Infection Prevention and Control

Level 1 - All staff including contractors, unpaid and voluntary staff
Core Skills Reader
Introduction to the Core Skills

The Core Skills standardise the training for 10 subjects commonly delivered as part of statutory and mandatory training requirements for health and social care organisations.

For each subject a set of learning outcomes has been agreed nationally and is set out in the UK Core Skills Training Framework (a copy of the framework is available on the Skills for Health website: www.skillsforhealth.org.uk/).

The learning outcomes specify what needs to be covered in the training for each Core Skills subject. This ensures a quality standard is set and provides clear guidance for organisations to deliver against these requirements as well as recognise the equivalent training delivered externally. This allows for Core Skills training to be portable between organisations and prevents the needless waste and duplication of statutory and mandatory training where it is not required.

To aid organisations in the delivery of the Core Skills subjects, these education resources have been developed to be aligned to the learning outcomes in the UK training framework. Organisations have the flexibility to deliver these resources in a variety of formats as well as adapting them to add localised content alongside the Core Skills Materials.

If you require any further information about the Core Skills, in the first instance please contact the Learning and Development Lead in your organisation.

In the North West, the implementation and management of the Core Skills is overseen by the North West Core Skills Programme on behalf of Health Education North West. The programme can be contacted on: CoreSkills.Programme@nhs.net
Introduction to Infection Prevention and Control

This reader covers the learning outcomes for Core Skills Infection Prevention and Control – Level 1. It can be used either as a standalone document or as supporting material alongside the Infection Prevention and Control presentation or e-Learning package (the relevant slide numbers and eLearning pages are given with each sub-heading). Whichever way the reader is used, it is recommended that the Infection, Prevention and Control Assessment is completed afterwards to allow the learner to demonstrate they have retained the knowledge and learning required to support best practice.

This resource has been designed to cover and address the key principles in Infection, Prevention and Control. The content covered here for Level 1 is likely to be a minimum requirement for all staff working in a health setting and specific staff groups may require additional training dependent upon their role.

It is anticipated that it will take you approximately 20-30 minutes to complete this reader. Current national guidelines recommend that training for Infection Prevention and Control – Level 1 is repeated a minimum of every three years.
What you will learn in this session
(Slide No 2 / eLearning Page 1)

The objectives covered by this reader are listed below and aligned to the Learning Outcomes for Infection, Prevention and Control – Level 1 in the UK Core Skills Training Framework.

1. How you can contribute to Infection Prevention and Control
2. Your responsibility to Infection Prevention and Control and standard precautions, including:
   - Hand Hygiene
   - Personal Protective Equipment (PPE)
   - Management of Blood and Body Fluid Spillage
   - Management of Occupational Exposure including sharps
   - Management of the Environment
   - Management of Care Equipment
3. How to recognise and act when your personal health and fitness may pose a risk of infection to others at work

Why is this important?
(Slide No 3 / eLearning Page 2)

It is a legal responsibility to address Infection Prevention and Control issues. Healthcare organisations need to comply with the Health and Social Care Act 2008 Code of Practice for health and adult social care on the prevention and control of infections and related guidance.

Over 6% of hospital patients in England acquire some form of healthcare associated infection (Health Protection Agency, 2012). In 2012 there were 292 deaths from MRSA and 1646 from C-Diff infections. E-coli and Salmonella cases are rising and becoming resistant to antibiotics.
Healthcare associated infections prolong a patient’s period of ill health and can increase the hospital stay of a patient by an average 7-11 days, this has a major impact on the availability of beds. Also infected patients cost 3 times more to treat than uninfected patients. As a result healthcare associated infections cost the NHS billions of pounds each year.

Infections are becoming more difficult to treat because of an increase in antimicrobial resistance. Often they can complicate illnesses, cause distress to patients and their family, and in some cases may even lead to death. 15-30% of current healthcare associated infections however are preventable. Monitoring and preventing healthcare associated infections is a priority. Effective prevention and control of infection must be part of everyday practice and it is everyone’s responsibility.

What are Healthcare Associated Infections?
(Slide No 4 / eLearning Page 3)

Healthcare Associated Infections (HCAIs) are acquired as a result of healthcare interventions. They can affect both patients and healthcare workers. However they don’t only occur in hospital wards and after surgery but they also occur in outpatients departments and in community settings. Therefore people in social care settings are also at risk.

