Health Information and Quality Authority

An tÚdarás Um Fhaisnéis agus Cáilíocht Sláinte

Health Information and Standards

Background document to support the development of Draft national infection prevention and control standards for community services

January 2018

Safer Better Care

Note on terms and abbreviations used in this document

A full range of terms and abbreviations used in this document is contained in a glossary at the end of it.

About the Health Information and Quality Authority

The Health Information and Quality Authority (HIQA) is an independent authority established to drive high quality and safe care for people using our health and social care services in Ireland. HIQA's role is to develop standards, inspect and review health and social care services and support informed decisions on how services are delivered.

HIQA aims to safeguard people and improve the safety and quality of health and social care services across its full range of functions.

HIQA's mandate to date extends across a specified range of public, private and voluntary sector services. Reporting to the Minister for Health and the Minister for Children and Youth Affairs, HIQA has statutory responsibility for:

- **Setting Standards for Health and Social Services –** Developing person-centred standards, based on evidence and best international practice, for health and social care services in Ireland.

- **Regulation –** Registering and inspecting designated centres.

- **Monitoring Children's Services –** Monitoring and inspecting children's social services.

- **Monitoring Healthcare Safety and Quality –** Monitoring the safety and quality of health services and investigating as necessary serious concerns about the health and welfare of people who use these services.

- **Health Technology Assessment –** Providing advice that enables the best outcome for people who use our health service and the best use of resources by evaluating the clinical effectiveness and cost-effectiveness of drugs, equipment, diagnostic techniques and health promotion and protection activities.

- **Health Information –** Advising on the efficient and secure collection and sharing of health information, setting standards, evaluating information resources and publishing information about the delivery and performance of Ireland's health and social care services.

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Executive summary

Infection prevention and control refers to the measures services put in place to ensure they are providing safe care in a clean environment. Healthcare-associated infections are infections that have been acquired by people after they have been in contact with a healthcare service, and are becoming more and more common in community care settings. These infections can have a huge impact on people, causing upset and anxiety, serious illness, disability and death. Many of these infections can be avoided by putting in place infection prevention and control and antimicrobial stewardship measures.

Antimicrobial resistance presents a serious global threat. Antimicrobial resistance occurs when a micro-organism develops resistance to an antimicrobial medication that had been originally effective for treating infections caused by it. Preventing infections from occurring in the first instance is one of the best ways to reduce the need to prescribe antimicrobial medication and prevent antimicrobial resistance.

This document sets out the findings of a review undertaken to inform the development of the *Draft national infection prevention and control standards for community services*. The purpose of the standards is to develop a framework for best practice in providing person-centred, safe and effective care and support in community health and social care services across Ireland. The background document was developed as part of the HIQA Standards Development Process as outlined in the introduction to this document. This document was informed by reviewing authoritative international and national websites, national repositories and libraries and evidence-based databases. All of the literature on infection and control in the community was collated and analysed and the findings were used to inform the standards and features presented under an eight-theme standards development framework, as set out on pages 10 to 13 of this document.

The document is divided into three different chapters. Chapter 2 provides an overview of international standards, guidelines and guidance documents. Countries such as Scotland, Australia, the United Kingdom and Wales were looked at in detail. In addition, the review considered guidelines and guidance documents produced by international organisations such as the World Health Organization (WHO) and organisations with long-standing expertise in this field, such as the Centers for Disease Control and Prevention (CDC) in the US.

A number of countries developed national guidelines which are aligned with their national standards. This review included both general infection prevention and control-related documents and setting-specific documents, for example, dental practice, general practice, ambulance, residential care facilities, home care, disability services and so on. The findings identified from this chapter have informed the

development of draft standards, primarily under the headings of Effective Care and Support; Safe Care and Support; and Leadership, Governance and Management.

Chapter 3 looks at Irish guidance documents which are divided under setting-specific headings such as dental practices, general practice, ambulances services and residential care facilities. The chapter also looks at micro-organism specific guidance and standard precautions. Findings from this chapter were used to inform the development of standards and features under the headings of the Effective Care and Support; Safe Care and Support; and Better Health and Wellbeing.

Findings from Irish surveys and reports are documented in Chapter 4 of the background document. This chapter looks at surveys and reports that have been conducted on healthcare-associated infections and antimicrobial medication use in primary and community healthcare settings over the past few years. These include both setting-specific and micro-organism specific surveys and reports. This information is useful as it gives a clear, up-to-date picture of some of the issues that community health and social care services are facing. Recommendations and information found in the surveys and reports were incorporated into a number of themes in the draft standards, in particular Effective Care and Support; Safe Care and Support; and Better Health and Wellbeing.

The findings across all of the chapters were broadly similar and helped to inform all of the eight themes in the draft standards. Where information was not readily available, or deficiencies within specific themes were identified, expert opinion and advice was sought through extensive engagement with informed and interested parties.

Overall, a consistent approach to infection prevention and control and antimicrobial stewardship was presented and it was highlighted that infection prevention and control is everyone's responsibility. The main findings from the review include:

- the importance of incorporating infection prevention and control principles in day-to-day delivery of care
- adherence to standard precaution principles, for example, hand hygiene and use of personal protective equipment
- the need for effective communication when managing healthcare-associated infections
- the need for safe antimicrobial prescribing
- the importance of providing care in a clean and safe environment
- ensuring that all equipment used is fit for purpose and used appropriately
- the need for strong leadership, management and governance structures
- the need for a skilled and trained workforce.

Chapter 1 — Introduction

1.1 Overview

Preventing and controlling healthcare-associated infections continues to be a significant challenge to healthcare systems throughout the world, including Ireland. These are infections that are acquired by people after they have been in contact with a healthcare service. However, a number of these infections are no longer confined to the hospital setting and are increasingly prevalent in community care settings. Healthcare-associated infections can have a huge impact on people, causing upset and anxiety, serious illness, long-term disability and death. There are also significant impacts on community care services due to additional consultations, investigations, and unscheduled care due to outbreaks.

As a result of the rapid turnover of patients in acute healthcare settings, complex care is increasingly being delivered in the community. Residents in long-term residential care facilities such as nursing homes are particularly vulnerable to healthcare-associated infections due to a number of risk factors including old age, pressure sores and the presence of medical devices such as urinary catheters and feeding tubes.[1] A national survey of healthcare-associated infections and antimicrobial medication use in long term-care facilities in 2016 found that on average 1 in 12 residents developed a healthcare-associated infection.[1]

In addition, antimicrobial resistance presents a serious global threat to human health. Antimicrobial resistance occurs when an antimicrobial drug that had been originally effective is no longer effective to treat an infection of disease caused by a micro-organism. The extensive use, misuse and overuse of antimicrobial medication have contributed to increased antimicrobial resistance. Antimicrobial medication use in Irish outpatient settings, including in community care, has been steadily increasing for a number of years and in 2015 was at mid to high levels in comparison with other European countries.[2]

Ireland's *National Action Plan on Antimicrobial Resistance 2017-2010* provides a roadmap on how to address antimicrobial resistance at a national level through a collaborative effort across health, agriculture and environmental sectors.[3]

However, a significant proportion of healthcare-associated infection is known to be avoidable if measures are taken to identify and address the work practices, equipment and environmental risks that have the potential to cause such harm. These measures are collectively referred to as infection prevention and control and describe the practice of providing safe care in a clean environment. The basic

principles of infection prevention and control apply regardless of the setting. Preventing infections from occurring in the first instance is one of the best ways to reduce the need to prescribe antimicrobial medication and prevent antimicrobial resistance.

These Standards will provide a framework for best practice in the prevention and control of healthcare-associated infections in primary and community health and social care services. The standards will cover important areas such as communicating well with people who use health or social care services, providing care in a clean and safe environment and prescribing antimicrobial medication in a safe manner.

They will also look at the necessary leadership, resources and staffing required to prevent and control healthcare-associated infections in such community settings. The principles of the standards are to:

- create a person-centred approach to the prevention and control of healthcare-associated infections
- promote practice that is up to date, effective and based on best available evidence
- promote an integrated care approach across the entire healthcare system to prevent and control healthcare-associated infections.

1.2 Methodology

As part of the process of developing these draft national standards, the standards team carried out a comprehensive desktop review. This was to identify relevant published international and national literature on the topic of infection prevention and control best practice as it applies to community health and social care services. The desktop review identified national and international standards, guidelines, guidance documents and survey data that informed the development of the draft standards.

Relevant international and national organisations that develop national standards and relevant guidance were reviewed. A number of the guidance documents that were reviewed were informed by evidence-based literature reviews, which in turn informed the development of the draft standards. For example, Health Protection Scotland undertook a series of literature reviews that underpin and inform the practical application of the National Infection Prevention and Control Manual.[(4)] National repositories and libraries and relevant evidence-based databases were also

searched. The search included governments and departments of health, organisations that support safety and quality improvements in health and social care services, international public health institutes and infection prevention and control professional organisations.

Associated bibliographies, references and compendiums, where appropriate, were reviewed to identify additional material. International and national setting-specific guidance was reviewed, for example, long-term care facilities, general practice, ambulance, home help and dental practices. Relevant national repositories and libraries in Ireland, for example Lenus, National Clinical Effectiveness Committee, Health Protection Surveillance Centre and Health Safety Authority, were also reviewed to identify key Irish documents and surveys. Inclusion and exclusion criteria were applied to all search results generated to determine their eligibility to be included in the review. Inclusion and exclusion criteria are documented in Appendix 1.

A targeted search of evidence-based databases was undertaken. To ensure that the most relevant sources and related documents were found, a series of keywords and phrases, both general topic-related and setting-specific, were used for the searches. Where appropriate, a series of filters such as evidence type and or date of publication were also used to ensure that the most relevant material on infection prevention and control in the community was found. Although the searches yielded a large number of results, only appropriate and relevant literature was included in this review. The majority of the literature that was used in the review was identified though hand searching relevant and authoritative international and national websites.

All of the literature was analysed, and the findings from the literature and data reviewed informed the content of the standards and features within the eight themes as set out above. In some instances, more information was available in relation to some themes than others. Where information was not readily available, or deficiencies within specific themes were identified, expert opinion and advice was sought through extensive engagement with informed and interested parties.

1.3 Standards development process

The draft standards were developed using an established framework for developing nationally mandated standards. This framework was developed following a review of national and international evidence, engagement with national and international experts and applying HIQA's knowledge and experience of the health and social care context. This framework was also used to develop the *National Standards for the*

prevention and control of healthcare-associated infections in acute healthcare services, published in 2017.[5] Figure 1 illustrates the eight themes under which the draft standards are presented. The four themes on the upper half of the circle relate to the dimensions of safety and quality in a service, while the four on the lower portion of the circle relate to the key areas of a service's capacity and capability.

Figure 1. Standards development framework

The four themes of quality and safety are:

- **Person-centred Care and Support** — how community services place people using their services at the centre of what they do. This includes how services communicate with people using these services to ensure they are well informed, involved and supported in the prevention, control and management of healthcare-associated infections and antimicrobial resistance.

- **Effective Care and Support** — how community services ensure that infection prevention and control forms part of the delivery of care to protect people from preventable healthcare-associated infections and antimicrobial resistance. This includes how services identify any work practice, equipment and environmental risks and put in place measures to improve the service provided.

- **Safe Care and Support** — how community services ensure that staff adhere to infection prevention and control best practice and antimicrobial stewardship to achieve best possible outcomes for people.

- **Better Health and Wellbeing** — how community services work in partnership with people using their services to promote and enable safe infection prevention and control practices and protect against antimicrobial resistance.

Delivering improvements within these quality and safety themes depends on service providers having capacity and capability in the following four key areas:

- **Leadership, Governance and Management** — the arrangements put in place by community services for clear accountability, decision-making, risk management and performance assurance, underpinned by effective communication among staff. This includes how responsibility and accountability for infection prevention and control and antimicrobial stewardship is integrated at all levels of the service.

- **Workforce** — how community services plan, recruit, manage and organise their workforce to ensure enough staff are available at the right time with the right skills and expertise to meet the service's infection prevention and control needs and antimicrobial stewardship practices.

- **Use of Resources** – how community services plan, manage and prioritise their resources to meet the service's infection prevention and control needs.

- **Use of Information** — how community services use information as a resource for planning, delivering, monitoring, managing and improving infection prevention and control practices and antimicrobial stewardship.

HIQA convened an advisory group made up of a diverse range of interested and informed parties, including representatives from patient and service-user advocacy groups, regulatory bodies, professional representative organisations, HIQA's

Regulation Directorate, Health Service Executive (HSE) and the Department of Health.

HIQA conducted a series of focus groups with people who use community health and social care services and staff working in these services to discuss their experience and obtain their opinions as to what the draft national standards should address. To date, HIQA has conducted 10 focus groups in four locations meeting with a total of 70 participants.

In addition to this, HIQA is undertaking a six-week public consultation process beginning Wednesday 31 January 2018 and concluding Wednesday 14 March 2018. Visit www.hiqa.ie to find out how to take part. All submissions received as part of the process will be reviewed and considered when the draft standards are further revised.

1.3 Structure of this report

This document sets out the findings of the review undertaken to inform the development of the draft national standards. It includes:

- **Chapter 2**: an overview of international standards and guidelines
- **Chapter 3**: an overview of Irish guidance
- **Chapter 4**: an overview of Irish reports and surveys relating to healthcare-associated infection and antimicrobial resistance in community health and social care services.

Chapter 2 focuses on international standards and the associated guidelines which show how the overarching standards have been implemented in different health and social care settings. All documents were reviewed and assessed for inclusion in the evidence base to inform the development of the draft national infection prevention and control standards for the community.

Chapters 3 and 4 outline the guidance documents that are in place across a variety of care settings in Ireland at the time of writing this document and provide an overview of evidence from reports and surveys that have been undertaken in Irish community care settings.

Chapter 2 — Summary of international standards, guidelines and guidance documents

2.1 Overview

It is recognised internationally that the setting and implementation of quality standards are important levers to improve care. Standards help to set public, provider and professional expectations and enable services to safeguard people using their services and to improve the quality of care they provide. HIQA conducted a review of infection prevention and control-related international standards. The most relevant standards developed or revised since 2009 are summarised in the following sections. Some standards are stand-alone infection prevention and control standards while others are part of a broader set of quality and safety standards.

The countries reviewed include:

- Scotland
- Australia
- United Kingdom
- Wales.

These countries were chosen following a desktop review which identified relevant developments in infection prevention and control in the community. Each individual national standard is explored in detail in this chapter.

A number of countries have developed national guidelines on the prevention and control of healthcare-associated infections which are aligned with their national standards. These include:

- the Scottish national standards aligning with its infection prevention and control manual
- the NICE pathway model linking the relevant quality standards, guidelines and guidance
- and the Australian standards supporting a suite of documents including a guideline, toolkit and educators guide.

An overview is presented on the international guidelines which helped to provide clarity and detail on current infection prevention and control evidence-based and consensus-driven best practice.

In addition, a number of organisations have produced guidance to assist in the application of infection prevention and control best practice in different settings such

as care homes, general practice, and dental services. The World Health Organization (WHO) and Centers for Disease Control and Prevention (CDC) in the US have also produced a number of guidelines covering key components of infection prevention and control and antimicrobial stewardship. These guidance documents have also been reviewed and are summarised in this chapter.

The international standards and guidelines reviewed indicate a number of key principles that underpin effective infection prevention and control. One of the key principles that emerged is that infection prevention and control must be part of everyday practice across the entire health and social care system. The documents reviewed promote a nationally integrated approach to address infection prevention and control risks across the system. Common themes that emerged across the international standards and guidelines reviewed include:

- communication with people using services and communication between services
- educating people on infection prevention and control practices
- the use of standard precautions
- antimicrobial stewardship
- a strong leadership commitment and accountability for infection prevention and control
- surveillance of healthcare-associated infections.

These priority areas have been incorporated into the draft national infection prevention and control standards for community services.

2.2 Scotland

Scotland has a population of 5.4 million.[6] Health services in Scotland are financed almost entirely out of general taxation and are largely free at the point of need and available to all inhabitants. Responsibility for health and for health services rests with the Scottish Cabinet Secretary for Health, Wellbeing and Cities Strategy who is accountable to the Scottish Parliament. Supported by officials in the Scottish Government health and social care directorates, ministers set policy, oversee delivery of services by the National Health Service (NHS) and regulate the small independent sector. Many of their functions are delegated to 14 integrated territorial NHS boards responsible for planning and delivering all health services — acute, primary and community — to the population.[7]

Specific healthcare-associated infection standards have been developed by Healthcare Improvement Scotland. Healthcare Improvement Scotland, set up in 2010, is responsible for:

- developing evidence-based advice, guidance and standards for effective clinical practice
- driving and supporting improvement of healthcare practice
- providing assurance about the quality and safety of healthcare through scrutiny and reporting on performance.[8]

The standards apply to all healthcare organisations and practitioners. An infection prevention and control manual has also been developed which outlines how infection prevention and control practices can be adopted and implemented.

2.2.1 Scottish Standards

The *Scottish Healthcare-associated infection standards* were revised by Healthcare Improvement Scotland in 2015.[9] Healthcare Improvement Scotland is a large organisation with a broad work programme that supports improvement in health and social care services. The revised standards were developed to ensure clarity around infection prevention and control of healthcare-associated infection at the point of patient care. There are a total of nine standard statements followed by a rationale and a criteria list. All criteria are considered essential or required in order to demonstrate the standard has been met. This is followed by an explanatory box about what the standard means depending on your role, examples of evidence of achievement and practical examples.

The standards document is closely aligned with the *National Infection Prevention and Control Manual 2012* developed by Health Protection Scotland, NHS National Services Scotland.[4]

The Scottish standards apply to all healthcare organisations and practitioners, including independent healthcare providers, and they recognise the role of all patients, their representatives and the public. These standards are also considered best practice for social care settings. While the standards were not developed explicitly for inspection purposes, they are mandatory for National Health Service (NHS) healthcare settings and are considered by Healthcare Improvement Scotland to be best practice guidelines for social care settings.

The nine standards prioritise key areas that are considered important to infection prevention and control efforts.

The standards relate to:

1. Leadership in the prevention and control of infection.
2. Education to support the prevention and control of infection.
3. Communication between organisations and with the patient or their representative.
4. Healthcare-associated infection surveillance.
5. Antimicrobial stewardship.
6. Infection prevention and control policies, procedures and guidance.
7. Insertion and maintenance of invasive devices.
8. Decontamination.
9. Acquisition of equipment.

Effective leadership means having leaders who are accountable for maintaining a safe care environment through risk assessments, performance assurance, outbreak management and continual improvement in infection prevention and control practice. Providing education to all staff enables them to apply the necessary knowledge and skills to minimise infection risks and ensure care is safe, effective and person-centred. The importance of communication during the patient's journey is outlined, especially where infection risks to and from the patient are identified. This also extends to people receiving treatment in, or visiting, one or more care settings and involving people in care decisions taken to reduce these risks.

The standards state that an infection and antimicrobial resistance surveillance system is essential to ensure rapid recognition of new, emerging or re-emerging infection-related risks. A coordinated effort for safe antimicrobial medication prescribing is required. The importance of adhering to evidence-based best practice guidance, including standard precautions,[*] as set out in the *National Infection*

[*] Standard precautions are a set of protective measures that apply to all patient care, regardless of suspected or confirmed infection status of the patient, in any setting where care is delivered. Standard precautions include, appropriate to the setting, the following:

- hand hygiene
- use of personal protective equipment, such as gloves, gowns and masks
- decontamination of patient equipment and medical devices
- environmental hygiene
- management of healthcare risk waste
- appropriate patient placement, movement and transfer
- occupational health
- management of needle-stick injuries
- management of spillages of blood and bodily fluids
- respiratory hygiene and cough etiquette
- management of laundry
- safe injection practices.

Prevention and Control Manual 2012 [4] is highlighted. The standard on insertion and maintenance of invasive medical devices outlines how to minimise infection risk to patients, including involving patients in the decision-making process.

The standard states that decontamination is critical in the provision of a safe, clean environment and equipment, underpinned by regular risk assessments and audits by the organisation to identify and address any deficiencies detected in cleanliness. Finally, the standards emphasise the importance of the service ensuring that it only invests in equipment that is safe for its intended use, ensuring the risk of transmission of infection is minimal.

2.2.2 Scottish Guidance

The revised 2012 *National Infection Prevention and Control Manual* [4] developed by Health Protection Scotland is mandatory for NHS employees and applies to all NHS healthcare settings. It contains best practice guidance on standard precautions and transmission-based precautions[†] that can be adopted locally for infection prevention and control practices and procedures. Health Protection Scotland has also published the associated literature reviews that underpin and inform the practical application of the national manual.

