Introduction to infection prevention and control

Part 1

Chapters

1 Infection prevention and control (IP&C)

Figure 1.1 Healthcare associated infections (HCAIs)

Box 1 HCAIs – patient risk factors

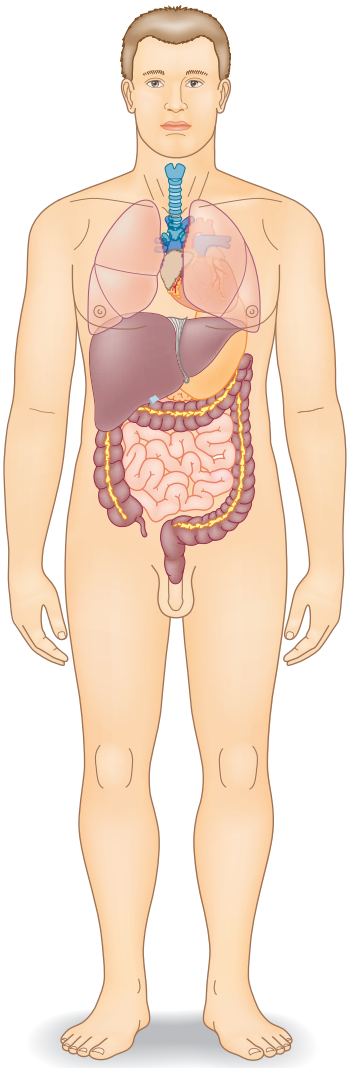
- Extremes of age
- Emergency admission to an intensive care unit
- Hospital inpatient stay > 7 days
- Insertion of an invasive device (see Chapters 20 and 30)
- Surgery/trauma-induced immunosuppression
- Neutropenia
- Impaired functional status
- Colonisation with an antibiotic-resistant organism (e.g. carbapenemase-producing organisms (see Chapter 29); MRSA (see Chapter 43)
- Any co-morbidities
- Antibiotics
- Obesity
- Malnutrition
- Loss of mobility

References: Golden et al (1999); Hirsch et al (2008); World Health Organization (2011)

Box 2 Other HCAI risk factors

- Increase in patients undergoing invasive procedures
- Increasing age of the population
- Confused, wandering and/or 'non-compliant patients', and patients with reduced mental capacity
- Increased bed occupancy rates, patient turnaround and delayed discharges
- Increased staff : patient ratios
- Lack of isolation facilities/poor isolation practices (see Chapter 21)
- Poor cleaning/decontamination practices (equipment)
- Poor standards of environmental cleanliness (see Chapter 17)
- Antibiotic resistance and poor antimicrobial stewardship (see Chapters 10 and 11)
- Poor infection and prevention control (IP&C) practice – non-compliance with the application of standard precautions (see Chapters 14, 16 and 18) and local IP&C policies

References: Department of Health (2002; 2004; 2007a); Cunningham et al (2005); Wigglesworth and Wilcox (2006); Griffiths et al (2008)



Box 3 The six commonest HCAIs (Health Protection Agency, 2012a)

1 Pneumonia/lower respiratory tract infections (see Chapter 32)
2 Urinary tract infections (see Chapter 30)
3 Surgical site infections (see Chapter 24)
4 Clinical sepsis (see Chapter 25)
5 Gastrointestinal infections (see Chapters 22 and 31)
6 Bloodstream infections (see Chapter 26)

Box 4 'Alert organisms'

- MRSA (see Chapter 43)
- Panton–Valentine leukocidin (PVL) producing strains of MRSA/ *Staphylococcus aureus* (see Chapter 43)
- *Clostridium difficile* (see Chapter 31)
- *Streptococcus pyogenes* (see Chapter 36)
- Group B haemolytic streptococci
- *Legionella* (see Chapter 37)
- Extended-spectrum beta lactamases (ESBLs) and carbapenemase-producing organisms (see Chapter 29)
- Glycopeptide-resistant enterococci (GRE)
- Resistant Gram-negative bacilli
- *Campylobacter* species (see Chapter 28)
- *Salmonella* species (see Chapter 42)
- *Escherichia coli* 0157

Box 5 'Alert conditions'

- Infectious diarrhoea (see Chapter 22)
- Food poisoning (see Chapters 28 and 42)
- Scabies and infestations (see Chapter 34)
- Tuberculosis (see Chapter 44)
- Chickenpox and shingles (see Chapter 45)
- Meningococcal disease (see Chapter 39)
- Typhoid and paratyphoid fever
- Viral hepatitis
- Post-operative surgical site infections (see Chapter 24)
- Creutzfeldt–Jakob disease (CJD)