If a patient gets an HCAI, it may:
- Make their existing medical condition worse
- Make their stay in hospital longer
- Cause them pain, depression and stress
- Lead to a loss of earnings
- On occasions even reduce their chances of successful recovery
There are numerous factors that increase the risk of acquiring an infection but they are most commonly caused by poor practice / standards of infection prevention and control. For example; contaminated hands of healthcare workers; contaminated medical devices; and a failure of staff to comply with local policies, procedures and guidelines. Maintaining high standards of infection prevention and control minimises the risk of HCAIs occurring.

**Chain of infection**
(Slide No 5 / eLearning Page 4)

The chain of infection is a series of six steps linked together showing how infection can be spread. Each link must be present and follow the sequence shown in the diagram for an infection to occur. The links are: Infectious agent; Reservoir; Site of exit from the reservoir; Method of transmission; Site of entry; and a Susceptible host.

Understanding the characteristics of each link provides healthcare staff with knowledge to put prevention strategies in place to break the chain and stop infection spreading. Breaking the chain of infection is everyone’s responsibility. Each link in the chain is discussed in more detail in the following sections.

**Infectious agent**
(Slide No 6 / eLearning Page 5)

Many organisms live in and on our bodies. They're generally harmless or even helpful, but some organisms under certain conditions may cause disease. The infectious agent (pathogen) is any micro-organism with the ability to cause disease. They can be bacteria, viruses, fungi or parasites.
They bring with them the possibility of infection related to:

- Virulence (ability to grow and multiply)
- Invasiveness (ability to enter tissue)
- Pathogenicity (ability to cause disease)

**The reservoir**
(Slide No 7 / eLearning Page 6)

The reservoir is the site where infectious micro-organisms reside and multiple. This can include:

- People
- Equipment
- Animals
- Water
- Food
- Soil

Without reservoirs, infectious agents could not survive and therefore could not be transmitted. An individual does not need to be symptomatic to serve as a reservoir. There are “carrier hosts” who do not show any obvious signs or symptoms of a disease but are still capable of transmitting the disease.
Site of exit
(Slide No 8 / eLearning Page 7)

The place of exit provides a way for a micro-organism to leave the reservoir. For example, a micro-organism may leave the reservoir through the nose or mouth when someone sneezes or coughs. Other examples of sites of exit are:

- Breaks in skin
- Blood
- Vomit
- Any other bodily substance

Transmission
(Slide No 9 / eLearning Page 8)

This is the method of transfer by which the micro-organism moves or is carried from one place to another. The principal routes of transmission are:

- Direct Contact (human to human contact for example through touching, kissing, sexual intercourse or from a pregnant woman to her fetus through the placenta)
- Via respiratory droplets when coughing, sneezing or talking
- Indirect Contact (For example airborne transmission, contact with contaminated surfaces touched by the infected person, or where droplets of bodily fluid have landed;
- Blood exposure
- Consuming contaminated food/water
- Parasite bites
Site of entry
(Slide No 10 / eLearning Page 9)

This is the site through which the micro-organism enters its new host and causes infection. Infectious agents can enter the body through various portals such as:

- Inhalation (breathing in)
- Ingestion
- Sexual contact
- Breaks in the skin
- Medical devices such as tubes placed in body orifices (e.g. catheters, needles, IV)

Pathogens frequently enter the body of the host via the same route they left the reservoir; for example, airborne infectious agents from one person’s sneeze can enter through the nose of another person.

Susceptible host
(Slide No 11 / eLearning Page 10)

The infectious agent’s ability to reproduce depends on the degree of the host’s resistance. Those with strong immune systems are better able to fend off microorganisms than those with weakened immune systems.
Patients, staff and visitors alike can all be susceptible hosts. Some individuals have poor physical resistance and are more susceptible due to:

- Low immunity
- Age (very young or old)
- Poor nutritional status – obesity or malnourishment
- Underlying disease
- Poor personal hygiene
- Medication
- Surgery
- Metabolic disorders
- Genetic abnormalities
- Not being vaccinated
- Pregnancy

**Standard precautions**
(Slide No 12 / eLearning Page 11)

The chain of infection can be broken by taking standard precautions. The list outlined below are the minimum set of infection prevention and control measures to be used for the care of all patients.