The responsibilities for the adoption and implementation of the manual for organisations, managers, staff and the infection prevention and control team are outlined. Chapter 1 covers the 10 elements of standard infection control precautions that are to be used by all staff, in all care settings, at all times, for all patients whether infection is known to be present or not. The precautions are:

1. Patient placement/assessment for infection risk.
2. Hand hygiene.
3. Respiratory and cough hygiene.
4. Personal protective equipment.
5. Safe management of care equipment.

[†] **Transmission-based precautions:** these are additional precautions that staff need to take when standard precautions may be insufficient to prevent cross-transmission of specific infectious agents. Transmission-based precautions are categorised by the route of transmission of infectious agents (some infectious agents can be transmitted by more than one route) including contact, droplet and airborne precautions. Examples of transmission-based precautions in a residential care facility may include using single rooms, limiting social activities and restricting residents to their rooms as much as possible, and restricting visiting.

6. Safe management of the care environment.
7. Safe management of linen.
8. Safe management of blood and body fluid spillages.
9. Safe disposal of waste (including sharps).
10. Occupational safety: prevention and exposure management (including sharps).

Patient placement depends on accurate assessment of a patient's infection risk on arrival to the care area, especially for those with symptoms of potential infection, previous positive multidrug-resistant micro-organism and hospitalisation outside Scotland in the past 12 months.

The specific technique and timings recommended for hand hygiene are also outlined in the overall manual. Staff should promote respiratory and cough hygiene for those patients who need assistance, including older people and children. Personal protective equipment (PPE) needs to be correctly used in order to provide adequate protection against the risks associated with tasks or procedures associated with exposure to blood and or other bodily fluids.

Care equipment can also be easily contaminated with blood, other bodily fluids, secretions, excretions and infectious agents. Adherence to manufacturers' guidance for use and decontamination of all care equipment is advised. It is recommended that a local decontamination policy should be in place to determine which groups of staff are responsible for the regular decontamination of care equipment. The moments for appropriate decontamination of reusable non-invasive communal patient care equipment are clearly outlined. It is acknowledged that the methods for decontamination of such care equipment are mostly based on expert opinion due to a lack of available scientific evidence.

The manual also outlines that the care environment needs to be safe for practice, including the requirement for both cleanliness and maintenance. In general, cleaning staff are responsible for cleaning the built environment and fixtures and fittings, while nursing or practice staff are responsible for cleaning patient care equipment. While visual inspections can identify damage to surfaces and accumulations of dust, it is accepted that this is a subjective method that may over-estimate the effects of cleaning.

An outline is given in the manual for managing all used and infectious linen in a residential environment, including how linen should be sorted, labelled, handled,

washed, transported and stored. However, an acknowledgement is made of the limited evidence base relating to safe management of linen.

Spillages of blood and other bodily fluids must be decontaminated by staff trained to undertake this safely. The NHS Scotland regulatory waste management guidance is reiterated in the manual and emphasises the importance of disposing of waste as close to the point of use as possible and into the correct waste stream. The regulatory health and safety requirements for employers and contractors in the healthcare sector are noted, particularly with regard to sharps handling.

The manual also outlines the additional precautions, known as transmission-based precautions, which are required to be used by staff when standard precautions may be insufficient to prevent cross-transmission of specific infectious agents.

2.3 Australia

Australia has a population of 24.80 million.[10] A federal system of government is in place with powers shared between the Commonwealth government and the six state governments. Two internal territories and one island territory hold a limited right to self-govern. Overall coordination of the public health system is the responsibility of all Australian health ministers, that is, the Commonwealth and state and territory ministers. Managing the individual Commonwealth, and state and territory health systems is the responsibility of the relevant health minister and health department in each jurisdiction.[11]

The Australian Commission on Safety and Quality in Health Care is a government agency that leads and coordinates national improvements in safety and quality in healthcare across Australia. It develops and supports national safety and clinical standards; formulates and implements national accreditation schemes; and develops national health-related datasets. It is also working to reduce variations in practice and outcomes for people using services and undertaking nationally coordinated action to address healthcare-associated infections and antimicrobial resistance.[12]

The 2012 *National Safety and Quality Health Service (NSQHS) Standards* were developed by the Australian Commission on Safety and Quality in Health Care.[13] In addition, an antimicrobial stewardship clinical care standard was also developed in 2014 by the Australian Commission on Safety and Quality in Health Care.[14] Infection prevention and control standards for GPs and other office-based and community-based practices have also been developed by the Royal Australian College of General Practitioners.[15]

Standard 3 of the *National Safety and Quality Health Service (NSQHS) Standards* outlines the prevention and control of healthcare-associated infections. The intention of this overarching standard is to prevent patients from acquiring preventable healthcare-associated infections and to effectively manage infections whenever they occur. Standard 3 is supported by a suite of documents including a guideline, toolkit and educators' guide. Standard 3 has been developed in line with the recommendations and evidence found in the *Australian Guidelines for the Prevention and Control of Infections in Health Care*.[16] A guidebook was also developed to help implement the guideline in primary care settings.[17] The clinical educators guide advises on how to integrate infection prevention and control into the day-to-day working routine.[18] Setting specific guides have also been developed for both dental practices[19] and residential and community aged care.[20]

2.3.1 Australian Standards

National Safety and Quality Health Service (NSQHS) standards 2012

The National Safety and Quality Health Service Standards (NSQHS) have been designed for use by all health services, including mental health services, and are compulsory for the majority of public and private healthcare organisations. However, a degree of flexibility is expected in the application of the standards to fit the context of the organisation, including varying patient and staffing profiles. The prevention and control of healthcare-associated infections is set out in Standards 3.

The six criteria[13] outlined in preventing and controlling healthcare-associated infections are:

1. Governance and systems for infection prevention, control and surveillance.
2. Infection prevention and control strategies.
3. Managing patients with infections or colonisations.
4. Antimicrobial stewardship.
5. Cleaning, disinfection and sterilisation.
6. Communicating with patients and carers.

The governance standard outlines how clinical leaders and senior managers need to develop systems to prevent and manage healthcare-associated infections and communicate these to the workforce to achieve appropriate outcomes. This includes endorsing policies, procedures and protocols, oversight of surveillance, reporting, investigating and analysing healthcare-associated infections, and undertaking quality improvement activities.

Successful infection prevention and control measures involve implementing work practices that prevent the transmission of infectious agents. The listed strategies

include hand hygiene, immunisation, occupational health and safety programmes, protocols for invasive device procedures and aseptic technique.

As outlined in the standards, when managing patients with infections or colonisations, it is imperative that they receive the necessary management and treatment. This includes appropriate patient placement and communication of a patient's infectious status at key times during points of transition of care. Antimicrobial stewardship needs to be part of a broader strategy to reduce the development of resistant micro-organisms, prevent and manage healthcare-associated infections and improve patient safety and quality.

The requirement for healthcare facilities and the associated environment to be clean and hygienic is outlined. Reprocessing of equipment and instrumentation needs to meet current best practice guidelines. The final standard outlines the importance of ensuring that information for patients and carers on the management and reduction of healthcare-associated infections is available at the point of care.

Antimicrobial Stewardship Clinical Care Standard 2014

The Australian Commission on Safety and Quality in Health Care published the *Antimicrobial Stewardship Clinical Care Standard* in 2014.[(14)] It complements existing efforts that support national antimicrobial stewardship. The standard has been developed for use in a variety of healthcare settings, including hospital, general practice and residential care. The standard aims to ensure that a patient with a bacterial infection receives optimal care from the time of diagnosis to cure of an infection. The following quality statements relate to the care that a patient should receive when they have, or are suspected of having, a bacterial infection:

Statement 1 outlines how a patient with a life-threatening condition due to a suspected bacterial infection receives prompt antibiotic treatment without waiting for the results of investigations.

Statement 2 outlines how a patient with a suspected bacterial infection has samples taken for microbiology testing as clinically indicated, preferably before starting antibiotic treatment.

Statement 3 outlines how a patient with a suspected infection, and or their carer, receives information on their health condition and treatment options in a format and language that they can understand.

Statement 4 states when a patient is prescribed antibiotics, whether empirical or directed, this is done in accordance with the current version of the national therapeutic guidelines (or local antibiotic formulary). This is also guided by the patient's clinical condition and or the results of microbiology testing.

Statement 5 states when a patient is prescribed antibiotics, information about when, how and for how long to take them, as well as potential side effects and a review plan, is discussed with the patient and or their carer.

Statement 6 states when a patient is prescribed antibiotics, the reason, drug name, dose, route of administration, intended duration and review plan is documented in the patient's health record.

Statement 7 outlines how a patient who is treated with broad-spectrum antibiotics has the treatment reviewed and, if indicated, switched to treatment with a narrow-spectrum antibiotic. This is guided by the patient's clinical condition and the results of microbiology tests.

Statement 8 states if investigations are conducted for a suspected bacterial infection, the responsible clinician reviews these results in a timely manner (within 24 hours of results being available) and antibiotic therapy is adjusted taking into account the patient's clinical condition and investigation results.

Statement 9 states if a patient having surgery requires prophylactic antibiotics, the prescription is made in accordance with the current national therapeutic guidelines (or local antibiotic formulary), and takes into consideration the patient's clinical condition.

Every statement is followed by an explanation for patients, clinicians and health services of what the quality statement means for them. While most of the statements apply to all healthcare settings, some are more specific to the hospital setting such as surgical prophylaxis.

Infection prevention and control standards for GPs and other office-based and community based practices 2014

These standards[15] published by the Royal Australian College of General Practitioners recognises the increasing need for a broader guide to infection prevention and control in all the varied clinical practice settings outside the hospital setting. As stated in the standards, while the principles of infection prevention and control practice are constant across the health sector, the translation of hospital policies and procedures to community-based practice is often not appropriate.

The focus of these standards is on risk assessment as it is not possible to write a 'one size fits all' rulebook for infection prevention and control for all general practices as they differ greatly in their day-to-day function. Each practice will need to perform regular infection prevention and control risk assessments — in other words, identify

risks and estimate the likelihood of infection and the consequences if it occurs. The importance of staff education and induction is highlighted as this explains their role in preventing the spread of infection and enables staff to manage risk through redesign of work practices. Education and training should be relevant to the duties performed by the team member, their prior knowledge and the individual practice's risks.

The document focuses on a number of important areas that underpin good infection prevention and control practice. The main infection prevention and control principles are outlined, including clear explanations as to why they are essential. The hands of healthcare workers are a common source of transmission of micro-organisms, accounting for how the vast majority of micro-organisms are acquired during patient care activities. However, effective hand hygiene can significantly reduce the healthcare-associated infection rate, including those involving multidrug-resistant micro-organisms.

Similarly, the blood and bodily fluids of all patients should be considered potentially infectious at all times. Therefore, standard precautions must be taken by all staff involved in patient care or who may have contact with blood or bodily fluids, regardless of the known or perceived infection status of the patient. Additional precautions, known as transmission-based precautions, are used when a patient is known or suspected to be infected or colonised with micro-organisms that cannot be contained by standard precautions alone.

An emphasis is placed on protecting the health of staff. The employer's duty of care in providing a safe working environment is highlighted. In particular, this includes immunisation appropriate to the duties of staff, provision and use of personal protective equipment and safe sharps management. Particular consideration needs to be given to any staff who may be at increased risk of exposure to an infectious disease (immunocompromised or pregnant staff) or those at risk of transmitting an infectious disease (such as measles, varicella or influenza).

The section on managing the practice's physical environment focuses on cleaning and waste management. It is stated that every practice needs a cleaning policy that includes both routine, scheduled cleaning of all surfaces and equipment to reduce dust and dirt which can harbour micro-organisms and unscheduled cleaning for blood, bodily fluid and other spills. Practices also need to have a waste management policy that covers the correct segregation, storage, disposal and work-related health and safety issues that minimise human contact with waste.

A very detailed description is presented on all of the steps required for processing reusable equipment. It is stated that every practice needs to have policies and procedures describing every aspect of instrument and equipment reprocessing. It is

advised that staff need to balance the following when determining what is reasonable in the processing of reusable equipment:

- the probability of harm to a patient
- the likely seriousness of the harm
- the feasibility of meeting all processing requirements in the practice
- complying with the manufacturer's instructions around the recommended use of equipment and products to ensure appropriate sterilisation.

Finally, the standards address the basic steps of disease surveillance including the practice's response to infectious diseases and reporting responsibilities. Staff need to be educated around awareness of patients presenting with suspected or confirmed infectious diseases. This includes reception staff being able to identify the potentially infectious patient and to respond appropriately. It is recommended that the following triage is used:

- routine questions asked of all patients
- questions asked when the patient indicates signs or symptoms consistent with an infectious disease
- questions asked of patients when the practice suspects a localised outbreak of an infectious disease, such as measles or when the practice is part of a response to a suspected pandemic.

Each doctor and health professional has a responsibility to ensure that suspected or confirmed notifiable diseases are reported in a timely fashion.

2.3.2 Australian guidelines

Prevention and control of infection in residential and community aged care 2013

The National Health and Medical Research Council's *Prevention and control of infection in residential and community aged care* guide was published in 2013.[20] This guide acts as a mini-guide taken from the 2010 *Australian Guidelines for the Prevention and Control of Infection in Healthcare.*[16] The aim of this mini-guide is to provide assistants in nursing and personal care workers in non-hospital settings, such as residential care homes and community care, advice on infection prevention and control, and the information to put these principles into practice in their settings.

This mini guide is divided into 3 parts:

- Part A: basics of infection prevention and control relevant to all healthcare and personal workers in aged care, including information on breaking the chain of infection and the spread of infections
- Part B: basics of infection prevention and control for care workers in residential aged care
- Part C: basics for infection prevention and control for care workers in community aged care.

The guide focuses on the use of standard and transmission-based precautions in these settings and gives examples and case studies as to when and where infection prevention and control principles should be used. The guide also offers advice on how to prevent the spread of infections when cleaning medical devices and the environment, managing waste, handling food and transporting residents and clients within or between facilities. Reporting of incidents and the uptake of recommended vaccination programmes are referenced as being important protective measures that all community care workers should follow.

Australian guidelines for the prevention of infection in healthcare 2010

The *Australian Guidelines for the Prevention and Control of Infection in Healthcare*[16] covers a comprehensive range of topics. This revised guideline aims to provide a coordinated approach to the management of healthcare-associated infection in Australia, by supporting the Australian Commission on Safety and Quality in Health Care on other healthcare-associated infection priority programme initiatives including:

- the national healthcare-associated infection surveillance strategy
- hand hygiene initiative
- antibiotic stewardship.

The guidelines provide a basis for healthcare workers and healthcare facilities to develop detailed protocols and processes for infection prevention and control, specific to local settings.

The guideline is divided into three parts:

- Part A: basics of infection prevention and control
- Part B: standard and transmission-based precautions
- Part C: organisational support.

An overview of risk management in infection prevention and control is presented in Part A. A patient-centred approach is advocated in order to facilitate a two-way approach to infection prevention and control and encourage the patient participation required to minimise cross-infection or transmission.

Part B outlines in detail, all standard and transmission-based precautions, with a particular focus on those precautions required during procedures or managing multidrug-resistant micro-organisms and outbreaks. Successful control of multidrug-resistant organisms is based on a combination of interventions, already underpinned by adherence to basic infection prevention and control practices. It is also stated that healthcare workers should be trained and competent in safe procedural techniques and participate in regular educational sessions about minimising the infection risk of procedures.

Part C outlines the responsibilities of clinical leaders and senior management of healthcare facilities to support the implementation, monitoring and reporting of effective infection control work practices. This covers a number of key areas including staff health and safety, education and training, infection and antimicrobial resistance surveillance, antimicrobial stewardship and facility design. While the management structure and processes associated with infection control will differ depending on the size of the organisation and the types of healthcare services it delivers, the principles of governance apply regardless of the setting.

Guidebook for Primary Care Settings 2010

This guidebook[17] was developed as part of a toolkit to help healthcare workers implement the *Australian Guidelines for the Prevention and Control of Infection in Healthcare* [16] 2010 in primary care settings. This document acknowledges that while the basic principles of infection prevention and control apply, the primary care context is very different to acute care, particularly with regard to resources. The guidebook looks at targeting the challenges of implementation under five headings, referred to as OSSIE:

O: Organisational leadership

S: Solutions and strategies for implementation

S: Stakeholder engagement

I: Implementation

E: Evaluation and maintenance.

The size of a practice or facility may mean that the implementation of the guidelines will be coordinated by just one key person as opposed to a team in a hospital. In

addition to the workforce, budgetary and physical requirements, time is one of the most significant resources required. Each practice should assess current practice against the guidelines and then identify its priority areas, as well as the barriers and enablers.

The guidebook states that the facility or practice needs to decide what it wants to achieve, decide what change will result in improvement and how to know if the change is an improvement. Various strategies are described including SMART objectives (specific, measurable, achievable, results oriented, time limited), PDSA (plan-do-study-act) cycles and audit and feedback.

Identifying key stakeholders who are interested in or who may be affected by infection prevention and control issues is a critical step. Examples of stakeholders in primary care include patients, colleagues from 'like' practices, colleagues within local professional groups, contractors and so on. Ideas for communicating, building and maintaining stakeholder engagement are discussed.

A well-planned implementation action plan describes who will be responsible for what actions, when each of the actions will be put in place, the resources required and what measures will be used to measure progress. Some recommendations are outlined for staff to think about how they can approach implementation.

Finally, it is important to determine whether a change is an improvement by collecting relevant data at baseline, then following intervention, analysing the results and providing feedback about progress.

Clinical educators' guide for the prevention and control of infection in healthcare 2010

The clinical educators' guide for the prevention and control of infection in healthcare[18] 2010 was developed by the Australian Commission on Safety and Quality in Healthcare to provide strategies for clinical educators and supervisors to assist students and graduate healthcare workers to integrate a risk management approach into their daily tasks that involve infection control. Risk management decisions are based on understanding the chain of infection including the susceptible person at risk, the potential source of the infectious agent and mode of transmission.

Adherence by staff to the risk management steps outlined in the document supports better decision-making, by providing greater insight into potential infection risks and perhaps avoiding them in the first instance where possible. The guide acknowledges that a 'one size fits all' approach to risk management is not possible given the varying levels of complexity of care delivered by staff in different healthcare settings.

However, the core principles can be applied by staff to determine risks in their own context and select the most suitable action.

As stated in the guide, it is important for facilities to regularly conduct infection prevention risk assessments within their facility and ensure that all staff understand their responsibility in managing these risks. In addition, healthcare facilities need to develop detailed protocols and processes for infection prevention and control which is specific to local settings.

Dental Association's guidelines for infection 2015

The Australian Dental Association's *Guidelines for Infection Control* [19] 2015 covers a range of topics on infection control in dental practices. This guideline, which is in its 3rd edition, is updated every three years to ensure that it remains aligned with current international best practice and the evidence base of infection control. The guideline describes the infection control procedures that dental practitioners and their clinical support staff are required to follow in their practices to prevent or minimise the risk of spreading infection in the dental setting. Emphasis is placed on the importance of staff being fully trained and educated in infection control procedures and practices.

This comprehensive guideline covers topics such as:

- infection control
- standard precautions of infection control
- infection control strategies within the contaminated zone
- instrument reprocessing
- documentation and practice protocols for infection control
- special areas and their particular dental infection control requirements
- infectious diseases, allergies, and transmission-based precautions for infection control.

As described in the guidelines, the purpose of infection control in dental practices is to prevent the transmission of infectious disease agents such as bacteria, viruses and fungi from one patient to another, from dental practitioner and dental staff to patients, and from patients to dental practitioner or other dental staff.

An outline of applying standard precautions and transmission-based precautions is presented from the dental perspective. The agents of most concern to dental practices are respiratory viruses as the majority of procedures undertaken in dentistry generate aerosols. Therefore, it is important to recognise any patients potentially infected with a micro-organism, as they are likely to pose considerable risk to dental staff and other patients if they undergo dental treatment. The guideline states that non-urgent treatment should be delayed or postponed where

possible, while transmission-based precautions are followed if patients require urgent care.

The design and layout of the dental surgery and treatment areas are also important factors in implementing successful infection control. This includes clean, uncluttered work areas, including work surfaces and benches and clean and contaminated zones for instrument reprocessing.[‡]

Infection control strategies within the contaminated zones include clearly demarcating the clean and contaminated zones and dental staff understanding the purpose of and requirements within each zone, and adhering to the outlined protocols. A number of measures are outlined that can reduce levels of bacteria in dental unit waterlines. Single-use items must not be reprocessed and reused on another patient, but be discarded after use.

Contaminated instruments can transmit infections between patients and it is essential that instruments are correctly reprocessed between each patient. The type of dental practice will determine the instrument inventory and the cost of reprocessing, varying from orthodontic practice, to general dental practice to specialist periodontal or oral surgery practice.

A number of recommendations are made regarding necessary documentation and practice protocols for infection control. Dental practitioners must maintain records relating to the sterilisation process itself and the validation process to check the performance of the steriliser. It is also advised that dental practices develop and maintain regularly updated immunisation or health records for dental staff. Each practice must develop a comprehensive infection control manual relevant to the daily routines of the practice that describes the infection control procedures for the practice as a whole.