Box 6 IP&C standard precautions

- Hand hygiene (see Chapter 14)
- Personal protective equipment (PPE) (see Chapter 16)
- Cleaning/decontamination of the environment and equipment (see Chapter 17)
- The safe use and disposal of sharps (see Chapter 18)
- The management of waste
- The management of linen

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Figure 1.2 The role of the Infection Prevention and Control Team (IP&CT)

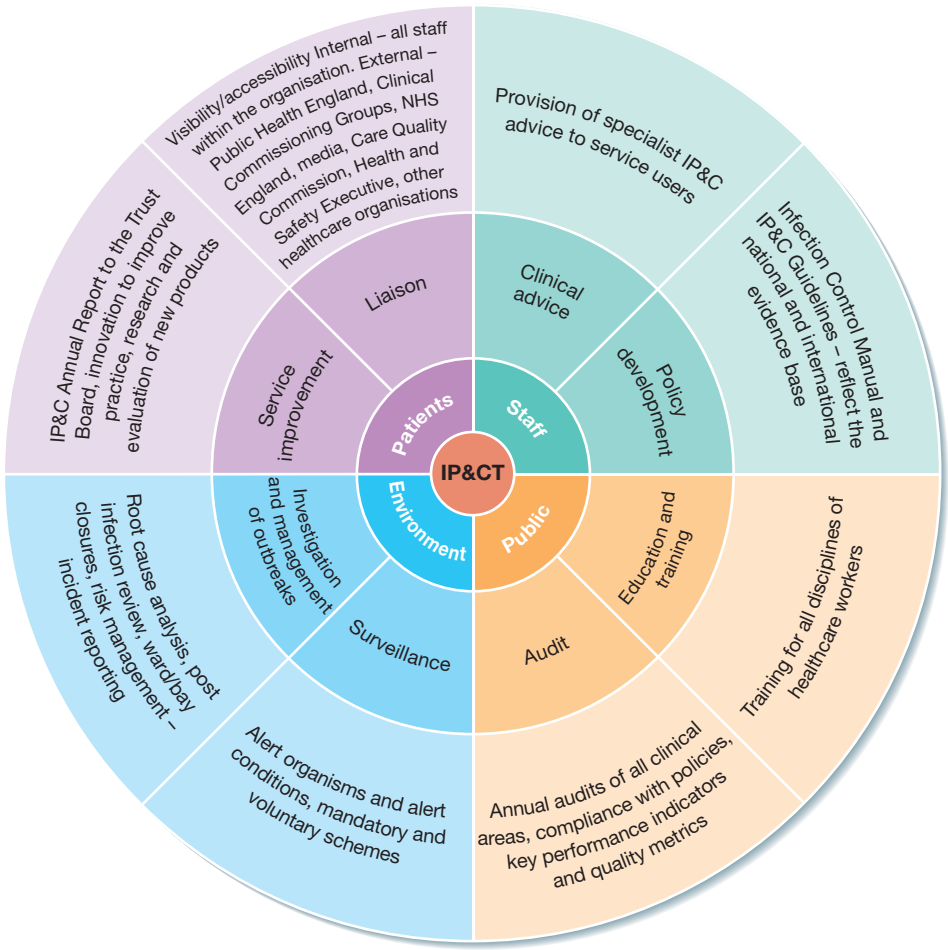

Table 1.1 The Code of Practice (The Health and Social Care Act, 2008 – Department of Health, 2015)

Compliance criterion	What the registered provider will need to demonstrate
1	Systems to manage and monitor the prevention and control of infection. These systems use risk assessments and consider the susceptibility of service users and any risks that their environment and other users may pose to them.
2	Provide and maintain a clean and appropriate environment in managed premises that facilitates the prevention and control of infections
3	Ensure appropriate antimicrobial use to optimise patient outcomes and to reduce the risk of adverse events and antimicrobial resistance
4	Provide suitable accurate information on infections to service users, their visitors and any person concerned with providing further support or nursing/medical care in a timely fashion
5	Ensure prompt identification of people who have or are at risk of developing an infection so that they receive timely and appropriate treatment to reduce the risk of transmitting infection to other people
6	Systems to ensure that all care workers (including contractors and volunteers) are aware of and discharge their responsibilities in the process of preventing and controlling infection
7	Provide or secure adequate isolation facilities
8	Secure adequate access to laboratory support as appropriate
9	Have and adhere to policies designed for the individual's care and provider organisations that will help to prevent and control infections
10	Providers have a system in place to manage the occupational health needs and obligations of staff in relation to infection

Source: Department of Health. Used under OGL

A healthcare associated infection (HCAI) can be defined as 'an infection occurring in a patient during the process of care in a hospital or other healthcare facility, which was not present or incubating at the time of admission. This includes infections acquired in the hospital but appearing after discharge and also occupational infections among staff of the facility' (WHO, 2011). Figure 1.1, Boxes 1 and 2, describes individual patient and other risk factors for the development of HCAIs; Box 3 lists the top six HCAIs.