They are mandatory for **ALL STAFF at ALL TIMES** in healthcare settings.

- Use of personal protective equipment
- Management and safe disposal of clinical waste
- Safe management of body fluid spillages
- Safe management of laundry
- Cleaning and decontamination of re-usable equipment
- Safe use / disposal of sharps and management of sharp injuries
- Hand hygiene
Personal Protective Equipment (PPE)
(Slide No 13 / eLearning Page 12)

PPE is designed to protect healthcare workers from exposure to potentially infectious materials and pathogens. The Personal Protective Equipment at Work Regulations 1992 (as amended) requires employers to provide suitable personal protective equipment to their employees who may be exposed to risk whilst at work where all other methods of reducing the risks has been considered and it has either not been possible to fully reduce the risks or the costs of such measures exceeds the criteria ‘so far as is reasonably practicable’.

PPE may include:

- Gloves
- Aprons / gowns
- Face Masks
- Protective eyewear
- Hearing protection
- Head protection

This is not an exhaustive list. It is your responsibility to use PPE in accordance with your organisation’s policy and the instructions and training on PPE use you have received in line with the requirements of your role.
Management and safe disposal of clinical waste  
(Slide No 14 / eLearning Page 13)

Healthcare staff have a duty to ensure that clinical waste is disposed of in a safe and appropriate way. The Department of Health have produced a best practice guide on the safe management of healthcare waste (2013, first published in 2006).

Segregation of different types of waste is critical for the safe management of clinical waste. The colour-coded segregation system outlined in the table below, identifies and segregates waste on the basis of waste classification and suitability of treatment or disposal.

It is the responsibility of all staff involved with the generation or handling of waste in the organisation, to be aware of the correct local management and safety procedures related to the waste produced.

<table>
<thead>
<tr>
<th>Colour</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Yellow</strong></td>
<td>Infectious waste, must be incinerated</td>
</tr>
<tr>
<td><strong>Orange</strong></td>
<td>Infectious waste, can be treated to render safe prior to disposal</td>
</tr>
<tr>
<td><strong>Purple</strong></td>
<td>Cytotoxic / Cytostatic waste, must be incinerated by licensed facility</td>
</tr>
<tr>
<td><strong>Yellow / Black</strong></td>
<td>Offensive / Hygiene waste, can be land filled on licensed site</td>
</tr>
<tr>
<td><strong>Black</strong></td>
<td>Domestic waste, may be land filled / recycled</td>
</tr>
</tbody>
</table>
Management of body fluid spillages
(Slide No 15 / eLearning Page 14)

Body fluid spillages can include blood, faeces, vomit, urine and pus. Blood and body fluids may contain disease causing micro-organisms, which must be dealt with as soon as possible after a spillage has occurred. They can be hazardous to health, therefore the Control of Substances Hazardous to Health Regulations 2002 (COSHH) will apply. It is the responsibility of all staff to deal promptly with such spills adhering to their organisation’s policy. However the general best practice guidelines below will apply in most cases:

- Prevent access to the spillage by cordonning off where it has occurred
- Ensure all cuts and abrasions are covered with a waterproof dressing
- Wear appropriate personal protective equipment (PPE): disposable gloves and an apron must be worn as a minimum. Face masks and eye protection should be worn if there is a risk of blood or body fluid splashing to the face or facial contact with contaminated debris
- If the spill contains broken glass or sharp instruments, safely dispose of them using a disposable scoop (or cardboard), without touching directly with your gloved hands. Discard safely (ideally into a sharps container)
- Use the correct cleaning procedure. Clean using a product that contains a detergent and disinfectant. Follow the instructions and ensure it is effective against bacteria and viruses and suitable for use on the affected surface
- Use disposable equipment when cleaning spillages and dispose of waste appropriately. Never use mops for cleaning up blood and body fluid spillages – use disposable paper towels and discard clinical waste as described in the previously. If items cannot be cleaned and decontaminated, they may need to be discarded safely. Heavily fouled soft furnishings may need bagging, before disposal as clinical waste
- A spillage kit should be available for blood spills
- Wash hands thoroughly after removing PPE
Management of laundry
(Slide No 16 / eLearning Page 15)