A number of aspects of dental care that present specific challenges to dental practitioners and clinical support staff in implementing effective infection control measures are presented. This includes such areas as dental radiology, specialised intraoral equipment,[§] implants and impressions. As stated, dental practitioners and clinical support staff should consult the manufacturer's advice as to the appropriate barrier and cleaning or sterilisation procedures required for these devices. The challenge of providing dental care in a nursing home is covered. This may require staff to carry all necessary personal protective equipment with them. During transport, all instruments and materials must be carried in lidded metal or rigid

[‡] **Instrument reprocessing:** cleaning contaminated instruments after patient use.

[§] **Intraoral equipment**: dental equipment that is used inside the mouth.

plastic clean containers to prevent damage or spillage, and transported back in the same manner to the dental practice for cleaning and reprocessing.

The final part of the guideline outlines the additional measures that are now referred to as transmission-based precautions. These measures must be applied for patients with known or suspected infectious diseases who cannot be managed by standard precautions alone, for example, patients with tuberculosis (TB), measles and so on. Avoiding occupational exposure to blood-borne micro-organisms such as human immunodeficiency virus (HIV), hepatitis B and hepatitis C can be addressed through the use of standard precautions, using safer equipment and modifying work practices.

2.4 UK

The population of the United Kingdom is 65.65 million.[6] The National Health Service (NHS) in the United Kingdom was established in 1948 and is funded centrally from national taxation, but is managed separately in England, Scotland, Wales and Northern Ireland.[21]

The National Institute for Health and Care Excellence (NICE) has developed a number of quality standards and related guidance regarding infection prevention and control. NICE is an organisation that provides national guidance and advice to improve health and social care services. The quality standards are a concise set of prioritised statements designed to drive improvement in healthcare services. Infection prevention and control is a key priority for the National Health Service (NHS), given the significant morbidity to those infected and costs to the healthcare service.

The quality standards and guidance build on the code of practice on the prevention and control of infections that apply to all providers of healthcare and adult social care under The Health and Social Care Act 2008.[21] While NICE standards in themselves are not mandatory, they are closely aligned with the 10 criteria against which the Care Quality Commission (CQC) — the health and social care regulator — assesses a registered provider on how it complies with the infection prevention requirements.

NICE standards apply to NHS services in England and in certain cases also apply to Wales, Scotland and Northern Ireland. The quality standards also recognise the important role families and carers have in infection prevention and control. The quality standards are incorporated into the NICE pathway on prevention and control of healthcare-associated infections, which links together the relevant quality standards, guidelines and guidance.

NICE has also developed supporting guidelines for the prevention and control of healthcare-associated infections in primary and community care and guidance about antimicrobial stewardship. Guidance documents have been developed by the UK Department of Health including:

- a code of practice on the prevention and control of infections[21]
- best practice guidance for infection prevention and control in care homes[22]
- best practice guidance on the layout of facilities for delivering primary and community care services.[23]

Additional guidelines have been developed by the Healthcare Infection Society relating to minor surgical procedures.[24]

2.4.1 UK Standards

Infection prevention and control quality standard 2014

This quality standard published in 2014 covers the prevention and control of infection for people receiving healthcare in primary, community and secondary care settings.[25] These settings include hospitals, general practices, dental clinics, health centres, care homes, the person's own home, schools and prisons providing healthcare, and care delivered by the ambulance service and mental health services.

The quality statements cover the following areas:

1. Antimicrobial stewardship.
2. Organisational responsibility.
3. Hand decontamination.
4. Urinary catheters.
5. Vascular access devices.
6. Educating people about infection prevention and control.

The quality statement on antimicrobial stewardship addresses the issue of the appropriateness of antimicrobial medication prescribing, particularly given that antimicrobial medication underpins routine medical practice in both primary and community care. The necessity of prescribing antimicrobial medication according to the principles of antimicrobial stewardship is outlined, such as prescribing antimicrobial medication only when they are needed and reviewing the continuing need for them.

Organisational responsibility highlights the importance of all organisations working together to coordinate strategies for infection prevention and control across a local area. Leadership is critical to ensure that infection prevention and control remains a

priority. Sharing information on infection control efforts can be achieved through surveillance and monitoring the impact of quality improvement initiatives.

Hand hygiene is covered given the remaining misconceptions about this fundamental principle of infection control and the fact that good practice is still not universal. The emphasis in this section is on the availability of facilities for hand hygiene, training for staff and undertaking regular local hand hygiene audits.

The correct procedure for urinary catheter insertion and maintenance is also covered, given that catheter-associated urinary tract infections comprise a large proportion of healthcare-associated infections. Similarly, the need for the correct procedure for vascular access device insertion and maintenance is discussed. The risk of invasive medical device-related infection is minimised by following these procedures and removing the device as soon as it is no longer needed.

The final quality statement outlines the importance of education for patients, their family members or carers, as appropriate, about the safe management of their device or equipment, including techniques to prevent infection. This is to ensure confidence and proficiency in infection prevention and control practices.

Antimicrobial stewardship quality standard 2016

This quality standard covers the effective use of antimicrobial medication and is for health and social care practitioners in all settings, as well as people using antimicrobial medication and their carers.[26] The document is based on the NICE antimicrobial stewardship guideline that looks more broadly at the overall systems and processes for the effective use of antimicrobial medication.[27]

It acknowledges that it is difficult to achieve a balance between using antimicrobial medication when they are really needed and reducing use when they are not indicated. Therefore a system-wide approach with individuals and organisations working together to preserve antimicrobial medication effectiveness is advocated. The quality statements relate to:

1. Advice on self-limiting conditions.
2. Back-up (delayed) prescribing.
3. Recording information.
4. Microbiological samples.
5. Data collection and feedback.
6. Electronic prescribing systems.

It is stated in the antimicrobial stewardship quality standard that people with a self-limiting condition should receive advice about self-management and information

about the adverse consequences of using antimicrobial medication when they are not needed.

Whenever there is clinical uncertainty about whether a condition is self-limiting or likely to deteriorate, prescribers in primary care can use back-up or delayed antimicrobial medication prescribing.

Recording the clinical indication, dose and duration of treatment of the antimicrobial medication prescribed allows better management during follow-up care and or transfer of care to another setting. It also helps identify appropriate and inappropriate prescribing in all settings.

The quality statement on taking a microbiological sample before starting an antimicrobial medication only applies to the hospital setting.

Individuals and teams responsible for antimicrobial stewardship need to monitor and review the prescribing data. This allows such individuals and teams to check adherence to local formularies, provide feedback, recognise good practice and challenge inappropriate prescribing.

The final quality statement advocates for the emerging area of electronic prescribing in secondary care services and dental care settings. This fundamentally links the clinical indication with the antimicrobial medication prescription, by highlighting inappropriate prescribing and monitoring individual prescribing practice.

2.4.2 UK Guidelines

NICE Healthcare-associated infections: prevention and control in primary and community care 2003

This 2012 guideline[28] provides an update and replacement of the 2003 *Infection control: prevention of healthcare-associated infection in primary and community care*. This supporting guidance reflects the fact that complex care is increasingly being delivered in the community, especially in relation to invasive procedures or devices. An emphasis is placed on patient-centred care throughout the document. Patients have the right to expect that those who provide their care meet appropriate standards for hygiene and follow the correct procedures to minimise the risk of healthcare-associated infection.

The guidance is outlined under four key areas:

1. Standard principles.
2. Long-term urinary catheters.
3. Enteral feeding.
4. Vascular access devices.

It is recommended that everyone providing care should be educated about the standard principles of infection prevention and control. This includes training in hand hygiene, the use of personal protective equipment, and the safe use and disposal of sharps. The guidance also advises patients and carers about their role in maintaining standards of healthcare workers' hand decontamination, as well as their own educational needs to ensure effective hand hygiene.

With regard to long-term urinary catheters, guidance is provided on assessing the need for catheterisation, catheter drainage options, catheter insertion, and catheter maintenance. The priority areas for enteral feeding include the preparation and storage of feeds, administration of feeds and care of insertion site and enteral feeding tube. The advice for vascular access devices is clearly outlined under general asepsis, vascular device site care and general principles for management of vascular devices.

The importance of education and training of patients, carers and healthcare workers is highlighted for all these medical-device-related procedures. Healthcare workers should be assessed for their competence to carry out these procedures. Follow-up training and ongoing support of patients and carers should also be available.

NICE Antimicrobial stewardship: changing risk-related behaviour in the general population 2017

This document aims to make people aware of how to correctly use antimicrobial medications (including antibiotics) and the dangers associated with their overuse and misuse.[29] This is to take into account that changes in the behaviour of both prescribers and the public are necessary to target inappropriate antimicrobial medication demand and use.

A number of practical measures are presented that can reduce inappropriate antimicrobial medication demand and use, and prevent and limit the spread of infection. The resources that are available for healthcare professionals to use with patients need to include basic information on self-care, managing self-limiting infections, not using antimicrobial medication inappropriately, and 'safety-netting' if symptoms deteriorate. The importance of consistency in the advice people receive from different sources, such as general practitioners (GPs) and community pharmacists, is highlighted.

It is noted that different organisations may need different approaches to implementation, depending on their size and function. Individual practitioners may be able to respond to recommendations to improve their practice more quickly than large organisations.

Effective antimicrobial stewardship needs to be underpinned by a coordinated national and local approach that includes public health, health and wellbeing, health and social care practitioners and organisations.

Department of Health Code of Practice 2015

This document sets out the 'code of practice' on the prevention and control of infections, under The Health and Social Care Act 2008.[21] The term 'cleanliness' was added to the description of infection prevention and control when the code of practice was revised in 2015. This was to make it clear to non-specialists that cleanliness is an integral part of infection prevention.

The 10 criteria against which the Care Quality Commission (CQC) will judge a registered provider on how it complies with the infection prevention requirements are set out in the table on the next page. The Care Quality Commission (CQC) does this in a way that is proportionate to the risk of infection dependent on the setting.

Parts 3 and 4 of the document help registered providers interpret the criteria and develop their own risk assessments. A number of primary and community care settings are specifically covered including adult social care, dental care, ambulance providers and primary medical care. The examples provided show how a proportionate approach to the guidance can apply in these settings.

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 many 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.

Compliance criterion	What the registered provider will need to demonstrate
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.

Department of Health infection prevention and control in care homes 2013

The prevention and control of infection in care homes is a best practice guidance document developed by the Department of Health in England and the UK's Health Protection Agency in conjunction with the Care Quality Commission (CQC) in 2013.[(22)] It is closely aligned to the Code of Practice, Care Quality Commission (CQC) criteria and the national specifications of cleanliness in care homes. It was also adapted by Public Health Wales to provide a common source of information on the prevention and control of infection in care homes for managers, inspection teams and public health teams.

As outlined, the aim is to assist staff in taking all reasonable steps to protect residents and staff from acquiring infections and prevent cross-infection, and in addition to provide information and guidance on infection prevention and control that will assist managers in undertaking risk assessments and in developing policies.

Part 1 looks at the organisation and management. This is about ensuring that systems are in place for the prevention and control of infection, regardless of the

size of the care home, including such areas as monitoring and reporting of infections, risk assessment, surveillance and outbreak recognition and management.

Part 2 examines the chain of infection including the likely susceptible host factors in a care home setting.

Part 3 discusses basic infection prevention and control practices. It states that everyone involved in providing care should be educated about the standard principles of infection prevention and control and trained in hand decontamination, the use of personal protective equipment, and the safe use and disposal of sharps. The section on sharps management when using glucose monitoring devices highlights the need for adherence to standard precautions as well as specific infection prevention and control recommendations for diabetic care procedures. It is the responsibility of the care home management to ensure that the right type of lancing device is used, while there must be policies, procedures and regular training on testing residents with diabetes.

Very clear advice is also provided on a range of other relevant areas including cleaning, linen and laundry management and waste management.

Health building note for primary and community care 2013

This document developed by the UK Department of Health provides best practice guidance on the layout of facilities delivering primary and community care services.[23] It is noted that changes in clinical practices have resulted in an increasing provision of clinical functions within the primary and community care sector that were previously undertaken within the acute sector. As outlined, infection control teams should be consulted from the outset of any new-build or refurbishment project and should form part of the planning team.

It is noted that many primary and community care services are delivered from shared generic accommodation, which needs to be taken into careful consideration at the planning stage. This includes determining suitable room sizes and the positioning of built-in equipment. It is recommended that in order to maximise the flexibility and adaptability of patient or client contact spaces, and for control of infection reasons, there are no fixed storage cupboards within rooms.

The document outlines the key organisational principles regarding public, primary and community care and staff zones. Consideration is also given to out-of-hours access arrangements. It states that the design should incorporate adequate measures to minimise infection control risks so far as is practicable, particularly in relation to adequate space and ventilation.

Healthcare Infection Society minor surgical procedures 2011

These guidelines define, from an infection prevention and control perspective, the basic physical requirements for facilities where minor surgical procedures and minimal access interventions may be carried out, including hospital and community settings.[24] They were developed in response to the changing delivery of healthcare, increasingly in the non-acute hospital sector, and in response to requests for guidance. They are based on best practice, evidence and current guidelines where available and appropriate, and expert consensus to primarily provide sensible and feasible advice.

Minor surgical procedures are those that are carried out under local anaesthesia and that are superficial, including some podiatric procedures and the debridement of leg ulcers for example. The same general infection prevention and control principles apply regardless of the procedure or intervention, though it is acknowledged that the risk of infection will vary according to the procedure and the patient.

The specifications for facilities are outlined and include recommendations for walls, windows, floors, instruments and sterile pack storage and disposal of waste. The procedure states that single-use instruments may be preferable and their use is encouraged if it is difficult to comply with the requirements for the appropriate decontamination and storage of reusable instruments.

All staff involved in minor surgical procedures and minimally invasive interventions must be able to provide evidence of competency in aseptic technique and in their knowledge and understanding of the facilities that are provided.

2.5 Wales

Wales has a population of 3.11 million.[6] NHS Wales is a publicly funded National Health Service of Wales that delivers all healthcare services through seven Health Boards and three NHS Trusts.[30]

2.5.1 Standards

The Health and Care Standards for healthcare services in Wales were updated in 2015.[31] The standards for healthcare services were published by the Welsh Government in relation to the provision of healthcare by Welsh NHS bodies. The standards have been designed so they can be implemented in all health and social care services, settings and locations. It is stated that different healthcare environments will need to comply with guidelines specific to their own areas and

needs. The principles of infection prevention and control also apply where care is provided in the service user's own home.

The standards are outlined under seven themes.[32] The infection prevention standard is outlined under the 'safe care' theme in Standard 2.4: Infection Prevention and Control (IPC) and Decontamination, as shown in Figure 2 on the next page.

Figure 2. Welsh Infection Prevention and Control (IPC) and Decontamination Standard

Standard 2.4 Infection Prevention and Control (IPC) and Decontamination

Effective infection prevention and control needs to be everybody's business and must be part of everyday healthcare practice and based on the best available evidence so that people are protected from preventable healthcare associated infections.

The health service will need to consider the following criteria for meeting the standard:

Criteria

- There are appropriate organisational structures and management systems for infection prevention, control and decontamination in place.
- Physical environments are maintained and cleaned to a standard that facilitates infection prevention and control minimises the risk of infection.
- Suitable and accurate information on infections is available.
- Suitable, timely and accurate information on infections is provided to any person concerned with providing further support or nursing/medical care when a person is moved from one organisation to another or within the same organisation.
- Staff employed to provide care in all settings are fully engaged in the process of infection prevention and control.
- Adequate isolation facilities are provided to support effective infection prevention and control.
- Policies on infection prevention and control are in place and made readily accessible to all staff.
- So far as is reasonable practicable staff are free of and are protected from exposure to infections that can be acquired or transmitted at work.
- Staff are suitably trained and educated in infection prevention and control associated with the provision of healthcare.
- Suitable and sustainable systems, policies and procedures are in place for medical device decontamination by competent staff in an appropriate environment.
- Patients and visitors are supported to achieve and maintain high standards of hygiene.
- Proper arrangements exist for the segregation, handling, transporting and disposal of waste including human tissue and subsequent disposal appropriately and sensitively.

2.6 World Health Organization guidelines

Hand Hygiene in Outpatient and Home-based Care and Long-term Care Facilities 2012

In 2012, the World Health Organization (WHO) published *Hand Hygiene in Outpatient and Home-based Care and Long-term Care Facilities*.[33] The WHO recommendations on hand hygiene best practices and improvement strategies are considered the gold standard for healthcare services worldwide. Due to the demand for hand hygiene guidelines specifically for primary and community settings, the WHO Clean Care is Safer Care team developed this guidance document.

Although the WHO states that all basic principles of infection control and hand hygiene are the same in all healthcare settings, it recognises that outpatient care presents some specific challenges related to the application of the 'My five moments for hand hygiene' approach and the implementation of the WHO Multimodal Hand Hygiene Improvement Strategy.

Primary healthcare is a key focus of this document. It is acknowledged that this type of care can vary widely among countries, including the different settings and numbers of various practitioners. As discussed in the document, the culture of infection prevention and control, including hand hygiene, is not established as a high priority among outpatient care settings around the world.

The guideline also applies to staff working in long-term care facilities. In long-term care facilities, the risk of transmission of healthcare-associated micro-organisms by hands is considered significant because many contacts with residents occur. It is also recognised that homecare is often provided by non-health professional lay persons, such as community volunteers and the patient's relatives.

This comprehensive guide aims to:

- discuss the available evidence related to the risk of healthcare-associated micro-organism transmission by hands during procedures typically carried out in outpatient settings
- provide practical explanations and considerations of the 'My five moments for hand hygiene' approach and the WHO Multimodal Hand Hygiene Improvement Strategy in outpatient care
- provide practical examples of typical care situations in these settings to facilitate the implementation of hand hygiene recommendations.

The guideline reinforces the 'My five moments for hand hygiene' approach as key to protecting patients, healthcare workers and the healthcare environment against the spread of micro-organisms. This approach requires an understanding of the key

concepts of the patient zone, healthcare area, and critical sites as each of the five moments are defined by the contacts with the surfaces contained in and between these geographical areas:

- **patient zone** is defined as the patient themselves, the patient's personal belongings, and in some cases where the patient is placed for a certain time in a dedicated space with dedicated equipment such as chemotherapy administration (in other words, surfaces or items touched by the patient, or in direct physical contact with the patient and the healthcare professional providing the care).

- **critical sites** are specific sites associated with the risk of infection within the patient zone. These are body sites (such as mucous membrane or non-intact skin) or medical devices that can lead to infection risk either to or from the patient. These sites are vulnerable points for the patient with reduced defence against microbiological invasion and, at the same time, they often represent a risk to healthcare workers of exposure to bodily fluids.

- **healthcare area** corresponds to all physical surfaces outside the patient zone, including other patients and their patient zones, and the wider healthcare environment. In most settings, the healthcare area is characterised by the presence of many different microorganisms, including multidrug-resistant micro-organisms, even if appropriate cleaning is performed.

This approach encourages healthcare workers in outpatient settings to clean their hands:

- before touching a patient
- before clean or aseptic procedures
- after bodily fluid exposure/risk
- after touching a patient and
- after touching patient surroundings.

The WHO multimodal hand hygiene improvement strategy focuses on:

- system change
- education and training
- evaluation and feedback
- reminders in the workplace
- institutional safety climate.

In practical terms, this means that the healthcare facility has the necessary equipment and facilities in place to allow healthcare workers to perform hand

hygiene. For example, this means having alcohol-based hand-rubs accessible at the point of care. The advantages include broad antimicrobial medication spectrum compared to other agents; shorter time (20–30 seconds) for effective antimicrobial medication decontamination and better skin tolerability. All healthcare workers in outpatient settings, particularly those with direct patient contact, require continual training on the importance of hand hygiene, the 'My five moments for hand hygiene' approach, and the correct techniques for hand washing and hand rubbing.

Regular monitoring is very helpful to measure and demonstrate the changes in work practices, such as usage rates of alcohol-based hand-rubs. Reminders in the workplace, such as posters, are key prompts to remind healthcare workers and patients alike, about the importance of hand hygiene and the appropriate indications and techniques for hand hygiene. The ongoing commitment of all healthcare workers to practice good hand hygiene is essential to firmly establish hand hygiene as a high priority patient safety issue.

The guideline also looks at the practical application of hand hygiene requirements in a broad range of outpatient care settings. A number of examples reflect typical primary care situations where a large number of patients undergo a care procedure one after the other and thus hand hygiene indications occur with very high frequency in a short time period. The minimum requirements for hand hygiene were identified in some very particular care situations, with a focus on essential opportunities.

As highlighted though, hand hygiene is closely linked to environmental contamination. The guideline emphasises that hand hygiene alone cannot be expected to compensate for failure to appropriately decontaminate medical devices and equipment and cleaning the environment.