HCAIs are **significant harm events** and healthcare staff have to be aware of their implications, not just from an individual patient perspective (patients can, and do, die from infections that they did not come into hospital with, or contracted as a result of hospital or other healthcare intervention), but also in the wider context. It is important to have a high awareness of the possibility of HCAI in both patients and healthcare staff to ensure early and rapid diagnosis resulting in effective treatment and containment of infection.

The introduction of national reduction, and local 'stretch', targets for MRSA bloodstream infections (see Chapter 43) and *Clostridium difficile* (see Chapter 31) , has kept these organisms at the top of the Department of Health agenda and in the media spotlight since 2004. These targets have largely been successful.

The focus has been on the implementation of evidence-based best practice and adherence to sound infection prevention and control practice, supported by a large number of Department of Health / NHS England / Public Health England drives, initiatives and legislation. MRSA and *C. difficile*, however, are just the tip of the iceberg, as the nature of infections and infectious diseases is constantly evolving. At the time of writing, the greatest 'infection control' threat that the NHS is facing is not from pandemic influenza (see Chapter 41) or another outbreak of Ebola virus disease (see Chapter 33) but from **multi-drug resistant Gram-negative bacteria** (see Chapter 29), which presents a global public health threat and, perhaps, the beginning of a world without antibiotics. The application of, and compliance with, infection prevention and control as part of everyday practice is going to become more crucial to patient care than ever, given the risk of patients dying from infections that previously could have been treated.

Organisms causing HCAIs

Figure 1.1, Box 4, lists the 'alert organisms' that are commonly implicated in HCAIs, as they can cause cross-infection and outbreaks in healthcare settings. There are also a number of 'alert conditions' that have wider public healthcare implications (see Figure 1.1, Box 5).

While HCAIs are, on the majority of occasions, acquired as a result of cross-infection arising from exposure to other **colonised** or infected patients or staff, they can arise endogenously from the patient's own resident microbial population, particularly where invasive devices (see Chapters 20 and 30) are inappropriately managed. Communicable diseases (see Chapter 2) acquired in healthcare settings through exposure to other patients, relatives or healthcare staff, can also be considered to be healthcare associated.

The Health and Social Care Act (Code of Practice)

The Code of Practice on the prevention and control of infections and related guidance (DH, 2015) came into being in 2008 as part of the Health and Social Care Act, which established the Care Quality Commission (CQC) (http://cqc.org.uk).The Health and Social Care Act 2008 and its regulations **are law, and must be complied with**.

Since April 2009, NHS Trusts have been legally required to register with the Care Quality Commission (CQC) under the Health and Social Care Act, 2008, and as a legal requirement of their registration must protect patients, workers and others who may be at risk of a healthcare associated infection. This has since extended to encompass other NHS bodies, independent healthcare and social care providers, primary dental care and independent sector ambulance providers and primary medical care providers.

In relation to HCAI, the CQC will monitor compliance with the statutory requirements of registration and will judge whether the requirement is met with reference to the *Code of Practice*. In cases of failure to comply with the registration requirements, the CQC has a range of enforcement powers that it can use to respond to breaches and which are proportionate to the risk of infection. It may draw the breach to the registered provider's attention and give the provider an opportunity to put it right within a reasonable period of time. In extreme cases the CQC has the power to cancel registration.

Table 1.1 lists the 10 Compliance Criteria of the *Code of Practice*.

IP&C – everybody's business

Infection prevention and control is an integral part of an effective risk management and patient safety programme and as such must be embedded in every aspect of patient care in every conceivable patient / healthcare setting by all healthcare staff. It is important to note that Registered Nurses and Midwives are bound by the Nursing and Midwifery Council (NMC) *Professional Standards of practice and behaviour for Nurses and Midwives (The Code)* (NMC, 2015), and medical staff registered with the General Medical Council (GMC) and licensed to practise medicine have to abide by the GMC's *Good Practice Guidance* (2013) (http://www.gmc-uk.org/guidance/good_medical_practice.asp).

Good management and organisation are crucial to establishing high standards of infection control. All healthcare providers must ensure that they have systems in place that address:

- leadership
- management arrangements
- design and maintenance of the environment and devices
- application of evidence-based protocols and practices for both users and staff
- education, training, information and communication.