Used linen, especially within a healthcare environment, can harbour large numbers of potentially infectious agents. Therefore, it is important that the appropriate precautions are taken to ensure contamination to or from linen does not take place, as this might then lead to the transmission of infections. These precautions apply to all stages of linen management: storage, handling, bagging, transporting, and laundering. Some general principles are listed below:

- Clean and dirty linen must be kept separately
- Clean linen should always be stored in a clean, designated area
- All dirty linen must be placed carefully and directly into the appropriate laundry bag on removal from the bed or patient
- Use PPE when handling dirty linen
- Hands should be decontaminated before handling clean linen and after handling used laundry

Ensure you have read and understand your organisation’s policy for local guidance on the management of linen and laundry and are able to incorporate this into clinical practice.

Cleaning and decontamination
(Slide No 17 / eLearning Page 16)

A dirty or contaminated clinical environment is one of the factors that may contribute to HCAIs. Although the environment and equipment may look clean, invisible micro-organisms are always present, some potentially harmful. Cleaning and decontamination of equipment and the environment are key infection prevention and control measures.
Decontamination is used to describe a combination of processes - cleaning, disinfection and / or sterilisation – which includes the destruction or removal of micro-organisms and makes equipment safe to re-use. Different medical devices require different levels of decontamination so you should always use the appropriate cleaning / disinfection products according to the situation. Special precaution should also be taken in high risk areas and with high risk patients.

Cleaning is always an essential pre-requisite when decontaminating equipment and must precede disinfection. If disinfectants are not used in an appropriate way they may promote microbial growth. You must be aware and comply with local policies for decontamination of equipment.

Safe use / disposal of sharps and management of sharp injuries
(Slide No 18 and 19 / eLearning Page 17 and 18)

Sharps include needles, stitch cutters, scalpels, and any other sharp instrument. A sharps injury is an incident, which causes a sharp instrument to penetrate the skin. This is sometimes called a percutaneous injury. Unfortunately it is common for staff to be injured by the inappropriate use of sharps. The main dangers from a sharps injury are blood borne viruses such as hepatitis B, hepatitis C and HIV. Some clinical procedures in particular have a higher than normal risk of causing injury, for example surgery, intra-vascular cannulation, and injection.
Sharps injuries can be prevented by following the good practice principles below:

- Don’t use a sharp if you don’t have to
- Consider needle free devices
- Never re-sheath a needle
- Ensure correct assembly of sharps containers
- Dispose of sharps in an approved container at the point of use
- Don’t exceed the fill limit
- Ensure the correct disposal of sharps containers
- Make sure you are aware and comply with your organisation’s agreed policies on the use of sharps

In line with the Health and Safety Executive (HSE) advice, if you, a colleague or patient suffer an injury from a sharp which may be contaminated you should:

- Encourage the wound to gently bleed, ideally holding it under running water
- Wash the wound using running water and plenty of soap
- Don’t scrub the wound whilst you are washing it
- Don’t suck the wound
- Dry the wound and cover it with a waterproof plaster or dressing
- Seek urgent medical advice as effective prophylaxis (medicines to help fight infection) are available
- Report sharps injuries in line with local reporting procedures/policies

As already discussed, the transmission of infection is dependent on a number of factors, including a person's natural immune system. Even if the number of injuries is high, only a small number are known to have caused infections that led to serious illness. However, the effects of an injury and anxiety about its potential consequences, including the adverse side effects of post-exposure prophylaxis can have a significant personal impact on an individual. More information is available via the following link: [www.hse.gov.uk/healthservices/needlesticks](http://www.hse.gov.uk/healthservices/needlesticks)
Hand hygiene
(Slides No 20 and 21 / eLearning Page 19 and 20)

“Hands are a very efficient vehicle for transferring micro-organisms. Therefore one of the most effective measures in the prevention of transmission of infection and significant reduction of HCAIs is improving hand hygiene” (Pratt et al., 2007).