2.7 Centers for Disease Control and Prevention guidelines

Guideline for isolation precautions 2007

This comprehensive Centers for Disease Control and Prevention (CDC) guideline was revised in 2007.[34] The CDC is a US federal agency that develops and applies disease prevention and control, environmental health, and health promotion and health education activities designed to improve the health of people. It updates and expands the original 1996 *Guideline for Isolation Precautions in Hospitals*. The transition of healthcare delivery from primarily acute care hospitals to other healthcare settings, such as home care, ambulatory care, and long-term care, created a need for recommendations that can be applied in all healthcare settings

using common principles of infection control practice, yet can be modified to reflect setting-specific needs. The 2007 version reaffirms standard precautions as the foundation for preventing transmission of infectious agents during patient care in all healthcare settings.

All healthcare settings, regardless of the level of care provided, must make infection prevention a priority and be equipped to observe standard precautions. The guideline reviews the scientific data regarding the transmission of micro-organisms and the fundamental elements to prevent this transmission.

A new addition to the practice recommendations for standard precautions is respiratory hygiene and cough etiquette. This standard precaution not only applies to healthcare personnel during patient care, but also more broadly to all persons who enter a healthcare setting, including healthcare personnel, patients and visitors. This recommendation evolved from observations during the severe acute respiratory syndrome-associated coronavirus (SARS-CoV) outbreak in 2003, which demonstrated that a lack of basic source control measures with patients, visitors, and healthcare personnel with signs and symptoms of respiratory tract infection may have contributed to the micro-organism's transmission.

Safe injection practices to prevent the transmission of infections to patients are also clearly defined and reinforced in the guidelines. This reaffirmation was influenced by a number of viral hepatitis outbreaks that occurred in the United States, which could have been prevented by adhering to basic principles of aseptic technique for the preparation and administration of parenteral medications. A number of key recommendations for safe injection practices are outlined. The CDC has subsequently developed and implemented the educational 'one and only' campaign to promote safe injection practices by raising awareness among patients and healthcare providers about safe injection practices.

The need for appropriate infection control staffing to meet the ever-expanding role of infection control professionals in the modern, complex healthcare system is discussed. However, the CDC stresses that it is also important that infection control is seen as being everyone's job. Adhering to the recommended infection control practices decreases transmission of infectious agents in healthcare settings, but is difficult to achieve.

The Core Elements of Antimicrobial Stewardship for Nursing Homes 2015

In 2015, the CDC published *The Core Elements of Antimicrobial Stewardship for Nursing Homes*.[35] This document used the same seven elements as stated in the *CDC Core Elements of Hospital Antibiotic Stewardship* and adapted them into practical ways to start or increase antibiotic stewardship activities in nursing homes.

The document details that nursing homes are encouraged to implement the activities and strategies in a gradual approach, starting with one or two activities and over time, as improvements are implemented, add new strategies to continue improving antimicrobial medication use. The document outlines that the core elements necessary for antibiotic stewardship in nursing homes include:

- leadership commitment — a strong leadership commitment to supporting the safe and appropriate antibiotic use in the facility
- accountability — identifying staff members such as physicians, nursing and pharmacy leads who are responsible for promoting and overseeing antibiotic activities in the facility
- drug expertise — establishing access to consultant pharmacists or other relevant individuals with experience or training in antibiotic stewardship for the facility
- action — implementing at least one policy or practice in the facility to improve antibiotic use
- tracking — monitoring at least one process measure of antibiotic use and at least one outcome from antibiotic use in the facility
- reporting — providing regular feedback on antibiotic use and antimicrobial resistance to staff such as prescribing clinicians, nursing staff and other relevant staff members
- education — providing resources to clinicians, nursing staff, residents and families about antibiotic resistance and opportunities for improving antibiotic use.

A checklist also accompanies the document for nursing home providers to self-assess their centre. It can be used initially as a baseline assessment of policies and practices which are already in place, and then to review progress on stewardship activities on a regular basis.

Summary of Infection Practices in Dental Settings 2016

The 2016 *Summary of Infection Practices in Dental Settings: Basic Expectations for Safe Care* was developed by the CDC to provide basic infection prevention principles and recommendations for safe care in dental healthcare settings.[36] These are based primarily upon the recommendations outlined in the CDC *Guidelines for Infection Control in Dental Health-Care Settings* 2003.[37] Additional information relevant to dental infection prevention and control published by the CDC since 2003 is included in this summary. These include infection prevention programme administrative

measures, infection prevention education and training, respiratory hygiene and cough etiquette, updated safe injection practices and administration measures for instrument processing. The summary also includes a checklist that can be used to regularly risk assess the dental setting to ensure that all minimum expectations for safe care are met.

The summary outlined six fundamental elements needed to prevent transmission of infectious agents in dental settings and identified a number of key recommendations under each element:

1. Administrative measures.
2. Infection prevention education and training.
3. Dental healthcare personnel safety.
4. Programme evaluation.
5. Standards precautions.
6. Dental unit water quality.

Administrative recommendations to prevent transmission of infectious agents in dental settings include developing and maintaining infection prevention and occupational health programmes and having at least one individual with infection prevention training responsible for coordinating and managing the programme. The summary also notes the importance of having the following in place:

- all of the necessary supplies to adhere to standard precautions
- developing and maintaining evidence-based written policies and procedures tailored to the needs of the dental service
- having policies and procedures in place for early detection and management of potentially infectious persons at initial points of entry.

For infection prevention education and training, the CDC states that ongoing education and training of personnel is critical to ensuring that all infection prevention policies are understood and adhered to. The CDC recommends that all personnel should receive induction and ongoing training, including task and job-specific training, personnel safety training and patient safety training.

Dental healthcare personnel safety recommendations focus on occupational health needs, including personnel vaccinations and screening. The summary document stresses that it is important that the risks posed to patients are assessed and managed and that referral arrangements are in place to manage personnel exposed to potential infectious agents in order to prevent the spread of healthcare-associated infections.

The success of infection prevention programmes depends on a number of different factors. It is recommended that all programmes are routinely evaluated including adherence by personnel to standard precautions and infection prevention practices, in addition to routinely documenting and monitoring healthcare-associated infections in patients and personnel.

Recommendations are made for all personnel to adhere to standard precautions such as hand hygiene practices, use of personal protective equipment, respiratory hygiene or cough etiquette, safety of sharps and safe injection practices. The guide also outlines what needs to be considered when sterilising and disinfecting patient-care items, devices and environmental surfaces and recommends best practice points to prevent the transmission of infections.

The final recommendations made in the guide are in relation to dental unit water quality. The correct treatment of dental unit water is necessary to ensure that personnel and patients are not at risk of adverse health effects and bacteria. Recommendations include using water that meets regulatory standards and consulting with manufacturers to ensure that the appropriate methods and equipment are used to maintain the quality of dental water.

Guide to infection prevention for outpatients settings: minimum expectation for safe care 2016

This *Guide to Infection Prevention for Outpatient Settings: Minimum Expectation for Safe Care* was published by the CDC in 2016.[38] The guide is based primarily upon elements of standard precautions presented in the 2007 CDC isolation precautions guideline and represents the minimum infection prevention expectations for safe care in outpatient settings.

For the purposes of this CDC guide, outpatient settings refer to hospital-based outpatient clinics, non-hospital based clinics and physician offices, ambulatory surgical centres and many other specialised settings where patients do not remain overnight. Outpatient facilities are also encouraged to use the checklist accompanying the guide so that they can regularly risk assess the outpatient setting to ensure that all minimum expectations for safe care are met.

The main recommendations cover:

- dedicated resources to infection prevention
- education and training of healthcare personnel
- monitoring and reporting healthcare-associated infections
- adherence to standard precautions.

Dedicated resources include having at least one individual with training in infection prevention employed by or regularly available to the facility. This person should be involved in developing infection prevention policies and procedures that take into consideration the types of services provided by the facility and the patient population that is served. There also needs to be sufficient and appropriate equipment and supplies necessary for the consistent observation of standard precautions, including hand hygiene products, injection equipment, and personal protective equipment available in the facility.

Education on the basic principles and practices for preventing the spread of infections should be provided to all staff working in the facility. This is critical for ensuring that infection prevention policies and procedures are understood and followed.

Monitoring and reporting healthcare-associated infection is highlighted as a key element to prevent the transmission of infectious agents in outpatient settings. Unlike acute hospital-based settings, surveillance of patients with a healthcare-associated infection in outpatient settings is challenging because encounters with patients may be brief or sporadic and as patients may be receiving treatment in a variety of different healthcare settings. It is therefore recommended that to assist with the identification of infections in an outpatient facility, patients are educated on the signs and symptoms of infection that may be associated with a procedure and should be encouraged to notify the facility if such signs and symptoms occur.

Facilities also need to ensure that all reportable diseases and outbreaks within outpatient settings are reported to the relevant bodies. Facilities can also check their adherence to infection prevention practices — such as hand hygiene, reprocessing reusable invasive medical devices and environmental cleaning — through regular focused practice surveys or audits.

An overview of the key standard precautions as they apply to outpatient settings is presented. Facilities should develop and implement systems for early detection and management of potentially infectious patients at initial points of entry to the facility. If it is suspected that a patient may have a potential infection, they should be placed in a single-patient room, if possible. When a patient is being transferred from one healthcare facility to another, facilities should inform the transporting agency and the accepting facility of the suspected infection type.

2.8 Summary

This review of international standards, guidelines and guidance documents demonstrates the many different components of good infection prevention and control practice across a diverse range of health and social care services. Most standards advocate a person-centred approach to managing healthcare-associated infections, especially with regard to effective communication. The importance of incorporating infection prevention and control principles as part of the day-to-day delivery of care is also highlighted.

Safe antimicrobial medication prescribing is a reoccurring theme in the context of the widespread use of antimicrobial medication, including their prophylactic use, and the associated global antimicrobial resistance threat. The importance is noted of meaningful feedback of information on healthcare-associated infections and antimicrobial resistance to help services identify the relevant areas for improvement.

Common principles emerged in this review of international documents in relation to leadership, governance and management arrangements. It is often stated in the standards reviewed that defined leadership is essential for safe and effective infection prevention and control across the entire health and social care system. While the management structure and processes associated with infection control will differ depending on the size of the organisation and the types of healthcare services it delivers, the principles of governance apply regardless of the setting. This involves clinical leaders and senior managers endorsing policies, procedures and protocols, overseeing infection and antimicrobial resistance surveillance, reporting, investigating and analysing healthcare-associated infections and undertaking quality improvement activities. It is vital to ensure that infection prevention and control remains a priority for the organisation as a whole and each person working within it.

The international guidelines and guidance documents provide a comprehensive account of infection prevention and control best practice in a number of key areas and are consistent in their key messages and principles of infection prevention and control best practice. Standard and transmission-based precautions are essential in order to protect patients and staff from the risk of healthcare-associated infections. The importance of staff adhering to these recommended practices is repeatedly stated. Good infection prevention and control depends on a healthy and safe workforce and environment. The occupational risk of staff acquiring a healthcare-associated infection is minimised by using safe equipment and applying safe work practices, for example, safe handling and disposal of sharps, availing of recommended vaccines and using personal protective equipment. Cleanliness of the premises and equipment is also cited as being an integral part of infection

prevention. The issues identified here have been incorporated into the appropriate themes in the draft standards, notably Effective Care and Support; and Safe Care and Support.

Services need to be able to determine risk in their own context as practices differ greatly in their day-to-day function. A number of guidelines outline how a proportionate approach to infection prevention and control principles can apply in various community settings. The key priorities in long-term care facilities include risk assessment of a patient on admission, the management of invasive medical devices, such as urinary catheters and enteral feeding tubes, outbreak recognition and management. In dental settings, instrument reprocessing and dental unit water quality are important considerations. In general practice and outpatient settings, there are significant issues in relation to safe antimicrobial medication prescribing, performing effective hand hygiene between high volumes of patients and assisting the public on how to protect themselves from the risk of healthcare-associated infection.

The findings from the review of international standards, guidelines and guidance documents have been incorporated into the draft national infection prevention and control standards for community services.

Chapter 3 – Summary of Irish guidance documents

3.1 Overview

The guidance documents reviewed in this section of the report cover a broad range of topics to support and advise staff working in community health and social care settings on infection prevention and control best practice.

A number of organisations have developed guidelines that deal exclusively with standard precautions, such as hand hygiene, environmental cleaning, decontamination of medical devices and equipment, and the management of healthcare waste in the context of various community settings. These guidelines cover dental, general practice, ambulance services, long-term care facilities, home help and community services.

The Health Service Executive's (HSE's) antimicrobial prescribing guidelines[39] for primary care provide guidance for general practitioners (GPs), dentists and other community prescribers. In addition, the HSE and Health and Safety Authority (HSA) have produced a number of guidance documents to assist staff in different community settings to minimise their risk of acquiring a healthcare-associated infection. A number of national documents consider the management of facilities from an infection prevention and control perspective, including decontamination units, waste management and water systems in all healthcare settings.

Most of the national guidelines on specific healthcare-associated infections also examine the prevention, control and management of these infections in primary and community settings. These include commonly occurring infections such as Meticillin-Resistant *Staphylococcus aureus* (MRSA), *Clostridium difficile*, norovirus and influenza, in addition to newer emerging multi-drug resistant micro-organisms, such as carbapenemase producing *Enterobacteriaceae* (CRE).

The prevention of medical device-related infection is outlined, including urinary catheter-associated infections and point-of-care devices. Finally, the importance of training is outlined in the national core infection prevention and control knowledge and skills guideline.[40] A number of the key recommendations from national guidelines on established good practice informed the development of the draft standards.

Key themes that emerged across the Irish guidance documents reviewed include:

- the use of standard precautions
- occupational health
- vaccinations
- decontamination
- safe antimicrobial prescribing
- management of healthcare risk waste
- management of outbreaks
- training on infection prevention and control practices.

3.2 Dental practices

3.2.1 Dental Council Code of Practice Relating to Infection Prevention and Control 2015

The *Code of Practice Relating to Infection Prevention and Control* was published by the Dental Council in 2015.[41] This revised code of practice is an update from previously published advice in light of more recent knowledge and builds on existing good practices for infection prevention and control in dental practices.

The code of practice sets out the standards required to minimise the risk of infection to patients and dental healthcare professionals. All dentists and personnel working in the dental team must adhere to the standards outlined in the code under their governing legislation(s), and failure to comply with the code may result in legal action.

The standards cover:

1. Occupational health.
2. Standard precautions.
3. Decontamination of dental instruments.
4. Healthcare risk waste and non-risk waste management.
5. Training and education.
6. Risk assessment/audit and standards.
7. Governance.

3.2.2 HSE Standards and Recommended Practices for Dental Services in a Local Decontamination Unit 2012

In 2012, the HSE published a document titled *Standards and Recommended Practices for Dental Services in a Local Decontamination Unit*** *(LDU)*.[42] The document details the standards and recommended practices required for the decontamination of reusable invasive medical devices for dental services in a local decontamination unit based on current European and national legal requirements and professional best practice. This document is targeted at all relevant staff in the public health service who work in local dental services, and other relevant staff who have a responsibility for the decontamination of reusable invasive medical devices.

It is noted that effective decontamination of dental reusable invasive medical devices is an essential component in the prevention of healthcare-associated infection. It is advised that when decontaminating and reprocessing dental reusable invasive medical devices, it is necessary that all aspects of the life cycle need to be controlled and managed if decontamination is to be fully effective. There are 10 steps involved in the decontamination life cycle. These include selection, specification, purchase, transport, storage and eventual disposal of reusable invasive medical devices and purchase, validation, maintenance and testing of associated decontamination equipment and processes. At each stage of the decontamination life cycle, acceptable standards must be reached to ensure the effective decontamination of reusable invasive medical devices.

There are four standards outlined in the document:

- suitability of decontamination facilities
- suitability of decontamination equipment
- choice of decontamination process
- procedures relating to transmissible spongiform encephalopathies (TSEs: fatal degenerative brain diseases that can be transmitted through invasive clinical procedures).

There are 23 recommended practices detailed in the document, which outline principles of a safe working environment for the decontamination of dental reusable invasive medical devices in a local decontamination unit. The recommended practices are closely aligned to the decontamination life cycle.

** A local decontamination unit is a dedicated non-clinical area in a dental clinic that is used for the decontamination of reusable invasive dental devices.

3.3 General practice

3.3.1 Infection Prevention and Control for Primary Care in Ireland. A Guide for General Practice (2013)

The *Infection Prevention and Control for Primary Care in Ireland. A Guide for General Practice*[43] was developed to address the infection prevention and control needs within the working environment of general practices.

An outline is provided of all standard precautions as they relate to general practice. The recommended vaccines for practice staff are discussed. The WHO's five moments for hand hygiene is explained in the general practice setting. Other important aspects of hand hygiene are also outlined, including the general care of hands, hand-wash and alcohol hand-rub techniques and the availability of good hand hygiene facilities.

Each type of personal protective equipment is described, and advice is given on when they should be worn. The importance of initiating good respiratory hygiene when patients present with signs and symptoms of a respiratory infection is emphasised. This mostly consists of educating patients and visitors on covering their mouth and nose when coughing, disposing tissue in the nearest bin after use and cleaning hands afterwards.

The safe preparation and administration of injections is highlighted. It is recommended that each practice has a policy in place that outlines the management and advice to staff following a needle-stick injury, and blood and or bodily fluid exposure. The options for practices that use sterile medical devices for procedures are outlined. If decontamination of the reusable medical devices within the practice itself is chosen, then the practice must comply with all relevant legislation, including the suitability of the decontamination facilities.

A list of recommended cleaning methods and products is provided for the cleaning of the environment and the general equipment in it. An overview is given of the precautions to be taken in the event of a blood or bodily fluid spill, and how to manage it with a spill kit. It is advised that practices which do not use a contracted laundry service use disposable linen as opposed to reusable linen.

The final standard precaution discussed is the safe management of healthcare risk waste. A comprehensive outline is provided on the different categories of waste and which items to dispose of correctly in the various types of waste bags and bins.

A number of suggested audit tools are provided at the end of the document that enable practices to assess their own performance in a number of the infection prevention and control areas outlined above.

3.3.2 Management of Infectious Intestinal Disease in primary care 2012

Chapter 4 of the HSE's Health Protection Surveillance Centre's *Infectious Intestinal Disease: Public Health & Clinical Guidance 2012* looks at managing infectious intestinal disease in primary care.[44] Gastroenteritis is a common condition in Ireland, with 4.5% of the population presenting to their GP with the condition each month. A significant number of cases also present to emergency departments. The importance of gastroenteritis lies in its potential clinical severity coupled with the fact that most gastroenteritis pathogens are contagious, meaning a single case can be transmitted to many people.

In cases where gastroenteritis is diagnosed, it is advised that no antidiarrhoeals and antimicrobial medications should be prescribed unless there is specific indication. In the event where a decision is taken to prescribe antimicrobial medication, it should be done in consultation with a consultant in public health medicine, a consultant microbiologist or infectious disease physician and reserved for severe invasive bacterial disease only.

It is recommended that everyone with a confirmed case of gastroenteritis should be offered advice on appropriate hand washing, correct disposal of soiled clothing and bed linen, appropriate cleaning of spillages and education on hygienic preparation and serving of food.

3.4 Ambulance and air ambulance services

3.4.1 Infection prevention and control guidance for aircraft personnel-Emergency Aeromedical Service, Irish Air Corps, Irish Coast Guard (2013)

The *Infection prevention and control guidance for aircraft personnel-Emergency Aeromedical Service, Irish Air Corps, Irish Coast Guard* was developed by the National Ambulance Service in conjunction with the Health Protection Surveillance Centre (HPSC) in 2013.[45] This was in response to concerns raised by aircraft crew members about multidrug-resistant micro-organisms during air ambulance flights. The short guide provides information to aircraft crew on basic hygiene measures they can take to protect themselves against all infections during all flights, including those used for aeromedical transport.

The key infection control measures that should be taken by all aircraft crew include:

1. Hand hygiene is the single most important infection control measure to protect yourself and your patients.
2. Cover all cuts with a waterproof dressing.
3. Cover your mouth when coughing or sneezing, dispose of tissue immediately and wash your hands or use an alcohol-based hand cleaner.
4. Treat any bodily fluid as infectious. This means that disposable gloves should be worn if contact with bodily fluids is possible.
5. Avoid touching your mouth, eyes, and nose with unwashed hands.
6. Ensure your vaccinations are up to date.

3.4.2 Control of Infection & Communicable Diseases Policy (2012)

In 2012, the National Ambulance Service produced a policy on the control of infection and communicable diseases for all ambulance staff.[46] The purpose of the policy is to help staff to minimise the risk of the spread of infection and provide specific information and guidance on recognising and managing some common communicable diseases.

