty of fruit and vegetables
- Plenty of starchy foods such as bread, rice, potatoes, pasta
- Some milk and dairy foods or non-dairy alternatives
- Some sources of protein, such as meat, fish, eggs and beans

Choosing nutrient-dense food and drinks can help improve calorie intake. This might not be suitable for everyone, especially those with conditions like dysphagia. If unsure GP, dietitian or nurse should be contacted for further advice.

Further tips for healthy eating: -

- Cut down on saturated fat and sugar
- Eat less salt: no more than 6g a day for adults
- Get active and be a healthy weight
- Do not get thirsty
- Do not skip breakfast

The impact on Health

How does hydration and nutrition impact the risk of infection and fighting off illness?

The body's ability to fight off infections is helped by hydration, nutrition, fitness, rest and good oral health. According to WHO (2023) unhealth diets and poor nutrition are among the top risk factors for diseases globally.

Dehydration and Poor nutrition impacts susceptibility to infection in the following ways: -

- Prolongs wound healing due to lack of protein
- Impairs wound healing
- Increases the risk of skin breakdown and pressure sores
- Impairs respiratory function
- Patients on antibiotics are additionally at risk of complications such as oral fungal infections such as Candida and Clostridioides difficile infection.

Infection Prevention & Control

Poor hydration increases the risk of urinary tract infections (UTIs).

Symptoms of UTIs: -

- Cloudy/ dark urine
- Blood in urine
- Pain in pelvic area
- Burning sensation when urinating
- Smelly urine
- Increased urgency to urinate.

Increasing fluid intake and urinating regularly will help to clear UTIs but GP advice may be required if improvement is slow or new symptoms develop.

Infection Prevention & Control

UTIs may lead to kidney infections and often lead to more serious blood stream infections called Gram-negative blood stream infections (GNBSIs). On occasion GNBSIs lead to severe life threatening conditions such as sepsis.

The UK sepsis Trust advise that Sepsis occurs when an infection triggers a chain reaction throughout your body and the infections that lead to sepsis most often start in the urinary tract.

Preventing UTIs require a multi modal approach. This includes maintaining optimal hydration, eating hydrating foods and practicing good Infection Prevention.

This involves: -

- **Hand hygiene.** Following the five moments of hand hygiene and practising good hand washing technique
- **Using personal protective equipment (PPE) appropriately.** Usage must be risk assessed based on task and patient's infection status and must be changed between each patient.
- **Waste generated when caring for others must be handled and disposed of appropriately.** PPE must be used and following removal hands must be decontaminated.

In some cases antibiotic treatment may be required. However it is important to prevent UTIs and GNBSIs as antibiotic usage leads to resistance that impacts the effectiveness of all antibiotics which can stop them from working.

Infection Prevention & Control

The over use of antibiotics leads to Antimicrobial Resistance (AMR)

AMR occurs when bacteria, viruses, fungi and parasites change over time and no longer respond to medicines making infections harder to treat and increasing the risk of disease spread, severe illness and death. As a result, the medicines become ineffective and infections persist in the body, increasing the risk of spread to others (WHO, 2023).

The following are 6 facts that you should remember when seeking medical support and using antibiotics: -

- Antibiotics do not kill viruses. Most viral infections run their course with no intervention.
- Antibiotics are not effective against colds and flu.
- Unnecessary use of antibiotics cause them to stop working.
- Taking antibiotics often has side effects such as diarrhoea.
- You must never share antibiotics with others.
- Prevent infections from developing or transmitting.

This training DOES NOT replace mandatory Infection Prevention & Control training.

Competency Check

1. Name 3 ways in which dehydration affects the body

Answers:

- Irregularates body temperature
- Reduces lubrication in joints
- Weakens organ function
- Impacts the quality of sleep
- Impairs cognition
- Alters mood
- Constipation

2. Name risk factors for dehydration

Answers:

- Diabetes
- Experiencing vomiting or diarrhoea
- Prolong exposure to the sun (heatstroke)
- Excessive alcohol intake
- Profuse sweating
- High temperature
- Medication that increases urination (diuretics)

3. What are 5 signs of dehydration

Answers:

- Dry mouth/ lips/ tongue
- Thirsty
- Headache
- Dry skin
- Passing less urine/ Smelly urine/ Dark or cloudy urine
- Dizziness
- Lethargy
- Sunken eyes
- Nocturia (frequent urination at night)
- Pee that looks cloudy, dark or has a strong smell
- Sudden urges to urinate
- Confusion
- Low blood pressure
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Signs of dehydration in a baby may include:

- A sunken soft spot (fontanelle) on top of their head
- Sunken eyes
- Few or no tears when they cry
- Fewer wet nappies
- Appearing drowsy or irritable

Competency Check

4. Name 6 ways to improve hydration

Answers:

How to reduce the risk of dehydration

Drinking fluids regularly can reduce the risk of dehydration. Water or diluted squash are good choices.

Drink enough during the day, so urine is a pale clear colour.

Drink more when there's a higher risk of dehydrating. For example, if you're being sick, sweating due to hot weather or exercise, or you have diarrhoea.

Children under the age of 5 should get plenty of fluids to avoid dehydration.

Eat foods high in water content

Helping someone you care for

A person you care for may not have a sense of how much they're drinking.

You can help them by:

- making sure they drink at mealtimes and in between meals
- making drinking a social thing, like "having a cup of tea"
- offering them food with a high water content – for example, soup, ice cream, jelly and fruits like melon

5. Obesity is a form of malnutrition; True or False

Answer: True

6. Improving physical activity helps to improve nutrition; True or False

Answer: True

Competency Check

7. Name 5 risk factors that would prevent the body from being able to absorb or use nutrients

Answers:

- Persistent vomiting or diarrhoea
- Dysphagia – a condition that makes swallowing difficult or painful
- Dementia – people with dementia may be unable to communicate their needs, may use up a lot of calories pacing or may experience a loss of appetite
- Mental health conditions, like depression or schizophrenia, which may affect individual's ability to look after themselves
- Individuals who are socially isolated, have limited mobility, or on a low income
- Cancer and liver disease that can cause a lack of appetite, persistent pain or nausea
- COPD, pulmonary fibrosis and emphysema, which cause your body to need more nutrients but can reduce your appetite
- Crohn's disease, ulcerative colitis or cystic fibrosis that disrupt your body's ability to digest food or absorb nutrients
- Burns, fractures and post major surgery, due to increased demand for nutrients

8. Name 3 ways in which malnutrition impacts the body

Answers:

- weight loss
- Muscle loss
- In appropriate body weight for height- body mass index (BMI)
- Vitamin and mineral deficiencies
- Diet related non-communicable diseases, including:
 - cardiovascular disease
 - certain cancers
 - diabetes

Competency Check

9. Name 3 ways in which dehydration and poor nutrition impacts susceptibility to infection

Answers:

- Prolongs wound healing due to lack of protein
- Impairs wound healing
- Increases the risk of skin breakdown and pressure sores
- Impairs respiratory function
- Patients on antibiotics are additionally at risk of complications such as oral fungal infections such as Candida and Clostridioides difficile infection.

10. List 3 symptoms of UTIs

Answers:

- Cloudy/ dark urine
- Blood in urine
- Pain in pelvic area
- Burning sensation when urinating
- Smelly urine
- Increased urgency to urinate.

11. In preventing UTIs what key areas of hand hygiene must be followed?

Answers:

Hand hygiene. Following the five moments of hand hygiene and practising good hand washing technique

12. What are two of the 5 facts that will help to prevent antimicrobial resistance?

Answers:

- Antibiotics do not kill viruses. Most viral infections run their course with no intervention.
- Antibiotics are not effective against colds and flu.
- Unnecessary use of antibiotics cause them to stop working.
- Taking antibiotics often has side effects such as diarrhoea.
- You must never share antibiotics with others.
- Prevent infections from developing or transmitting.

Supporting documents

[What is Hydration? Let's Make Hydration a Priority – Healthera](#)

[Dehydration - NHS \(www.nhs.uk\)](#)

[Water, drinks and hydration - NHS \(www.nhs.uk\)](#)

[Malnutrition - NHS \(www.nhs.uk\)](#)

[Fact sheets - Malnutrition \(who.int\)](#)

[Antimicrobial resistance \(who.int\)](#)

[Introduction | Nutrition support for adults: oral nutrition support, enteral tube feeding and parenteral nutrition | Guidance | NICE](#)