Hand hygiene can be performed using soap and water or hand sanitisers. You should ensure you are aware of and follow local guidelines. Your organisation can monitor that staff are compliant with good hand hygiene by:

- Infection prevention and control audits
- Routine observations of practice
- Monitoring concerns and complaints by patients and visitors

The World Health Organisation has developed the ‘5 Moments for Hand Hygiene’ framework that defines the key moments when healthcare workers should perform hand hygiene. It recommends that health-care workers clean their hands:

- Before touching a patient,
- Before clean / aseptic procedures,
- After body fluid exposure / risk,
- After touching a patient
- After touching patient surroundings

The 5 moments is a good guide and shown in detail on the next page. It is not exhaustive though and may not be appropriate in all circumstances. In addition, there are general areas where you should ensure hand hygiene, these include:

- Entrance to clinical areas / wards
- Before and after handling food (in and outside a hospital setting)
- After going to the toilet (in and outside a hospital setting)
Your 5 moments for HAND HYGIENE

1. BEFORE PATIENT CONTACT
   WHEN?: Clean your hands before touching a patient when approaching him or her
   WHY?: To protect the patient against harmful germs carried on your hands

2. BEFORE AN ASEPTIC TASK
   WHEN?: Clean your hands immediately before any aseptic task
   WHY?: To protect the patient against harmful germs, including the patient’s own germs, entering his or her body

3. AFTER BODY FLUID EXPOSURE RISK
   WHEN?: Clean your hands immediately after an exposure risk to body fluids (and after glove removal)
   WHY?: To protect yourself and the health-care environment from harmful patient germs

4. AFTER PATIENT CONTACT
   WHEN?: Clean your hands after touching a patient and his or her immediate surroundings when leaving
   WHY?: To protect yourself and the health-care environment from harmful patient germs

5. AFTER CONTACT WITH PATIENT SURROUNDINGS
   WHEN?: Clean your hands after touching any object or furniture in the patient’s immediate surroundings, when leaving – even without touching the patient
   WHY?: To protect yourself and the health-care environment from harmful patient germs

WHO acknowledges the Hôpitaux Universitaires de Genève (HUG), in particular the members of the Infection Control Programme, for their active participation in developing this material.
Your 5 Moments for Hand Hygiene

1. BEFORE TOUCHING A PATIENT
   WHEN? Clean your hands before touching a patient when approaching him/her.
   WHY? To protect the patient against harmful germs carried on your hands.

2. BEFORE CLEAN/ASEPTIC PROCEDURE
   WHEN? Clean your hands immediately before performing a clean/aseptic procedure.
   WHY? To protect the patient against harmful germs, including the patient’s own, from entering his/her body.

3. AFTER BODY FLUID EXPOSURE RISK
   WHEN? Clean your hands immediately after an exposure risk to body fluids (and after glove removal).
   WHY? To protect yourself and the healthcare environment from harmful patient germs.

4. AFTER TOUCHING A PATIENT
   WHEN? Clean your hands after touching a patient and his/her immediate surroundings, when leaving the patient’s side.
   WHY? To protect yourself and the healthcare environment from harmful patient germs.

5. AFTER TOUCHING PATIENT SURROUNDINGS
   WHEN? Clean your hands after touching any object or furniture in the patient’s immediate surroundings, when leaving – even if the patient has not been touched.
   WHY? To protect yourself and the healthcare environment from harmful patient germs.

World Health Organization
Patient Safety
SAVE LIVES
A World Alliance for Safer Health Care
Clean Your Hands
Barriers to effective hand hygiene
(Slides No 22 and 23 / eLearning Page 21 and 22)

It is often overlooked how personal jewellery and clothing can hinder effective hand hygiene. To achieve effective hand hygiene in the workplace, you should comply with the ‘Bare Below the elbows’ dress code. In line with this you should:

- Avoid wearing wrist watches or stoned rings
- Keep nails short and clean and avoid wearing nail varnish and / or false nails
- Cover any cuts with a waterproof dressing
- Do not wear long sleeves. Alternatively roll up sleeves prior to hand hygiene

All staff undertaking duties in clinical areas or with patient contact must comply with the ‘Bare Below the Elbows’ dress code. However healthcare workers delivering direct patient care outdoors (e.g. ambulance staff) are still expected to wear long sleeved high visibility clothing in line with health and safety legislation. You should refer to your organisation’s dress code / uniform policy for clarification and any other requirements.
Hand hygiene technique and appropriate products
(Slides No 24 and 25 / eLearning Page 23 and 24)

You should apply hand hygiene rub (sanitiser) or wash hands with liquid soap and water using the hand hygiene techniques described in detail on the next 2 pages, to decontaminate hands between caring for different patients, or between different caring activities for the same patient.