This policy sets out the responsibilities for all staff members working in the National Ambulance Service from senior management to those at the point of care.

The rationale for and recommended use of standard and transmission-based precautions in day-to-day routines are detailed in the policy. The practical application of all standard precautions as they apply to the ambulance setting is outlined.

Systematic reporting of all incidents, including near misses, is noted as being critical. A governance structure for reporting and investigating such incidents is clearly laid out in the policy. The importance of providing infection prevention and control training for staff and conducting regular quality audits of each vehicle is also outlined.

3.4.3 Ambulance Service: Infection Prevention and Control Precautions for Suspected or Confirmed Influenza (2011)

In 2011, the HSE's Health Protection Surveillance Centre published the *Ambulance Service: Infection Prevention and Control Precautions for Suspected or Confirmed Influenza*.[47] This short guide outlines what precautions National Ambulance Service personnel are to take when dealing with suspected or confirmed cases of seasonal influenza.

The practical infection prevention and control precautions to follow are separated into steps taken during six points of care in a patient's journey:

- on arrival to the house or transfer facility
- informing the hospital of the admission or transfer of a potentially infectious person
- before leaving the house or healthcare facility
- in the ambulance
- arrival at the hospital
- before the ambulance is used again.

Hand washing and the use of personal protective equipment is recommended throughout the document. It is advised that all patients with suspected or confirmed influenza should wear a surgical mask before entering the ambulance and that they should be aware of respiratory hygiene and cough etiquette. It is stated that any patient with suspected or confirmed seasonal influenza should not travel with any other patients in the ambulance. Single-patient-use medical equipment is advised, where possible, but where reusable equipment is used, it is recommended that manufacturer's instructions are followed when cleaning and or disinfecting the equipment. It is recommended that the vehicle should be cleaned and disinfected after use and that waste, sharps and spillages of blood and bodily fluids should be managed effectively.

3.5 Residential care facilities

3.5.1 Public Health Guidelines on the Prevention and Management of Influenza Outbreaks in Residential Care Facilities in Ireland (2017/2018)

The *Public Health Guidelines on the Prevention and Management of Influenza Outbreaks in Residential Care Facilities in Ireland* are reviewed and published on an annual basis by the HSE's Health Protection Surveillance Centre.[48]

Key interventions stated in the guideline to prevent and control an influenza outbreak include:

- annual influenza vaccination for residents and staff, with appropriate documentation of same
- planning and education
- implementation of standard and transmission-based precautions including droplet and contact precautions
- surveillance (monitoring) for influenza-like illness and influenza
- procedures in place to ensure ready quick access to antiviral medications in the event of an influenza outbreak
- a written outbreak management plan.

The guidelines state that the influenza vaccine is safe and effective and prevents influenza-related complications and death. The vaccine provides a high level of protection in healthy persons under 65 years of age. Staff uptake of the vaccine can protect residents by reducing the risk of introduction and transmission of influenza within the facility. It is the responsibility of the residential care facility management to ensure that all residents are vaccinated with influenza vaccine (unless there is a medical contraindication) at the beginning of the influenza season in late September or early October.

These public health guidelines also include additional guidance and checklists in the appendices to help residential care facilities with the prevention, detection and control of influenza-like illness and influenza outbreaks.

3.6 Home help

3.6.1 Infection Prevention and Control: An information booklet for Home Helps and Personal Assistants (2014)

This booklet, published by the HSE's National Clinical Programme for Healthcare-associated infection and Antimicrobial Resistance in 2014, aims to provide home helps and personal assistants with practical information on infection prevention and control.[(49)] It is noted that elements of this booklet may also be relevant to family carers.

The booklet focuses on the use of standard precautions in home settings and gives practical examples and visual aids of where, when and how these should be used and adhered to.

Examples of standard precautions detailed in the booklet include:

- staff health and personal hygiene
- hands and hand hygiene
- sneezing and cough etiquette
- personal protective equipment
- routine cleaning in the home
- washing clothes at home
- managing blood or body spills
- managing sharps
- managing a needle-stick injury and blood and or bodily fluid splashes
- managing pets
- pest control.

Staff immunisations are covered under the section on staff health and hygiene. Assisting and encouraging clients to carry out standard precautions in their homes such as hand hygiene, sneezing and cough etiquette, and management of sharps is an important role of the home help or personal assistant. Home help or personal assistant staff are strongly recommended to report any issues that arise when providing care in the home settings to their respective managers.

3.7 Community services

3.7.1 HSE Guidelines on Infection Prevention and Control (IPC) in Community and Disability Services HSE South (2012)

The *Guidelines on Infection Prevention and Control (IPC) Community and Disability Services HSE South* were published by the HSE in 2012.[50] In 2017, the basic principles of infection prevention and control, standard precautions, transmission-based precautions, immunisation and staff health, and laundry were updated in the guidelines. The aim of the document is to assist staff in taking all reasonable steps to protect residents, clients and themselves from infection. The weblink to access the guidelines also includes an information booklet for home helps and personal assistants, and for community disability services.[51]

The guidelines are divided into 20 sections with each section offering healthcare workers practical infection prevention and control advice and steps to follow to protect residents, clients, staff and visitors from infection. An easy-to-reference summary is given in each of the sections of the key considerations of that particular aspect of infection prevention and control practice. An outline of 13 standard precautions is presented in the guideline, covering:

1. Occupational health programme.
2. Hand hygiene.
3. Personal protective equipment.
4. Respiratory hygiene and cough etiquette.
5. Safe use and disposal of sharps.
6. Management of a blood and or bodily fluid spillage.
7. Management of blood and bodily fluid exposures.
8. Management of laundry and linen.
9. Environmental hygiene.
10. Client care equipment and medical devices.
11. Resident/patient placement, movement and transfer.
12. Safe injection practices.
13. Infection control practices for lumbar puncture.

The section on safe injection practices specifically covers fluid infusions and administration sets, point-of-care testing and insulin pens. The key elements of transmission-based precautions as they apply to a resident are also outlined. Consideration is given to immunisation of:

- residents
- children attending day centres or services
- and staff.

Adhering to standard precautions limits the transmission of most multidrug-resistant organisms (MDRO) from one resident to another. In the case of invasive medical devices, it is important that staff comply with the appropriate policies, procedures and systems to reduce the risk of infection related to such devices. It is important that clinical specimens for laboratory examination are collected, handled, packaged and transported in a safe manner.

In addition to the above topics, the document also provides guidance about:

- pets in healthcare
- uniforms and clothing worn in the delivery of care
- the public attending health services
- last offices (care of the patient's body after they have died)
- admissions
- transfers and discharges, and
- food hygiene.

The final section on healthcare risk waste management outlines the key principles on the handling, segregation, packaging, storage, collection and disposal of such waste. This includes the advice that must be provided to patients for sharps waste generated in the home.

3.7.2 Infection Prevention and Control: An Information Booklet for Community Disability Services

This information booklet published by the HSE South (Cork and Kerry) in 2012[51] aims to provide staff working in community settings in disability services guidance on infection prevention and control measures, to reduce the risk of infection to both people using these services and staff. It is aligned with the more detailed guidelines on infection prevention and control in community and disability services for HSE South.[50] As outlined, people using these services may be more susceptible to infection as they may be older people or be very young, have chronic illnesses and or are receiving treatment that hinders their ability to fight infection. They may also have recently been discharged from an acute healthcare setting to community facilities.

As people are supported or cared for within a variety of locations — such as day care facilities, community group homes or within the family home — it is important that a balance is found to deliver safe care in a non-clinical environment.

An outline is provided of standard precautions in the context of this environment, with particular emphasis on hand hygiene. Recommendations for how to decontaminate typical patient care items is provided. In addition, other practices to prevent and control the transmission of infection are provided in the following sections:

- general home hygiene, including cleaning, laundry, pets
- food hygiene
- general guidelines on managing outbreaks, including gastroenteritis.

3.7.3 Department of Public Health HSE East Community Infection Prevention and Control Manual (2011)

The *Department of Public Health HSE East Community Infection Prevention and Control Manual* was published in 2011 for healthcare workers in counties Dublin, Kildare and Wicklow.[52] The guideline outlines recommendations for infection prevention and control in community care settings, primary care and in the client's own home.

The guideline addresses and makes recommendations for managing infection prevention and control under the following headings:

- organisation and management
- roles and responsibilities
- occupational health
- inoculation injuries (needle-stick, bites, splashes and so on)
- vaccination for clients or residents
- physical infrastructure and service management.

Each community facility should have a designated person with overall responsibility for infection prevention and control and have the necessary structures in place to support and provide infection prevention and control services. Everyone needs to know their own role and responsibilities for infection prevention and control including the senior manager or clinician in each facility, healthcare workers, community infection prevention and control nurse, the Public Health Department and environmental health officers.

All staff should be assessed for vaccination requirements. Each facility should have a local guideline in place on managing sharps injuries. A vaccination programme needs to be in place for residents in line with national guidelines. Each facility's infrastructure should be assessed for compliance with best practice recommendations and an action plan developed to address deficiencies.

The key principles of standard and transmission-based precautions are discussed. The section on managing infectious disease in community healthcare settings looks at applying these precautions in the community context, including clients in their own home. This includes people who are symptomatic with infections such as *Clostridium difficile*, Meticillin-Resistant *Staphylococcus aureus* (MRSA), norovirus and influenza. The section on how to manage invasive procedures and devices looks at cannualas, percutaneous endoscopic gastrostomy (PEG) feeding systems, catheter management, in addition to fingerstick blood glucose testing.

Other issues addressed in the guidelines include the notification of infectious diseases and outbreaks, visiting clients in their own home and food hygiene. The timely notification of infectious diseases to the local Department of Public Health is important to allow appropriate action to be taken. The key areas that community healthcare workers need to consider when visiting clients in their own homes are:

- performing hand hygiene
- using personal protective equipment
- managing healthcare risk waste
- storing medical supplies and
- cleaning equipment.

Finally, it is important that food is handled, prepared, cooked and stored in a safe manner, to avoid food poisoning. Staff engaged in food preparation or handling should attend a recognised food hygiene course.

3.8 Standard precautions

3.8.1 Guidelines for hand hygiene in Irish healthcare settings (2015)

The *Guidelines for hand hygiene in Irish healthcare settings* was developed by the Royal College of Physicians of Ireland (RCPI) in 2015.[53] These guidelines are an update from the first national guidelines for hand hygiene in the healthcare setting published in 2005 by the Strategy for the Control of Antimicrobial Resistance in Ireland (SARI). These guidelines are based on the 2009 WHO evidence-based guidelines on hand hygiene in healthcare.[54]

It is stated that the purpose of this document is to assist Irish healthcare facilities and services to improve hand hygiene through a series of recommendations that reflect best practice. It is recommended that the guidelines should be implemented in all healthcare settings in Ireland as part of an integrated multimodal infection prevention and control and patient safety strategy. These guidelines are aimed at all healthcare workers and may also be of relevance to patients, visitors, carers and all members of the public.

The guideline outlines the WHO's five moments for hand hygiene and the recommended hand hygiene technique that all healthcare workers should adhere to, including surgical hand preparation. The recommended hand hygiene facilities in all healthcare settings are detailed in the document. It is noted that regular audits of hand hygiene, with feedback, should take place in all healthcare settings and that these should be linked to an improvement programme and form part of a broader programme of surveillance and audit. Recommendations on hand hygiene education and training are also outlined.

3.8.2 Standard Precautions (2009)

This document, *Standard Precautions*, was published by the HSE's Health Protection Surveillance Centre in 2009[55] and was adapted from the Centers for Disease Control and Prevention's *Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings, 2007*.[34] It is aimed at all healthcare workers delivering care to all patients in all settings. The document states that each healthcare facility, including community care areas, must develop local guidelines on standard precautions using this document as a template if desired.

The 13 standard precautions outlined in the guideline cover:

1. Occupational health programme.
2. Patient placement.
3. Hand hygiene.
4. Patient movement and transfer.
5. Respiratory hygiene and cough etiquette.
6. Use of personal protective equipment, such as gloves, gowns and masks.
7. Environmental decontamination.
8. Decontamination of patient care equipment and medical devices.
9. Management of healthcare risk waste.
10. Management of needle-stick injuries.
11. Management of laundry.
12. Management of spillages of blood and bodily fluids.
13. Safe injection practices.

All healthcare workers need to implement the standard precautions at all times, attend induction and ongoing training, and advise visitors on infection prevention and control requirements. Managers of healthcare facilities are responsible for ensuring that the resources necessary to implement standard precautions are provided, including an education programme, an occupational health service and appropriate physical infrastructure (hand-wash sinks, isolation areas and so on). Finally, the infection prevention and control staff have a responsibility to provide education on standard precautions to all staff, provide advice to staff and audit implementation of the precautions where appropriate.

3.9 Antimicrobial stewardship

3.9.1 HSE Guidelines for the prescribing of antibiotics in Ireland (2012)

The HSE's *Antimicrobial prescribing guidelines for primary care in Ireland* are available online since November 2012 and are maintained and updated as guidance changes.[39] The online version has replaced hard copies of these guidelines first produced in 2009.

These antimicrobial medication guidelines aim to improve antimicrobial medication prescribing, reduce the progression of antimicrobial resistance in the community,

promote the safe and effective use of antimicrobial medication, and improve patient outcomes.

The guidelines are separated into a number of sections including conditions and treatments, prescribing for children, dental prescribing and antimicrobial stewardship. Each of the conditions listed details the relevant comments and preferred antimicrobial medication treatment option or options. These guidelines for prescribers do not replace clinical judgment but rather augment it.

The guidelines also include a table which lists the main serious drug interactions for regularly prescribed antimicrobial medication in the community.

Finally, a section is provided on the meaning of antimicrobial stewardship in a community context and relevant audit tools.

The core principles of antimicrobial stewardship are to ensure the following:

- you prescribe the right antibiotic, antiviral, antifungal for the patient in front of you considering age, other medical conditions, if pregnant or long-term care resident, and so on
- choose the right dose, duration, and route for the condition you are treating
- you cause the least amount of harm to that patient; consider drug interactions, allergy and toxicity
- you cause the least amount of harm to future patients by reducing the likelihood of antimicrobial drug resistance
- do not prescribe for obvious self-limiting viral infections
- only use antibiotics for suspected bacterial infections
- promote use of immunisation to minimise infections
- practice good infection control to minimise the spread of infections.

As outlined in the guideline, prescribers can demonstrate improvement by using a simple antimicrobial medication prescribing audit to show antimicrobial stewardship in action.

3.10 Occupational health management

3.10.1 HSE-HPSC Guidelines for the Emergency Management of Injuries and Post-exposure Prophylaxis (2016)

In 2016, the HSE's Health Protection Surveillance Centre published the *Guidelines for the Emergency Management of Injuries and Post-exposure Prophylaxis*.[56] This guideline applies to all persons at risk in all settings, including healthcare workers, members of the public, the Garda Síochána and so on. The aim of the guidelines are to have a standardised approach to manage injuries that can be used in all settings, based on best available evidence and expert opinion. The intended use of these guidelines is to provide clear advice in situations where a person presents with an injury where there is a risk of acquiring blood-borne viruses such as the hepatitis B virus, hepatitis C virus and human immunodeficiency virus (HIV) or other infections. Examples of such potential injuries include needle-stick or other sharps injury, sexual exposure, human bite, and exposure of broken skin or of mucous membranes.

A number of algorithms are presented for ease of reference, including when to administer post-exposure prophylaxis. As stated in the guidelines, the appropriate management of such injuries, in the emergency and follow-up periods, is critical in terms of minimising the risk of transmission of blood-borne viruses and in allaying the psychological impact on the injured person.

3.10.2 Health and Safety Authority's Guide to the European Union (Prevention of Sharps Injuries in the Healthcare Sector) Regulations (2014)

The *Guide to the European Union (Prevention of Sharps Injuries in the Healthcare Sector) Regulations* was published by the Health and Safety Authority in 2014.[57] The regulations in this guide relate to the risks posed by sharps to all of those working in healthcare in all settings including students, external contractors and self-employed persons in healthcare. The regulations detail specific control measures to protect employees at risk and require an appropriate response in the event of an incident occurring. The purpose of this guide is to provide comprehensive, practical information on the implementation of the regulations.

Sharps injuries pose a serious risk to those working in healthcare in Ireland. Under the regulations, employers and employees are required to:

- assess the risks of sharps injuries
- select appropriate controls
- implement those controls through safe working procedures and the provision of information and training
- have in place arrangements for accident reporting, follow up and the care of the injured employee.

3.10.3 Policy on the Prevention of Sharps Injuries (2016)

In 2016, the HSE published the *Policy on the Prevention of Sharps Injuries.*[58] As noted, sharps contaminated with an infected patient's blood can transmit many diseases, including hepatitis B, hepatitis C and human immunodeficiency virus (HIV). As stated in the policy, the HSE, in compliance with the European Union (Prevention of Sharps Injuries in the Healthcare Sector) Regulations 2014, is committed to eliminating or reducing the risk of exposure.

This policy is for all HSE employees and others working in the HSE, including temporary employees, agency employees, students, volunteers, contractors and any employee contracted to provide services for the HSE.

The purpose of the policy is to inform all managers and employees of the key issues to address when developing safe work practices for the prevention of sharps injuries. The policy outlines the roles and responsibilities of all staff in the prevention of sharps injuries, including responsibility of managers to ensure that the necessary resources are provided for implementing this policy.

It is imperative that all sharps injuries are reported immediately after the event to senior members of staff and if applicable to relevant external organisations. All healthcare services must have a local procedure in place to ensure that employees who have suffered an adverse event have access to treatment and follow up.

3.10.4 Immunisation and health information for healthcare workers and other in at-risk occupations (2013)

Chapter 4 of the *Immunisation Guidelines for Ireland* developed by the National Immunisation Advisory Committee in the Royal College of Physicians of Ireland (RCPI) focuses on immunisation and health information for healthcare workers and others in at-risk occupations.[59] It details that healthcare workers are the largest at-

risk group in the Irish workforce that may be exposed to infectious agents during their employment.

Under the Safety, Health & Welfare at Work Act, a risk assessment needs to be carried out to establish if vaccinations are required for employees in particular work settings. This is based on the activities that they perform, rather than their job title. Ideally, this risk assessment is done before staff start their employment or work placement. As outlined in the guidelines, vaccination is an essential component in preventing transmission of infections and should be regarded as one part of good infection control practices.

3.10.5 Health and Safety Authority's Health and Safety at Work in Residential Care Facilities: Biological Agents (2012)

In 2012, the Health and Safety Authority published *Health and Safety at Work in Residential Care Facilities*.[60] This document is intended for owners and managers of residential care facilities such as those for older people, people with disabilities and respite and convalescent care facilities. As outlined, hazards may be considered under the headings of physical, chemical, biological and psychosocial hazards. A biological hazard includes any infectious agent that can cause infection, allergies or toxic effects, such as harmful exposure to blood and bodily fluids, or exposure to airborne pathogens such as tuberculosis.

It is stated that under relevant health and safety legislation, each employer must carry out a risk assessment to assess any risk to the health and safety of an employee from actual or potential exposure to a biological agent at work. When carrying out risk assessments, it is recommended that the following areas are considered:

- the work activities where a risk may arise
- the categories of employees that may be affected
- the routes of transmission, such as inhalation, absorption, ingestion or inoculation (sharps injury or bite).

This information can then be used to determine how likely harm may arise and what preventive and protective measures need to be in place.

The risk assessment must be recorded and staff should be made aware of both the hazards and risks and associated control measures. The training and supervision of staff on safe work practices is emphasised in the Health and Safety Authority's document. All healthcare workers should receive the relevant vaccines based on the type of work carried out and risk of exposure to biological agents. This information should be recorded and followed up as necessary. It is stated that all employees

should be informed of both the benefits and drawbacks of both vaccination and non-vaccination.

Relevant health surveillance should be available to staff where a risk of exposure to biological agents is revealed and must be overseen by a responsible medical practitioner.

It is noted that all staff should be aware of the causes and effects of Legionnaires disease and the control measures that need to be taken, in line with national guidelines, to prevent the disease.

Finally, an outline is provided on waste management and transport of dangerous goods. The document notes that the segregation of waste at source is essential so that waste can be safely disposed of.

3.10.6 Health and Safety Authority's Occupational Safety and Health and Home care: Biological Hazards 2017

The *Occupational Safety and Health and Home Care 2017* document published by the Health and Safety Authority provides information on the occupational health considerations in the home environment.[61] This guide is specifically aimed at staff providing home care services for older and vulnerable people in their own homes, whether they are HSE, the voluntary sector or private provider. While a home care worker is working in a client's home that home becomes a place of work and the relevant occupational safety and health legislative requirements must be met. This means ensuring that a workplace is as safe as is reasonably practicable.

A number of key occupational hazards that can occur in the home are covered, including biological hazards, in other words, potential contact with infectious agents. The guide identifies a number of control measures home care workers can put in place if they come in contact with a number of sources of infection either through direct contact with clients or with contaminated materials.