All staff are responsible for the care that they give, and are **accountable** or answerable to someone for their actions. They also have a **duty of care**, which is a legal obligation to ensure that patients in their care come to no harm as a consequence of any act or omission by the healthcare worker. The Infection Prevention and Control Team (IP&CT) are required to hold staff to account and to challenge poor practice and non-compliance (compliance essentially means acting in accordance with agreed standards or guidelines). Therefore it is essential that staff understand that they are responsible for their practice in relation to IP&C, and for protecting the patients in their care as far it is practically and reasonably possible from HCAIs, and that they are answerable to someone if they are non-compliant. For example, failure to record the visual infusion phlebitis (VIP) scores for two days on a patient with a peripheral cannula in situ (see Chapter 20) leading

to a bloodstream infection (BSI – **bacteraemia** or septicaemia; see Chapter 25) could be viewed as negligent, meaning that harm has been caused to the patient through careless omission (as opposed to a deliberate act), and that the duty of care has been breached.

Holding staff to account however is not about apportioning blame. It is about encouraging responsibility, ownership and engagement, and the IP&CT and healthcare staff working together to reduce, prevent, control and manage HCAIs and the risk to patients. IP&C is an integral component of patient centred care, and all aspects of IP&C clinical practice must be viewed as being *as* important as *all other aspects* of patient care, *not* as add-ons.

Staff must have the **competency** or ability to undertake tasks or clinical interventions; part of this ability means possessing the necessary knowledge and skills. To undertake clinical activities / interventions without the appropriate knowledge or skills or training places patients and healthcare workers at risk. Staff must also be aware that if there are omissions or gaps in a patient's paperwork in relation to the **documentation** of IP&C interventions, the legal interpretation is that care was not given.

Avoidable versus unavoidable infections

Avoidable HCAIs are essentially those where poor clinical practice and non-compliance with IP&C can be evidenced / demonstrated. Any successful reduction in HCAIs requires a zero tolerance approach by all healthcare staff with regard to poor infection control practice, non-compliance with policies, protocols and evidence-based best practice recommendations, and avoidable infections.

HCAIs and the Duty of Candour

All NHS provider bodies registered with the Care Quality Commission (CQC) have to comply with the new Statutory Duty of Candour as a requirement of their registration.

The Duty of Candour is **legal duty** on hospital, community and mental health Trusts to inform and apologise to patients if there have been mistakes in their care that have led to significant harm. It is therefore applicable to all healthcare professionals in all settings who have a professional responsibility to be honest with patients when things go wrong. This includes reporting incidents and near misses, being open and honest with patients / clients and their carers, and apologising. With regard to applying the Duty of Candour in relation to HCAIs, the onus is on the medical team responsible for the patient's care, not the IP&CT.

The role of the Infection Prevention and Control Team

The Code of Practice on the prevention and control of infections and related guidance (DH, 2015), part of the Health and Social Care 2008, requires healthcare organisations to have, or have access to, 'an appropriate mix of both nursing and consultant medical expertise (with specialist training in infection prevention and cleanliness)'. The IP&CT are the nursing and medical experts responsible for providing the organisation within which they work with evidence-based best practice advice on all aspects of infection prevention and control, and are the only specialist nursing and medical team with responsibility for patients, staff, the public and the environment. The IP&CT are the authors of the Infection Prevention and Control Annual Report, which is presented to the Trust Board of Directors and describes the activities undertaken by the IP&CT during that year in relation to the prevention and control of healthcare associated infections (HCAIs). Activities undertaken by the IP&CT are described in Figure 1.2, and are all focused on ensuring that the organisation is compliant with the Code of Practice.

The application of IP&C outside an acute NHS Trust setting

The risk of HCAIs is generally considered to be greater to patients within an acute healthcare setting (i.e. NHS Trusts) given the types of interventions / invasive procedures that patients typically undergo, and other HCAI risk factors (see Figure 1.1, Boxes 1 and 2), although, in theory, infections / outbreaks should be easier to prevent and manage given that the hospital environment is more 'controlled'.

There are some patient/client groups in whom the prevention and control of infection poses particular challenges, such as those who are confused and wandering, and/or have reduced mental capacity, or disabilities.

Staff education and training in the application of standard precautions (see Figure 1.1, Box 6) is paramount, and staff may need to be creative in how they actually apply or practice IP&C. When caring for elderly, confused and wandering patients who are **colonised** or who have an infection for example (and this is just as applicable to an acute care setting), there will need to be an increased focus on patient / client hand hygiene (i.e. by using patient hand hygiene 'wet wipes'), and additional / enhanced cleaning of the environment, particularly frequent 'touch points' (areas that the patients' / clients' hands are most likely to come into contact with) and communal areas such as toilets and bathrooms.

NICE (2012) and the DH/HPA (2013) have published specific guidance for the prevention and control of infection in community care, and the HPA/DH have also published specific guidance for staff working in prisons and places of detention (HPA/DH, 2011).