Hands that are visibly dirty must be washed with liquid soap and water. Use hand hygiene rub only if hands appear clean or as an additional step following hand washing to provide additional cleansing and residual disinfectant action (e.g. prior to clinical procedures).

Sometimes you may be advised against using hand rubs as a first method of cleaning, for example rubs are not effective against Norovirus or Clostridium difficile spores so always consult your local hand washing policy and follow the relevant instructions.

Promote skin integrity by drying hands properly after washing them. Disposable paper hand towels should be used for this purpose. Also use hand cream (moisturiser) at regular intervals throughout the day. If a particular product irritates the skin contact Occupational Health.

A foot pedal bin should be available and soap and sanitisers should be conveniently located in wall-mounted dispensers close to hand washing facilities.
How to hand wash?

WASH HANDS ONLY WHEN VISIBLY SOILED! OTHERWISE, USE HANDRUB!

Duration of the entire procedure: 40-60 sec.

0. Wet hands with water
1. apply enough soap to cover all hand surfaces.
2. Rub hands palm to palm
3. right palm over left dorsum with interlaced fingers and vice versa
4. palm to palm with fingers interlaced
5. backs of fingers to opposing palms with fingers interlocked
6. rotational rubbing of left thumb clasped in right palm and vice versa
7. rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa.
8. Rinse hands with water
9. dry thoroughly with a single use towel
10. use towel to turn off faucet
11. ...and your hands are safe.
How to handrub?

RUB HANDS FOR HAND HYGIENE! WASH HANDS ONLY WHEN VISIBLY SOILED!

Duration of the entire procedure: 20-30 sec.

1a. Apply a palmful of the product in a cupped hand and cover all surfaces.
1b. Rub hands palm to palm

2. Rub hands palm to palm

3. Right palm over left dorsum with interlaced fingers and vice versa

4. Palm to palm with fingers interlaced

5. Backs of fingers to opposing palms with fingers interlocked

6. Rotational rubbing of left thumb clasped in right palm and vice versa

7. Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa

8. ...once dry, your hands are safe.

WHO acknowledges the Hôpitaux Universitaires de Genève (HUG), in particular the members of the Infection Control Programme, for their active participation in developing this material.

World Health Organization
October 2006, version 1.
Is your personal health and fitness a risk to others?
(Slides No 26 / eLearning Page 25)

In order to protect yourself and your work colleagues, you must immediately inform your line manager (or nominated departmental absence contact person) if you believe that your absence is work-related, for example as a result of stress, an accident at work or have been in contact with an infectious disease.

Ensure that you do not attend work if you are unwell or unfit for work, if in doing so would affect your health and / or the health of others with whom you come into contact in the course of your work. Healthcare workers have a duty of care towards their patients, which includes taking precautions to protect them from communicable disease. Immunisation of healthcare workers therefore:

- Protects the individual and their family from an occupationally-acquired infection
- Protects patients, including vulnerable patients who may not respond well to their own immunisation
- Protects other staff
- Allows for the efficient running of services without disruption

Clinical staff and food handlers, who develop diarrhoea and / or vomiting of an unexplained or of a potentially infectious nature, should report this to the line manager and occupational health department. The staff member should stay off work until they have been symptom free for 48 hours. Staff with a suspected or known infectious disease should be referred to Occupational Health for advice on when to return to work and whether the infection should be referred to the workplace manager if patients may have been put at risk of infection. Healthcare workers have a duty of care to patients to promptly seek and follow confidential professional advice if for any reason they believe they may have been exposed to infection with a blood borne virus e.g. Hepatitis B or C or HIV.
Further information
(Slide No 29 / eLearning Page 26)

For Further information please access the resources below:

- [www.rcn.org.uk/](http://www.rcn.org.uk/)
- [www.ips.uk.net/](http://www.ips.uk.net/)
- [www.nric.org.uk](http://www.nric.org.uk)
- [www.who.int/en/](http://www.who.int/en/)

You should also know how to access your organisation’s Infection Prevention and Control Resources and the Infection Prevention and Control Team contact details.

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