It is recommended that all employers providing care for older and vulnerable people in their homes should have infection prevention and control policies in place which are in line with national guidelines and take account of standard and transmission-based precautions where necessary.

3.10.7 Health and Safety Authority Guidance on Occupational Hazards in Dentistry: Biological Agent Hazards 2016

In 2016, the Health and Safety Authority published *Guidance on Occupational Hazards in Dentistry*.[62]

A number of hazards are addressed in the guidance, including those caused by biological agents. Dentists may be exposed to a variety of micro-organisms through a number of possible sources including:

- contact with contaminated sharps and healthcare waste
- respiratory infectious disease through splatters from bodily fluids and or projectiles while using high-speed rotary handpieces
- respiratory infectious disease through airborne transmission
- environmental biological contaminants from water or ventilation systems (for example *Legionella*).

Due to the risk of dental healthcare professionals being exposed to biological agents in their day-to-day work practices, especially when performing exposure-prone procedures,[††] the guidance outlines a number of control measures that can be put in place to reduce the risk of exposure.

It is also recommended that the EU portable drinking water standard should be adhered to in absence of Irish or EU microbial limit values set for dental unit output water. Regular disinfection of water lines, following manufacturers' instructions, is advised. It is recommended that waste from dental practices should be separated into two categories: clinical or healthcare risk and general office or non-risk waste. The disposal of clinical or healthcare risk should be appropriately managed and disposed of from point of collection in the dental practice to collection of waste by licensed waste carriers. This also includes maintaining up-to-date dispatch documents for clinical risk waste and a contract for the carriage of dangerous goods with the specialised waste contractor to ensure legal duties under dangerous goods transport legislation are addressed.

[††] **Exposure prone procedures:** situations where the worker's hands (whether gloved or not) may be in contact with sharp instruments, needle tips or sharp tissues (spicules of bone or teeth) inside a patient's open body cavity, wound or confined anatomical space where the hands or finger tips may not be completely visible at all times. There is an increased risk of transmitting blood-borne viruses between dental healthcare professionals and patients during exposure prone procedures.

3.11 Facilities management

3.11.1 HSE's Guidance for the Application of Standards and Recommended Practices for Local Decontamination Units in Primary Care, Dental, Podiatry and GP Practice (2016)

The *Guidance for the Application of Standards and Recommended Practices for Local Decontamination Units (LDUs) in Primary Care, Dental, Podiatry and GP Practice* was published by the HSE in 2016.[63] The purpose of the document is to offer guidance for the implementation of standards and recommended practices for the decontamination of reusable invasive medical devices in these settings, based on current legal and regulatory requirements and professional best practice; and to promote a standardised approach to safe decontamination practice in these settings. The guidance document is aimed at all relevant staff in the public health service that work with and or are involved in the decontamination of such devices.

As outlined, practices that use sterile reusable invasive medical devices must choose from the following three options:

1. Use sterile single-use medical devices instead.
2. Have reusable invasive medical devices decontaminated and sterilised by a certified sterile service department.
3. Decontaminate reusable invasive medical devices in the local decontamination unit using HSE standards and guidance.

If option 3 is chosen, then the practitioner needs to comply with the recommendations set out in this guidance document.

The document outlines six standards statements and associated features that all primary care settings should follow, categorising them under four of the themes used in HIQA's *National Standards for Safer Better Healthcare* (2012):

- patient-centred care and support
- effective care and support
- safe care and support
- workforce planning.

The standards cover a range of issues including:

- supporting and encouraging patients to provide feedback, raise concerns or make complaints
- decontaminating reusable invasive medical devices, in line with legislation, national recommendations, standards and quality improvement initiatives that are based on best available evidence

- developing, and updating, local policies, procedures and protocols
- identifying and managing occupational risks to staff from exposure to healthcare-associated infections and injuries
- performing decontamination of reusable invasive medical devices in suitable locations external to the clinical treatment area
- adhering to effective methods of decontamination of reusable invasive medical devices, including cleaning, disinfection and sterilisation. The documentation of the decontamination process includes a track and trace record[‡‡] of each part of the decontamination process
- ensuring at a minimum an annual validation and service of decontamination equipment is performed by a competent person
- training and education of staff who are involved in the decontamination of reusable invasive medical devices.

A self-assessment tool is included in the appendices for local decontamination units to self-evaluate themselves on their decontamination practices. Checklists and guidance for procurement of decontamination equipment and reusable invasive medical devices are also included.

3.11.2 Guidance on the Implementation of the Health and Safety Authority Competent Authority – Exemption 03/2016 on the Carriage of Uncleaned Reusable Invasive Medical Devices by Road (2016)

The *Guidance on the Implementation of the Health and Safety Authority Competent Authority – Exemption 03/2016 on the Carriage of Uncleaned Reusable Invasive Medical Devices by Road* was published by the HSE in 2016.[(64)] This exemption is part of the legal rules on the carriage of dangerous goods by road that affect the packaging and transportation of healthcare risk waste.

The guidance document is aimed at all relevant healthcare workers in the HSE, voluntary hospitals or primary care services who are involved with or have responsibility for the following areas: management of decontamination units, transport of uncleaned reusable invasive medical devices by road or the procurement of services.

This guidance document outlines the responsibilities of those involved in the preparation, packaging and transportation of uncleaned reusable invasive medical devices by road and details the requirements that must be complied with under

[‡‡] **Track and trace record:** keeping a record of batch labels for each set of instruments, signed decontamination cycle records and or equipment printouts which are linked to the patient on whom the devices have been used and should be kept for a minimum of 11 years (current HSE guidance) plus the lifetime of the decontamination equipment.

European and national agreements, in other words the European Agreement Concerning the International Carriage of Dangerous Goods by Road 2015 (ADR) and the Health and Safety Authority Competent Authority Exemption 03/2016.

3.11.3 Healthcare Risk Waste Management: Segregation, Packaging and Storage Guidelines for Healthcare Risk Waste 2010

The national healthcare risk waste management segregation, packaging and storage guidelines were published in 2010, an update from the previous 2004 guidelines.[65] While the document has an acute hospital focus, it offers guidance on the segregation and packaging of healthcare risk waste generated in the provision of all patient care in the Republic of Ireland.

Good practices in the generation and housekeeping of waste are the key to responsible and successful healthcare waste management. These basic waste management principles are determined by environmental, health and safety considerations and statutory requirements. An outline is provided of the statutory waste management acts, carriage of dangerous goods by road regulations and United Nations approved packaging. The waste management act places the primary responsibility for waste and its proper disposal on the producer or holder of the waste.

As outlined in the guideline, it is essential that all staff involved in the management of waste are trained on the correct procedures when handling waste in accordance with best practice and statutory requirements. The risk of waste spreading infection is very low when handled correctly.

The majority of healthcare waste is non-risk waste. Healthcare risk waste is categorised as biological, infectious, chemical, sharps or radioactive, therefore posing risk as it may cause infection or injury. Best practice means segregating and discarding healthcare non-risk waste and risk waste into the correct waste stream.

The final disposal of waste means the acceptance of the waste by a local authority or private waste contractor properly licensed or permitted to transport, store and treat such healthcare wastes.

3.11.4 National Guidelines for the Control of Legionellosis in Ireland, 2009

The *National Guidelines for the Control of Legionellosis in Ireland, 2009* were an update of the 2002 guidelines.[66] *Legionella* bacteria are typically found in water and they can cause a mild self-limiting influenza-like illness or Legionnaires' disease, a more serious and potentially fatal illness characterised by pneumonia. This comprehensive guideline is underpinned by relevant occupational health and safety

legislation, which means that healthcare facilities have to consider possible exposure to *Legionella* bacteria in their water management systems and address these risks in a safety statement.

It is important that the persons undertaking the risk assessment are those who devise and implement preventive measures and they should have the relevant knowledge, skills and training to carry out their tasks effectively and safely. A systematic risk management approach ensures that the prevention and control measures, including engineering control, are appropriate for the level of risk and that a process for review and continual improvement is in place. As stated in the guidelines, water systems in new or refurbished buildings should be designed to ensure risks from *Legionella* bacteria are eliminated wherever possible or reduced as far as is reasonably practicable.

3.11.5 Guidelines for the Prevention and Control of Infection from Water Systems in Healthcare Facilities (2015)

Guidelines for the Prevention and Control of Infection from Water Systems in Healthcare Facilities were published in 2015.[(67)] This guidance should be used in conjunction with the *National Guidelines for the Control of Legionellosis in Ireland, 2009*. Water systems have frequently been identified as a source of water-related healthcare-associated infection, especially among immunocompromised or critically ill patients in the hospital setting. Serious outbreaks of infection have been caused by waterborne micro-organisms such as *Legionella* species and Pseudomonas species, in particular *Pseudomonas aeruginosa*.

While the guideline is targeted more at the acute healthcare setting, the basic principles of safe water system management applies to all healthcare facilities. As stated, each healthcare facility is responsible for the management and quality of the water supply once it enters its building or buildings. Particular attention needs to be given to clinical areas where patients may be at increased risk of waterborne infection, including the cleaning of clinical hand-wash sinks. It is important that cleaning staff clean clinical hand-wash sinks in a manner that minimises the risk of contamination of the tap from micro-organisms in the basin.

It is important that any contamination incidents of the water supply and or suspected outbreaks of healthcare-associated infection are reported immediately to the relevant authorities.

3.12 Micro-organism specific guidelines

3.12.1 Prevention and Control of Methicillin-Resistant *Staphylococcus aureus* (MRSA): National Clinical Guideline No.2 (2013)

The National Clinical Effectiveness Committee's *Prevention and Control of Methicillin-Resistant Staphylococcus aureus (MRSA): National Clinical Guideline No. 2* was published in 2013,[68] following an update of the previous 2005 guideline. This guideline outlines the best available evidence for treating any patients who may be colonised or infected with MRSA. This micro-organism commonly colonises the skin and nose, but can also cause serious infection in susceptible patients such as bloodstream infections, skin and soft tissue infections and pneumonias. The guideline has been developed for all healthcare staff involved in the care of patients, residents or clients who may be at risk of or may have MRSA, including those in residential care settings and in the community.

A total of 53 recommendations are presented under four main themes: prevention and control; management; surveillance; and evaluation. Recommendations 11 to 16 address the prevention and control of MRSA in the non-acute healthcare setting, including residential care facilities, while recommendations 20 to 22 cover community-associated Meticillin-Resistant *Staphylococcus aureus* (CA-MRSA). Healthcare facilities need to prioritise infection prevention and control and antimicrobial stewardship to prevent occurrence in the first instance and minimise the spread of the micro-organism where it is present.

The importance of good communication between healthcare facilities is essential, especially staff being informed on admission and discharge of any recent MRSA screening results, any treatments and any follow-up screening plans. The recommendations for treatment and follow-up screening in the community are outlined for individuals, household contacts and healthcare workers, including carers.

3.12.2 Surveillance, diagnosis and management of *Clostridium Difficile* Infection in Ireland: National Clinical Guideline No. 3 (2014)

The National Clinical Effectiveness Committee's *Surveillance, Diagnosis and Management of Clostridium difficile Infection in Ireland* guideline published in 2014[69] takes into account developments in diagnosis and patient management since the previous 2008 guideline. *Clostridium difficile* is the leading cause of healthcare-associated infectious diarrhoea, resulting in mild to potentially serious consequences for patients, such as fatal colitis. The guideline is relevant to all healthcare staff involved in the care of patients or residents that may be at risk of or

have *Clostridium difficile.* This guideline outlines the general and specific measures required to prevent and control *Clostridium difficile* infection.

The 43 recommendations are presented under the following themes, including considerations for primary and community care:

- **national recommendations —** non-acute services should have access to infection specialist expertise as appropriate, such as microbiologist, infection prevention and control nurses
- **an infection prevention and control programme —** that endorses the use of standard precautions by all healthcare staff when caring for patients or residents and follows procedure in the event of a positive laboratory result from a patient or resident
- **prevention —** efforts by staff to minimise the frequency, duration and number of antimicrobial medications prescribed and provide practical information to patients and residents and their visitors and carers on how to avoid or minimise risk of infection
- **surveillance —** any cases occurring outside the hospital are notified to the Department of Public Health
- **laboratory diagnosis —** stool testing for *Clostridium difficile* should be requested by clinicians as early as possible on all patients or residents with possible infectious diarrhoea
- **management of suspected and or confirmed cases —** all patient or residents with potentially infectious diarrhoea should be isolated immediately with standard and contact precautions when in residential care. Information needs to be provided to patients, residents and their families outlining these precautions when being managed at home. On discharge, the history of *Clostridium difficile* infection needs to be clearly communicated to the GP to facilitate appropriate antimicrobial medication prescribing and reduce the risk of possible reoccurrence
- **management of outbreaks and clusters —** medical practitioners are required to notify unusual clusters or changing patterns of illness to the local Department of Public Health. Control of an outbreak involves re-enforcement of infection prevention and control and antimicrobial stewardship measures including early isolation of patients or residents, education of staff, patients, residents, families, increased environmental and equipment cleaning and optimising hand hygiene by all.

3.12.3 Guidelines for the Prevention and Control of Multi-drug resistant organisms (MDRO) excluding MRSA in the healthcare setting (2014)

The 2012 guidelines for the prevention and control of multidrug-resistant micro-organisms and the subsequent update in 2014 provide the best available evidence and advice on managing these micro-organisms.[70] These micro-organisms consist of both *Enterococci* and *Enterobacteriaceae*, which can produce potent enzymes to counteract antimicrobial medication. The document aims to provide information and guidance on how to control the spread of these bacteria inside and outside the hospital both on a local and on a national level. A number of recommendations are discussed, including the key infection control recommendations for settings outside the hospital applicable to all multidrug-resistant micro-organisms (MDROs). These recommendations are outlined in the text box below:

- Multidrug-resistant micro-organism (MDRO) colonised patients should not be declined admission to a long-term care facility, day care facilities or rehabilitation services or have their admission delayed on the basis of positive multidrug-resistant micro-organism (MDRO) colonisation status.
- Isolation of a resident with a multidrug-resistant micro-organism (MDRO) is generally not required in long-term care facilities. Standard precautions are required for the care of all patients, including patients colonised with multidrug-resistant micro-organism (MDRO) in long-term care facilities. The need to place a multidrug-resistant micro-organism (MDRO) colonised patient in a single room or to use contact precautions should be determined based upon local risk assessment on a case-by-case basis.
- Routine screening for multidrug-resistant micro-organism (MDRO) is not recommended for long-term care facilities.

Specific recommendations are described for the prevention and control of some of the most frequently found multidrug-resistant micro-organisms, including vancomycin-resistant *Enterococci* (VRE), resistant *Enterobacteriaceae* — such as extended spectrum β-lactamase producing *Enterobacteriaceae* (ESBL) and carbapenemase producing *Enterobacteriaceae* (CPE) — and multidrug-resistant *Pseudomonas aeruginosa* and *Acinetobacter baumannii*.

Due to the increased reporting of CPE in recent years, provisional guidance has been issued by the HSE Healthcare-associated infection and antimicrobial resistance response team. This includes guidance for long-term care facilities (LTCFs),[71] public

health nurses and other staff who need to visit patients in their homes[72] and general practice.[73]

As outlined in the above guidance documents, the guiding principles of CPE advice are as follows:

> (a) a carbapenemase producing *Enterobacteriaceae* (CPE) colonised person has the same right to access health and social care as everyone else and should not be made suffer significant delays in transfer between home, nursing home and hospitals simply because they are colonised with carbapenemase producing *Enterobacteriaceae* (CPE).
>
> (b) anything that is practical should be done to limit spread of carbapenemase producing *Enterobacteriaceae* (CPE) and other bacteria in all healthcare settings while respecting the needs of patients for dignity and privacy.

The management of CPE in the community is about getting the basics right, including using standard precautions, carrying out hand hygiene and avoiding antimicrobial medication.

3.12.4 National Guidelines on the Management of Outbreaks of Norovirus Infection in Healthcare Settings (2002)

These guidelines were developed by the Viral Gastroenteritis Subcommittee in the National Disease Surveillance Centre in 2002.[74] The guidelines deal with norovirus (also known as the winter vomiting bug) outbreaks and are intended for use and adoption in all healthcare settings, both acute and community settings.

Due to the resilient and infectious nature of the virus, the guidelines state that outbreaks are not eradicable but they can be controlled and managed. An early, prompt response to a norovirus outbreak, with the establishment of an outbreak control team (OCT), is noted as the key to controlling the outbreak. It is advised that residential settings should have an agreed outbreak management plan in place to ensure the uniformity and effectiveness of responses to outbreaks. In each residential home, a lead person should be designated to manage the outbreak.

It is outlined that early and effective communication and implementation of control measures are vital in managing an outbreak. Essential control measures recommended include immediate cleaning and decontamination, frequent hand washing and cohorting of ill patients. It is also noted that staff who have become ill must not return to work until after a specific minimum amount of time and that agencies should also reinforce this to their staff. It is emphasised that a written hand-washing policy should be in place in all healthcare settings or facilities.

3.12.5 Infection prevention and control of suspected or confirmed influenza in healthcare settings

The *Infection prevention and control of suspected or confirmed influenza in healthcare settings* was published by the HSE's Health Protection Surveillance Centre in 2013.[75] This document outlines the infection prevention and control measures required for patients presenting with suspected or confirmed influenza in all such settings. It is noted that the symptoms of influenza are non-specific, so all staff in healthcare settings must be aware of the current prevalence of influenza in the community and use standard precautions for all patients at all times.

Administrative measures that should be applied to all patients presenting with influenza-like illness are also detailed in the document. These include having a dedicated waiting area for symptomatic patients, if possible, ensuring adequate supplies of tissues, waste bins and hand hygiene facilities in waiting areas, having a surveillance programme in place to monitor staff and patients for influenza-like illness and offering all healthcare workers an annual influenza vaccine. Where a single room or dedicated waiting area is unavailable, the advice is to place patients with influenza-like illness at least one meter (three feet) from other patients.

Education of staff and patients on control measures to take to reduce or prevent the spread of influenza, such as the use of personal protective equipment, is emphasised throughout the document. Advice is given on the cleaning of a patient's room or treatment room with neutral detergent and disinfectant. The manufacturer's instructions should be followed for cleaning and disinfecting reusable medical equipment after use and single use items should be disposed of after use.

It is recommended that staff who are presenting with symptoms should report these symptoms and not attend work. It is advised that visitors should also use standard precautions such as personal protective equipment and hand hygiene when visiting patients with suspected or confirmed influenza including:

- keeping visits to a minimum
- wearing a surgical mask while in the patient's room
- being educated on putting on and removing personal protective equipment; hand hygiene; and respiratory hygiene and cough etiquette.

3.13 Medical devices guidelines

3.13.1 Guidelines for the Prevention of Catheter-associated Urinary Tract Infection (2011)

The national *Guidelines for the Prevention of Catheter-associated Urinary Tract Infection* were published in 2011.[76] Urinary tract infection has been shown to be one of the most common healthcare-associated infections, with the majority related to the presence of a urinary catheter. This document is aimed at healthcare professionals in all healthcare settings. These detailed guidelines outline what needs to be considered before catheterisation and the best practice for insertion and management of urinary catheters.

Provisional guidance relating to urinary catheters and urinary tract infection in long-term care facilities was developed in 2017 to support practice of healthcare workers in these settings.[77] An emphasis is placed on avoiding inserting a urinary catheter in the first place. The importance of diagnosing a urinary tract infection, based on clinical signs and symptoms is also stressed. Dip-sticks of urine samples are almost never of value in assessing long-term care facility residents for evidence of urinary tract infection. Urine cultures should be submitted for culture only at the request of a doctor who has evaluated the resident and has concerns that the resident has urinary tract infection based on the clinical features. Antimicrobial medication treatment of urinary tract infection in residents can be supported by using the national community antimicrobial medication guidelines.

3.13.2 Prevention of Intravascular Catheter-related Infection in Ireland (2014)

The national guidelines for the prevention of intravascular catheter-related infection in Ireland were originally published in 2009 and reviewed and updated in 2014.[78] While central intravascular catheters are more typically inserted and managed in acute healthcare services, all types of intravascular catheters are associated with a risk of infection. Peripheral intravascular catheters are the devices most frequently used for vascular access. Although the incidence of bloodstream infection is low for this type of vascular catheter, serious complications can produce considerable morbidity. The guidelines outline a series of recommendations that reflect international best practice for the prevention, surveillance and management of both central and peripheral intravascular catheters.

The guidelines state that patients transferring from other healthcare facilities with a peripheral intravascular catheters in place should have this device reviewed upon arrival to ensure it is still needed. Intravascular catheters should only be inserted

when there is a clear clinical indication for their use. When the clinical indication is no longer present, the catheter must be removed.

3.13.3 Guidelines for Safe and Effective Management and Use of Point of Care Testing in Primary and Community Care 2007

In 2007, *Guidelines for Safe and Effective Management and Use of Point of Care Testing in Primary and Community Care* were published by the HSE.[79] Point-of-care testing involves the performance of a test in the immediate vicinity of a patient to provide a rapid result outside the conventional laboratory environment.

The purpose of this document is to provide guidelines to primary and community care settings (such as GP surgeries, community pharmacies, community clinics, health centres and anticoagulation clinics) for managing and implementing a point-of-care testing service, with a specific focus on the safe use of such medical devices. The guidelines state that it is the responsibility of the service provider to ensure that appropriate occupational health advice is provided to staff performing point-of-care testing, including appropriate vaccination against hepatitis B.

A number of key recommendations for best practice for point-of-care testing in primary and community care environments are outlined in the document. Examples include having a system in place for the clinical and managerial governance of point-of-care testing, developing and implementing standard operating procedures, having trained and fully competent staff carrying out quality-control testing on all point-of-care tests and ensuring that all clinical waste, including sharps, is disposed of correctly.

3.14 Childcare settings

3.14.1 Management of Infectious Disease in Childcare Facilities and Other Childcare Settings (2012)

In 2012, the HSE's Health Protection Surveillance Centre published the *Management of Infectious Disease in Childcare Facilities and Other Childcare Settings*.[80] These guidelines are aimed at those operating childcare facilities in Ireland. The aim of these guidelines is to minimise the risk of transmission of infectious diseases in childcare facilities by outlining the basic principles of disease transmission and control.

The guidelines outline how infections are spread and recommend three basic principles to prevent the transmission of disease in childcare settings:

- hand washing is used at every opportunity
- immunisation: all children and staff should appropriately immunised
- exclusion — any unwell staff member or child should be excluded.

The use of standard precautions are recommended to greatly reduce the spread of infections in childcare facilities. Hand washing is noted as being the single most effective way to prevent the spread of infection.

Maintaining a good standard of environmental hygiene is also recommended, coupled with appropriate cleaning of toys, personal care items, education and recreational materials and appliances, and laundry. Practical steps are also given for maintaining potty, toilet and nappy changing facilities. All waste items, including those that have been soiled with bodily fluids, should be disposed of appropriately and safely. The importance of training all childcare staff in the use of standard precautions is emphasised.

It is strongly recommended in the guidelines that both childcare workers and children are adequately and appropriately vaccinated prior to commencing employment or attending a childcare facility. It is a legal requirement that all childcare facilities maintain immunisation records on all children attending. It is also emphasised that all staff and children should be told not to attend the childcare facility if they are feeling unwell.

Practical steps in managing food hygiene, pest control and a series of specific infectious diseases in childcare facilities are outlined in the document.

3.15 Healthcare worker knowledge and skills guideline

3.15.1 Core Infection Prevention and Control Knowledge and Skills: A Framework Document (2015)

The *Core Infection Prevention and Control Knowledge and Skills: A Framework Document* was published by the HSE in 2015.[40] This document outlines the core infection prevention and control knowledge and skills required from all health and social care staff employed or contracted by the HSE who have direct patient contact or who have a risk of exposure to blood or bodily fluids.

In the document, both healthcare staff and proposed infection prevention and control knowledge and skills are categorised, while the type of infection prevention and control skill and knowledge required by each staff category is detailed. By categorising staff with the type of infection prevention and control skills and knowledge that they require, the document states that resources can be targeted effectively and training programmes can be prioritised.

Educating and training health and social care staff on effective infection prevention and control is a fundamental aspect in reducing or preventing healthcare-associated infections. By educating and training staff on infection prevention and control, it raises awareness of infection prevention and control and antimicrobial stewardship practices and enables healthcare staff to make informed and evidence-based decisions on how best to protect patients, colleagues and themselves. The document outlines that education in infection prevention and control in Ireland varies considerably across the healthcare sector in terms of frequency and approach.

3.16 Summary

The Irish national guidance documents cover a broad range of topics that outline good standards of infection prevention and control practice. A number of the documents cover infection prevention and control priorities from the perspective of community settings including dental, general practice, ambulance, long-term care facilities, home help and community services. The importance of adhering to the relevant standard precautions applicable to these different settings is clearly outlined. The aim of publishing setting-specific guidance is to assist staff in these settings to take all practical and reasonable measures to protect everyone from the risk of infection. Services need to determine their own specific risks regarding work practices, equipment used and the environment. It is important that services provide assurances that infection prevention and control needs are being identified and met.

Safe antimicrobial medication prescribing is essential to deal with the increasing problem of antimicrobial resistance. It is important to prescribe antimicrobial medication according to the principles of antimicrobial stewardship, including prescribing the right antimicrobial medication at the right dose, route and duration, and for the right infection type at the right time.

The importance of safeguarding staff from an occupational health injury at work is highlighted, with particular emphasis on immunisations and sharps injuries. A number of setting-specific documents on health and safety at work outline the necessary steps of identifying and assessing risks and selecting the appropriate preventative and protective measures to put in place.

It is essential that healthcare facilities are managed appropriately in line with regulatory requirements and best practice. This includes recommended practices for local decontamination units in primary care, managing healthcare risk waste and managing water systems. It is also important that healthcare facilities understand their responsibilities for any equipment used for decontamination and for healthcare waste that is collected and transported.

Staff who provide care need to be familiar with commonly occurring healthcare-associated infections within the community — such as influenza, norovirus, *Clostridium Difficile* — in order to effectively prevent, control and manage these infections. It is also important that staff are familiar with newer emerging infectious agents that are resistant to a number of antimicrobial medications. However, the management of all of these different infectious agents is fundamentally about getting the basic infection prevention and control practices right, including using standard precautions and avoiding inappropriate antimicrobial medication use.

The correct use of medical devices, such as urinary catheters and point-of-care devices, can significantly reduce the risk of acquiring a healthcare-associated infection in the first instance. Finally, the provision of education and training is essential to enable staff to comply with best practice.

The review of Irish guidelines and guidance helped identify and prioritise key infection and control-related practices and areas for consideration in developing the draft standards.

Chapter 4 — Summary of Irish surveys

4.1 Overview

A number of Irish studies have been conducted on healthcare-associated infection and antimicrobial medication use in primary and community healthcare settings over the past few years. A large European-wide point prevalence survey was repeated in Irish long-term care facilities in 2016.[1] The study demonstrates that healthcare-associated infection and antimicrobial medication use continue to be prevalent issues in long-term care facilities, regardless of ownership or type. The study determined that the average rate of healthcare-associated infection was 4.4% and antimicrobial medication use was 8.3%.

Surveillance data collected by the HSE and Health Protection Surveillance Centre (HPSC) has looked at *Clostridium difficile* rates, antimicrobial medication use and antimicrobial medication resistant micro-organism rates in community settings.[2] A significant proportion of *Clostridium difficile* originates in the community and long-term care facilities, which had increased in the three years prior to this HIQA review. The rate of outpatient (ambulatory, community or primary care) antimicrobial medication consumption in Ireland in 2015 is mid to high compared with other European countries. The trend for increasing antimicrobial resistance in important causative micro-organisms remains a cause for concern, with a number of cases and outbreaks being detected in the community and long-term care facilities at the time of writing.

Influenza vaccine uptake among long-term care facility staff was 23.5% during the 2017 season, considerably below the national 40% target set by the HSE.[81] Baseline audit data on the National Ambulance Service has identified a number of infection prevention and control issues, especially with regard to processes for regular and deep cleaning of ambulances.[82] A number of the key recommendations arising from the above reports have been taken into consideration and integrated into the new draft national standards.

Key themes that emerged from the Irish surveys reviewed include:

- safe antimicrobial prescribing
- access to specialist support and advice
- occupational health
- surveillance, for example, healthcare-associated infections and uptake of vaccinations
- communications between services.

The themes that emerged were used to inform the development of the draft national standards.

4.2 Point Prevalence Survey of Healthcare-Associated Infections & Antimicrobial Use in Long-Term Care Facilities (HALT): May 2016 - Ireland National Report

The aim of the 2016 *Point Prevalence Survey of Healthcare-Associated Infections & Antimicrobial Use in Long-Term Care Facilities* (known as the HALT report) was to determine the prevalence of healthcare-associated infection and antimicrobial medication prescribing practices in Irish long-term care facilities.[(1)] During May 2016 224 long-term care facilities took part in the survey, with a total of 10,044 residents. To facilitate accurate comparisons of information across participating EU member states, standardised case definitions of healthcare-associated infections were used in accordance with a standard protocol. This data was collected during a two-week period in May 2016 by trained data collectors in each long-term care facility and the results were subsequently analysed by the HPSC, with individual feedback provided to each of the long-term care facilities that participated in the survey.

Sixty-one percent of the long-term care facilities that took part in the survey were owned by the HSE, 24% were privately owned and 15% were voluntary services. To provide a more meaningful interpretation of the data collected, the 224 long-term care facilities were separated into eight major care type categories, based on the typical characteristics and estimated length-of-stay for the majority of the residents in the long-term care facilities. These included:

- general nursing homes (long-stay)
- mixed-care type long-term care facilities (long-stay)
- long-term care facilities where the majority of residents stay for less than 12 months (short-stay)
- long-term care facilities caring for residents with intellectual disability
- long-term care facilities caring for residents with psychiatric conditions
- long-term care facilities caring for residents with physical disabilities
- facilities caring for residents with palliative care needs or rehabilitative needs.

Four percent of long-term care facilities participating in the survey selected the 'Other' category. The top three care types: general nursing homes; mixed-care type long-term care facilities; and long-term care facilities caring for residents with intellectually disability, accounted for 84% of residents surveyed. The proportion of residents aged 85 years and over was highest in the general nursing homes, mixed-care facilities and the short-stay facilities. This is in contrast to the long-term care facilities caring for residents with intellectual disability which had only 1% of the

residents aged 85 years or over. Overall, the median bed occupancy was 93%, with a median single room availability of 71%.

Long-term facility-acquired infections data

The overall prevalence rate of long-term care facility-acquired infections was 4.4%, with 455 active cases identified in 441 residents. This figure is similar to the prevalence of hospital-acquired infections reported from the May 2012 *Hospital Point Prevalence Survey* of 50 acute hospitals where 5.2% of patients had a hospital-acquired infection. The highest prevalence of long-term care facility-acquired infections was reported in palliative care long-term care facilities (8.3%) with the lowest prevalence rate reported in both intellectually disabled and psychiatric long-term care facilities at 3.25% and 3.8% respectively.

It was found that a number of risk factors contributed to the development of long-term care facility-acquired infections among residents such as the presence of a urinary catheter, vascular catheter, pressure sores and other wounds. These risk factors were found to be most prevalent and common in palliative care long-term care facilities in comparison to other care types. High prevalence of long-term facility-acquired infections were also found in general nursing homes (6.6%), rehabilitation long-term care facilities (4.9%) and mixed-care type long-term care facilities (4.5%).

The most prevalent long-term care facility-acquired infection types reported in long-term care facilities were respiratory tract infections, urinary tract infections and skin infections, with respiratory tract infections and urinary tract infections being joint-most prevalent, each affecting 1.5% of all residents. Three cases of *Clostridium difficile* infection were reported, all cases microbiologically confirmed. *Escherichia Coli* (35%) and *Staphylococcus aureus* (29%) were recorded as being the most frequently reported micro-organisms causing long-term care facility-acquired infections. Of the *Escherichia Coli* tested for complete antimicrobial medication susceptibility, 4% was resistant to 3rd generation cephalosporins, while 16% of *Staphylococcus aureus* was resistant to meticillin/flucloxacillin (MRSA). There were no long-term care facility-acquired infections with a positive result for carbapenemase producing *Enterobacteriaceae* (CPE) reported during the study.

For this first time, the survey also collected data on hospital-acquired infections. A resident was considered to have a hospital-acquired infection where the resident was transferred to the long-term care facilities with an active hospital-acquired infection or developed signs and symptoms meeting surveillance criteria on day one or day two following transfer to the long-term care facilities. The overall prevalence of hospital-acquired infections in long-term care facilities was found to be 0.4%.

Respiratory tract infections and skin infections were the joint most prevalent hospital-acquired infections reported in long-term care facilities. Similar to long-term care facility-acquired infections, hospital-acquired infections were highest in palliative care long-term care facilities (6%). Overall, the data shows that the vast majority of healthcare-associated infections in long-term care facilities in Ireland are acquired within the long-term care facilities.

Antimicrobial prescribing practices data

The survey found that of the 10,044 residents, 981 were prescribed antimicrobial medication, representing an 8.3% national median prevalence of antimicrobial medication use. Although this figure shows a decrease from the previous three surveys (2010; 2011; 2016) where the median prevalence of antimicrobial medication use was 10%, the 2013 European survey showed that residents of Irish long-term care facilities were more than twice as likely to be on an antimicrobial medication that their European counterparts (4.4%). In palliative care long-term care facilities, the prevalence of antimicrobial medication use was 30.8%, which is more similar to that reported in acute hospitals. The prevalence was also higher in long-term care facilities where the majority of residents stay for less than 12 months (short-stay) (12.1%) and rehabilitation long-term care facilities (10.9%). It was found that across all of the care types, 83% of antimicrobial medication was prescribed within the long-term care facilities. A higher proportion of antimicrobial medication had been prescribed in the hospital for rehabilitative care, palliative care and short-stay long-term care facilities.

The reasons for antimicrobial medication varied across all care types. The urinary tract was the most prevalent site across the care types, accounting for antimicrobial medication prescribed to 5% of all residents. Overall, it was reported that 59% of antimicrobial medication were prescribed to treat infections across the care types; however, this was seen to differ in long-term care facilities for people with intellectual disabilities, where antimicrobial medication prophylaxis accounted for the majority of prescriptions (54%), in particular respiratory tract prophylaxis. The survey showed that therapeutic antimicrobial medication was most commonly prescribed for respiratory tract infections (36%) and prophylactic antimicrobial medication was most commonly prescribed for urinary tract infections (68%).

The most commonly prescribed antimicrobial medication in long-term care facilities was found to be nitrofurantoin (26%), trimethoprim (25%), co-amoxiclav (25%) and flucloxacillin (15%). Amoxicillin (9%) was also frequently prescribed across all care types. The study also found that 95% of all antimicrobial medication was prescribed via the oral route, 6.5% via parenteral (IV) route and 2% was administered via other routes (such as inhalation).

Infection prevention and control coordination

The study also examined a number of specific infection prevention and control issues including:

- access to advice from external infection prevention and control experts
- access to staff with training in infection prevention and control
- vaccine uptake in residents
- availability of policies, procedures, protocols and guidelines
- healthcare-associated infection surveillance.

Seventy-eight percent of long-term care facilities reported having access to external infection prevention and control advice (for instances from a local hospital or Department of Public Health). However, only 39% had access to the advice of a pharmacist as required.

Seventy-six percent of long-term care facilities reported having access to a staff member with infection prevention and control training, although only 28% of those staff were based within the long-term care facilities on an ongoing basis. An active local infection prevention and control committee was reported in 61% of long-term care facilities with an average of three meetings per year. However, the vast majority of long-term care facilities reported having no antimicrobial stewardship committee (98%). Infection prevention and control training was available in the majority of long-term care facilities, but private long-term care facilities offered less access to training for nursing, paramedical and medical staff. Eighty-three percent of all staff had a hand hygiene training session during the previous year; however, 94% of long-term care facilities reported no annual training on antimicrobial medication prescribing. Overall, 91% of long-term care facilities reported that the seasonal influenza vaccine is offered to residents.

In terms of clinical practice guidance, protocols were more widely available for management of multidrug-resistant organisms (MDROs) (85%), hand hygiene (85%), urinary catheters (89%), enteral feeding (83%) than for vascular catheters (46%). In general these protocols were less likely to be available in intellectual disability and psychiatric long-term care facilities. A local antimicrobial medication prescribing guideline was available in 44% of long-term care facilities overall; however, most (86%) reported having no restrictions on the types of antimicrobial medication that could be prescribed for residents. It was noted that where a designated coordinating physician was in place, there was a greater likelihood of standardised infection prevention and control practices and policies being in place.

Some form of healthcare-associated infection surveillance programme was reported by 31% of long-term care facilities. Audits of infection prevention and control

policies and procedures were performed in half of the long-term care facilities. A designated member of staff for the reporting and management of outbreaks was available in 86% of long-term care facilities overall. Those long-term care facilities with an active infection prevention and control committee were more likely to be engaged in surveillance, including surveillance for multidrug-resistant organisms (MDROs).

The report makes a number of key recommendations regarding:

- staffing, including designation of coordinating physicians, recruitment of community infection prevention and control nurses and development of multi-disciplinary infection prevention and control and antimicrobial stewardship teams within each community health organisation (CHO)
- links between the acute hospitals and long-term care facilities including the development of inter-facility transfer template
- antimicrobial stewardship including formal implementation of the primary care prescribing guidelines within all Irish long-term care facilities and feedback of antimicrobial medication consumption
- surveillance that determines the priority areas for local prospective surveillance such as surveillance of urinary tract infections, *Clostridium difficile* infection, antimicrobial medication use and so on
- prevention and education including resident and staff influenza immunisation, hand hygiene compliance and reducing antimicrobial medication prophylaxis prescribing.

4.3 Annual Epidemiological Report 2015

Chapter 9 of the annual epidemiological report provides an overview of healthcare-associated infections, antimicrobial medication consumption and antimicrobial resistance data collected by the HSE Health Protection Surveillance Centre (HPSC) in 2015.[(2)] It outlines the data currently being collected in the Irish healthcare system in relation to acute, primary and community health and social care services. Data is available on *Clostridium difficile* infection rates, antimicrobial medication consumption and antimicrobial resistance from primary and community settings.

In 2015, there were a total of 1,943 cases of *Clostridium difficile* infection notified to Public Health Departments via the Computerised Infectious Diseases Reporting (CIDR) system. Sixty-eight percent were reported from patients aged 65 years or older. Two of the 12 outbreaks occurred in nursing homes. The data collected on *Clostridium difficile* infection shows that it is increasingly common in community and long-term care facilities.

The enhanced data collection looks at both the location when symptoms of *Clostridium difficile* started and the location where the patient acquired the infection in the first instance. While the notifiable data showed that the hospital setting was the location at the time of diagnosis for most patients (69%), 34% had symptom onset in the community and 16% in a long-term care facility. Overall, it was observed that 22% (a total of 420 cases) of *Clostridium difficile* infection cases had been acquired in the community and 14% (a total of 173 cases) in a long-term care facility.

The proportion of community-associated *Clostridium difficile* infection cases had risen from 2013 levels (18% to 22%). Of note, the majority of the community-associated *Clostridium difficile* cases experienced symptom onset while outside a healthcare facility and without a history of discharge from a healthcare facility within the previous 12 weeks.

The report outlines how the trend for outpatient (ambulatory, community or primary care) antimicrobial medication consumption in Ireland has been increasing steadily since 2000, with the highest rate so far recorded in the final quarter of 2015. In the 2015 European Surveillance of Antimicrobial Consumption Network (ESAC-Net) report, Ireland ranked ninth highest for outpatient antimicrobial medication consumption out of 30 European countries. Penicillins (61%), macrolides (17%) and tetracyclines (10%) were found to be the top three most commonly prescribed outpatient antimicrobial medications during 2015. Broad-spectrum penicillin usage was also high, representing 35% of all penicillins. At a county level, it was noted that there was considerable variability in overall outpatient antimicrobial medication usage, with Mayo and Longford showing the highest use and Roscommon and Wicklow showing the lowest.

The report also examines antimicrobial resistance rates for seven key micro-organisms that cause invasive infections. The data from this report is submitted to the European Centre for Disease Prevention and Control's European Antimicrobial Resistance Surveillance Network (EARS-Net). EARS-Net does not distinguish between hospital-acquired, healthcare-associated and community-acquired infection. It primarily serves as a surveillance system to measure national levels of antimicrobial resistance. The important strains of resistance include resistance to third-generation cephalosporins (3GC), extended spectrum beta lactamases (ESBL) or carbapenemases producing *Enterobacteriaceae* (CRE).

A summary is given below of some of the significant micro-organisms that are having an impact on the community:

- *Escherichia Coli* is now the most frequently reported micro-organism causing invasive healthcare-associated infection. The proportion of resistance of

Escherichia Coli to third-generation cephalosporins (3GC) extended spectrum beta lactamases (ESBL) producers has reached the highest level to date. The most common source of *Escherichia Coli* bloodstream infection was the urinary tract.

- While the proportion of Meticillin-Resistant *Staphylococcus aureus* (MRSA) bloodstream infection is the lowest annual proportion reported to date, Ireland still has one of the highest proportions of MRSA in Europe, ranking 11th out of 30 countries. Twenty-five percent of MRSA bloodstream infections were reported as device-associated with a recent antimicrobial medication exposure history reported in 33% of patients.
- The number of overall *Enterococcus faecium* bloodstream infection also increased, including the proportion resistant to vancomycin (VREfm). Since 2008, Ireland has had the highest proportion of *vancomycin resistant Enterococcus faecium* bloodstream infection in Europe. Twenty-two percent of *vancomycin resistant Enterococcus faecium* bloodstream infections were device-associated, and 21% had recent antimicrobial medication exposure.
- The proportion of invasive multi-drug resistant *Klebsiella pneumonia* (MDRKP) also increased. Enhanced surveillance data has indicated that multi-drug resistant *Klebsiella pneumonia* (MDRKP) is now widely shared throughout both acute and non-acute healthcare settings, including primary and residential care. The data collected by the HPSC on Ireland between 2014 and 2016 reported that one in three of all multi-drug resistant *Klebsiella pneumonia* (MDRKP) cases were detected in patients attending general practice or residents of long-term care facilities. This included 46 cases of carbapenemase producing *Enterobacteriaceae* (CPE).[83]

4.4 Uptake of the Seasonal Influenza Vaccine in Acute Hospitals and Long Term Care Facilities in Ireland in 2016-2017

In 2017, the HSE's Health Protection Surveillance Centre (HPSC) undertook a survey to evaluate influenza vaccine uptake among healthcare workers employed in all public hospitals and long-term care facilities, which were both HSE funded and staffed unless otherwise specified.[81] There are 102 long-term care facilities (including disability and or mental health facilities and care for older people units) participating in the current survey at the time of writing.

Key findings from the survey include:

- the national average immunisation uptake rate among all categories of long-term care facility healthcare workers was 28.1%, an increase from the previous 2015–2016 season (24.4%)
- the national uptake target of 40% was exceeded by 23.5% of all long-term care facilities (n=24) compared to 8.6% in 2015–2016
- average uptake varied by HSE staff category, with the highest value reported among health and social care professionals (43.4%) and the lowest among nursing staff (25.7%)
- variances in the average uptake was noted between community health organisations (CHO), with the highest average uptake in CHO 3 (Clare; Limerick; North Tipperary/East Limerick) and the lowest in CHO 2 (Galway; Roscommon; Mayo).

Increases in the percentage of long-term and respite residents vaccinated since the beginning of the season in long-term care facilities was observed. Uptake amongst long-stay residents in long-term care facilities was reported to be 93.5% since the beginning of the season. In terms of short-stay residents, 14.1% of residents were vaccinated prior to admission and 19.1% of residents were vaccinated while living in the centres. An increase was observed in the numbers of long-term care facilities who have a staff vaccination policy (n=25) and a policy recommending that respite residents are vaccinated prior to admission (n=56) from the previous 2015–2016 season. Apart from Ireland, the only other EU member state that reported on influenza vaccine uptate among healthcare workers was Portugal, which reported a similar overall uptake of 22%.

Long-term care facilities were also given the opportunity to make observations and highlight issues of concern in the survey. The two most common concerns cited by 25 long-term care facilities were in relation to vaccination details not being collected for respite residents and the lack of awareness of staff vaccination status by management.

Direct comparison with previous uptake surveys is not possible given the decision to present average figures rather than overall uptake rates for this survey. The report outlines a number of recommendations to improve uptake levels among staff in Irish healthcare organisations such as improving flu vaccine uptake reporting, improving attitudes to changes, improving vaccine availability and access, and improving flu campaigns.

4.5 Quality Assurance and Verification Division Healthcare Audit Service Summary Report 2015

In 2015, an audit of the National Ambulances Service's compliance with the HIQA *National Standards for the Prevention and Control of Healthcare Associated Infections* (2009)[84] was undertaken by the HSE's Quality Assurance and Verification Division.[82] The objective was to determine the level of compliance with Standards 1 (governance and management) and Standard 5 (communication) of the National Standards. A number of significant issues were found. Some of the key findings included:

- the National Ambulances Service's education assurance and competency plan did not reference healthcare-associated infections
- there was minimal evidence of proactive healthcare-associated infection management in any of the three regions audited. Healthcare-associated infection issues did not appear as standing items on management agendas and instead were addressed reactively as they occurred
- a deep cleaning service for vehicles was only provided on an ad hoc basis following an incident; by external contactors with no evidence of monitoring the performance of the cleaning company
- healthcare-associated infections training did not feature in the up-skilling programme for two areas.

There was no evidence of a structured audit schedule for hygiene and infection control. Of note, staff stated they were often misinformed of patient's healthcare-associated infection diagnosis and were unsure of the appropriate management of some infections due to variation in treatment between different healthcare facilities.

Evidence of good practice was also reported in the audit including appropriate governance in relation to the management of reported healthcare-associated issues, the provision of feedback to those involved and engagement in risk assessment. A number of recommendations were issued to three national regions: North Leinster, South, and West.

4.6 Summary

The above studies and data collected on performance across the Irish healthcare system provide information on healthcare-associated infection, antimicrobial medication use trends and infection prevention and control issues in the community.

Antimicrobial resistance remains a significant challenge for the Irish healthcare system, with the increasing emergence of multidrug-resistant micro-organisms

(MDROs). *Escherichia Coli* is now the most frequently reported micro-organism causing invasive healthcare-associated infection, including long-term care facility-acquired infection. Another significant micro-organism, often related to indiscriminate antibiotic medication prescribing, *Clostridium difficile,* is increasingly common in the community and long-term care facilities.

A number of important strains of resistance in micro-organisms has grown exponentially in the past few years. Carbapenemase producing *Enterobacteriaceae,* also known as CPE, are a particular concern to public health due to the very limited options for treatment of these infections.

The trend for outpatient (ambulatory, community or primary care) antimicrobial medication consumption in Ireland has been increasing steadily over the past decade. A high usage of antimicrobial medication has been identified in long-term care facilities, with most prophylactic antimicrobial medication prescribed for presumed urinary tract infections. The HALT report recommends formal implementation of the primary care prescribing guidelines across all long-term care facilities.

Seasonal influenza vaccination for healthcare workers is an important infection control measure; however, uptake rates remain sub-optimal. This low vaccination uptake rate among staff gives cause for concern, particularly in the context of a diminished protective effect of the seasonal vaccine in older people or immunocompromised patients. There is an urgent need to improve influenza vaccination uptake among staff in order to reduce influenza-related morbidity and mortality.

A lack of access to specialist multidisciplinary infection prevention and control teams and in particular antimicrobial stewardship teams, is a major issue in community health and social care services. Training and education in infection prevention and control is not a priority. Very few services are engaged in any surveillance — such as surveillance of urinary tract infections, *Clostridium difficile* infection, antimicrobial medication use — that could help determine the gaps in infection prevention and control that need to be addressed.

The baseline information obtained from the review of the relevant reports and surveys, has been invaluable in determining where infection prevention and control efforts are best targeted. Recommendations from the surveys and reports have been integrated into the new draft national standards where appropriate.

Chapter 5 — Conclusion

This background document outlines the literature that was reviewed by the HIQA Project Team to inform the development of *Draft national infection prevention and control standards for community services*. This included a review of:

- international standards, guidelines and guidance documents
- Irish national guidance documents
- Irish surveys on healthcare-associated infection and antimicrobial resistance data.

This desktop research conducted by HIQA informed an initial draft of the standards, which was then refined at different stages of the standards development process, as follows:

- detailed discussions at meetings of the Advisory Group
- individual meetings with relevant informed and interested parties
- focus groups with people who use health and social care services in the community and front-line staff in these services.

Each of these steps, in conjunction with the desktop research documented in this report, formed the evidence base for the development of the draft standards. The draft standards are available for a six-week public consultation starting on Wednesday 31 January 2018.

Submissions received during this consultation will be reviewed and carefully considered. The draft standards will be revised based on the feedback received. The main amendments will be published in a related statement of outcomes document along with the final National Standards when they have been approved and mandated by the Minister for Health.

Appendix 1 — Criteria used to determine eligibility of evidence for inclusion

Inclusion criteria:

- international standards (developed or revised since 2009)
- relevant international guidelines that:
  - define best care standards
  - provide context for best practice in different primary and community care settings
  - inform the development of more detailed clinical and technical guidance such as policies, procedures and protocols
- national audits and key performance indicators
- national reports and recommendations
- national policies (national infection prevention and control and antimicrobial stewardship).

Exclusion criteria:

- detailed clinical and technical guidelines such as micro-organism specific guidance (MRSA, MDROs, *Clostridium difficile,* influenza, norovirus), site-specific guidance (urinary tract infections), medical device-related guidance (vascular catheters, enteral feeding tubes, point-of-care devices)
- local policies, procedures, protocols
- quality improvement tools
- care bundles
- settings outside the scope of the standards such as schools, prisons and so on.

Glossary of terms

This glossary details key terms and a description of their meaning within the context of this document.

Accountability: being accountable to another person or organisation for decisions, behaviour and any consequences.

Antibiotic: a type of antimicrobial medication that kills or inhibits the growth of bacteria.

Antimicrobial: a substance that kills or inhibits the growth of micro-organisms such as bacteria, viruses or fungi.

Antimicrobial medication: a substance that kills or inhibits the growth of micro-organisms such as bacteria, viruses or fungi, also known as antibacterial, antiviral, antifungal and antiparasitic medicines.

Antimicrobial resistance: resistance of a micro-organism to an antimicrobial medication that had been originally effective for treating infections caused by it.

Antimicrobial stewardship: antimicrobial stewardship is a systematic approach to optimising antimicrobial therapy, through a variety of structures and interventions. Antimicrobial stewardship includes not only limiting inappropriate use but also optimising antimicrobial selection, dosing, route, and duration of therapy to maximise clinical cure, while limiting the unintended consequences, such as the emergence of resistance, adverse drug events and cost.

Assurance: is being sure or certain that services re functioning effectively and meeting their infection prevention and control needs and priorities.

Audit: assessment of performance against any standards and criteria (clinical and non-clinical) in a health or social care service. The full audit cycle consists of five stages comprising planning for audit, standard and criteria selection, measuring performance, making improvements and sustaining those improvements.

Back-up or delayed prescribing: a prescription (which can be post-dated) given to a patient or carer, with the assumption that it will not be dispensed immediately, but in a few days if symptoms worsen.

Best available evidence: the consistent and systematic identification, analysis and selection of data and information to evaluate options and make decisions in relation to a specific question.

Best practice: clinical, scientific or professional practices that are recognised by a majority of professionals in a particular field. These practices are typically evidence-based and consensus-driven.

Biological agent: these are bacteria, viruses, fungi (including moulds) and parasites that can cause infections, allergies, poisoning or toxic effects. In healthcare the main risk is infection.

Catheter: a hollow flexible tube that is inserted into a body organ.

Catheter-associated urinary tract infection (CAUTI): the presence of symptoms or signs attributable to microorganisms that have invaded the urinary tract, where the patient has, or has recently had a urinary catheter.

Cleaning: the physical removal of foreign material such as bloody and bodily substances, rust, dust, dirt, debris, spillages, and so on. Cleaning physically removes rather than kills micro-organisms. It is achieved with water, detergents and mechanical action and should always occur before disinfection or sterilisation.

Clusters: group of cases of infection in a specific time and place that might be more than expected.

Cohort: a ward or a unit in which a group of patients (cohort) with the same infection are placed together. Cohorts are created based on clinical diagnosis, microbiological confirmation when available, epidemiology, and mode of transmission of the micro-organism.

Colonisation/colonised: when micro-organism or micro-organisms are living on or in a person without causing disease.

Community services: these are a broad range of services that are provided outside of the acute hospital system including primary care, social care, mental health and health and wellbeing. Examples include but are not limited to: community hospitals, health centres, dental clinics, general practice clinics, home care, and so on. Each service is different in terms of scale, the nature of care provided, staffing levels and location.

Community infection prevention and control nurse: a nurse with specialist postgraduate qualifications and expert knowledge in infection prevention and control.

Competence: the knowledge, skills, abilities, behaviours and expertise sufficient to be able to perform a paricular task and activity.

Complaint: an expression of dissatification with any aspect of service provision.

Concern: a safety or quality issue regarding any aspect of service provision, raised by people using services, service providers, member of the workforce or general public.

Contamination: the soiling of inanimate objects or living material with harmful, potentially infectious or unwanted matter.

Cross-infection: Infection acquired from other people, such as from patients, staff or visitors. Food and the environment may also be factors in cross-infection.

Culture: the shared attitudes, beliefs and values that define a group or groups of people and shape and influence perceptions and behaviours.

Decontamination: the removal of micro-organisms or foreign matter (or both) from contaminated materials or living tissue. Three processes for decontamination are commonly used: cleaning, disinfection and sterilisation.

Diagnosis: the process of identifying a disease or condition by carrying out tests or by studying the symptoms.

Dignity: the right to be treated with respect, courtesy and consideration.

Disinfection: a process used to reduce the number of viable micro-organisms, but which may not necessarily inactivate some infectious agents, such as spores.

Effective: a measure of the extent to which a specific intervention, procedure, treatment, or service, when delivered, does what it is intended to do for a specified population.

Enteral feeding: refers to a type of feeding used for people who cannot eat normally in which liquid food is given through a tube into the gut.

Equipment: this consists of a large group of equipment, typically divided into four broad groups including single-use items, single-patient-use items, reusable non-invasive communal patient care equipment and reusable invasive medical devices.

Exposure prone procedures: situations where the worker's hands (whether gloved or not) may be in contact with sharp instruments, needle tips or sharp tissues inside a patient's open body cavity, wound or confined anatomical space where the hands or finger tips may not be completely visible at all times. There is an increased risk of transmitting blood-borne viruses between staff and patients during exposure prone procedures.

Governance: the function of determining the organisation's direction, setting objectives and developing policy to guide the organisation in achieving its objectives and stated purpose.

Hand hygiene: a general term referring to any action of hand cleansing. This includes both hand washing (the physical removal of microorganisms from the hands using soap and running water) or using alcohol-based hand-rub.

Healthcare-associated infection: infections that are acquired after contact with a healthcare service.

Healthcare risk waste: any waste produced by, and as a consequence of, healthcare activities.

Health and Safety Authority (HSA): the national statutory body in Ireland with responsibility for enforcing occupational safety, health and welfare legislation, promoting and encouraging accident prevention and providing information and advice in this regard.

Health Protection Surveillance Centre (HPSC): specialist organisation which is responsible for surveillance of communicable disease and other functions in Ireland. It is part of the Health Service Executive (HSE).

Health Service Executive (HSE): provider and or funder of all of Ireland's public health and social care services.

Home care: the delivery of a wide range of healthcare and support services to clients and or patients for health restoration, health promotion, health maintenance, respite, palliation and for the prevention or delay in admission to long-term residential care. Home care can be delivered where clients and or patients live (such as homes, retirement homes, group homes and hospices).

Hygiene: the practice that serves to keep people and the environment clean. In a healthcare setting it incorporates the following key areas: environment and facilities, hand hygiene, management of laundry, waste and sharps, and equipment, specifically in the context of preventing and controlling infection.

Infection: The invasion and reproduction of pathogenic or disease-causing micro-organisms inside the body that may cause tissue injury and disease.

Infection prevention and control: the discipline and practice of preventing and controlling healthcare-associated infection and the spread of infectious diseases in a health or social care service.

Infectious agent: micro-organisms that cause infectious diseases.

Infectious disease: a disease that can be spread from one person to another, also called communicable disease.

Information: information is data that has been processes or analysed to produce something useful.

Instrument reprocessing: Cleaning contaminated instruments after patient use.

Intraoral equipment: dental equipment that is used inside the mouth.

Integrated care: health and social care services working together, both internally and externally, to ensure people using services receive continual and coordinated care.

Invasive medical device: a device which, in whole or in part, penetrates inside the body, either through a body orifice or through the surface of the body. For example, an invasive medical device might be a urinary catheter, vascular catheter, enteral feeding tube and so on.

Isolation: physically separating patients to prevent the spread of infection.

Managers: responsible persons who have responsibility for the management of resources and the management and supervision of staff.

Medical device: a product, except medicines, used in healthcare to diagnose, prevent, monitor or treat illness or disability. For example, a device might be a blood pressure monitor, blood glucometer, or an infusion pump.

Micro-organism: living organism, such as bacteria, viruses, fungi too small to be seen with naked eye, but visible under a microscope.

Monitoring: systematic process of gathering information and tracking change over time. Monitoring provides a verification of progress towards achievement of objectives and goals.

Multidisciplinary: an approach to the planning of treatment and the delivery of care for a service user by a team of healthcare professionals who work together to provide integrated care.

Multidrug-resistant organisms: micro-organisms (predominantly bacteria) that are resistant to one or more classes of antimicrobial medication agents. Examples include Meticillin-Resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant *Enterococci* (VRE), *Enterobacteriaceae* which may produce enzymes such as extended spectrum beta lactamases (ESBL) or carbapenemases, whereby they may be called carbapenem-resistant *Enterobacteriaceae* (CRE) or carbapenemase-producing *Enterobacteriaceae* (CPE).

Outbreak: when two or more people have the same infection, or more people than expected have the same infection. The cases will be linked by a place and a time period. The commonest outbreaks are due to viral respiratory infections and gastroenteritis.

People: the term 'people' is used in general throughout this document but occasionally the term 'patient' or 'resident' used where it is more appropriate. This is intended to include:

- those who use health or social care services
- their parents, guardians, carers and family
- their nominated advocates
- potential users of health or social care services.

Personal protective equipment: equipment a person wears to protect themselves from risks to their health or safety, including exposure to infections. Examples include gloves, aprons, and eye and face protection.

Point-of-care testing: tests designed to be used at or near the site where the patient is located, which do not require permanent dedicated space and which are performed outside the physical facilities of the clinical laboratories. Examples include glucometers, blood pressure monitors, pulse oximeters, thermometers, and so on.

Policy: a written operational statement of intent which helps staff make appropriate decisions and take actions, consistent with the aims of the service provider, and in the best interests of people using services.

Post-exposure prophylaxis: the administration of a drug to prevent the development of an infection after the patient has been exposed to the infection, for example, for hepatitis B and human immunodeficiency virus (HIV).

Procedure: a written set of instructions that describes the approved and recommended steps for a particular act or sequence of events.

Prophylactic antibiotics: the use of antimicrobials to prevent an infection in clinical situations where there is significant risk of infection occurring. For example, antimicrobials are sometimes given before surgery as a preventive measure against infection.

Quality improvement: a systematic approach using specific methods to improve quality through achieving successful and sustained improvement.

Regulation: a governmental order having the force of law.

Reusable invasive medical device: a device used for diagnostic or therapeutic purposes which, in whole or in part, penetrates inside the body, either through a body orifice or through the surface of the body and which can be reused after appropriate decontamination procedures have been carried out.

Risk: risk is the effect of uncertainty on objectives. It is measured in terms of consequences and likelihood.

Risk assessment: refers to the overall process of risk analysis and risk evaluation. Its purpose is to develop agreed priorities for the identified risks. It involves collecting information through observation, communication and investigation.

Risk management: coordinated activities to direct and control an organisation with regards to risk.

Self-limiting condition: a self-limiting condition is likely to resolve itself without antimicrobial treatment. For example, the common cold.

Sharps: any items that have the potential to puncture the skin and inoculate the recipient with infectious material.

Single-use item: a medical device that is intended to be used on an individual patient during a single procedure and then discarded.

Standard precautions: are a set of protective measures that apply to all patient care, regardless of suspected or confirmed infection status of the patient, in any setting where care is delivered. Standard precautions include, appropriate to the setting, the following:

1. Hand hygiene.
2. Use of personal protective equipment, such as gloves, gowns and masks.
3. Decontamination of patient equipment and medical devices.
4. Environmental hygiene.
5. Management of healthcare waste.
6. Appropriate patient placement, movement and transfer.
7. Occupational health.
8. Management of needle-stick injuries.
9. Management of spillages of blood and bodily fluids.
10. Respiratory hygiene and cough etiquette.
11. Management of laundry.
12. Safe injection practices.

Sterilisation: the process to make an object free from viable micro-organisms, including spores.

Surveillance: the ongoing systematic collection, collation, analysis and interpretation of data; and the sharing of information to those who need to know in order that action may be taken.

Transmission: the spread of infectious agents from one person to another.

Transmission-based precautions: these are additional precautions that staff need to take when standard precautions may be insufficient to prevent cross transmission of specific infectious agents. Transmission-based precautions are categorised by the route of transmission of infectious agents (some infectious agents can be transmitted by more than one route) including contact, droplet and airborne precautions. Examples of transmission-based precautions in a residential care facility may include using single rooms, limiting social activities and restricting residents to their rooms as much as possible, and restricting visiting.

Vaccine: any preparation intended to produce immunity to a disease by stimulating the production of antibodies. Vaccines include, for example, suspensions of killed or attenuated microorganisms, or products or derivatives of microorganism.

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