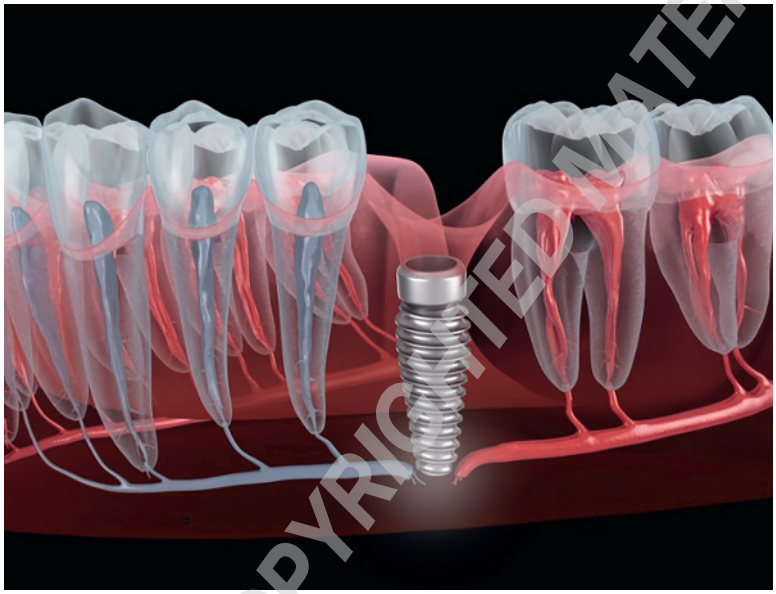
CHAPTER 1

Standards in Implant Dentistry



1.1 INTRODUCTION

Dental implant treatment has become routinely available in the UK for the management of tooth loss to restore dental function and aesthetics [1]. Currently, implant treatment is provided by dentists from different backgrounds and training, ranging from general dental practitioners to specialists in oral and maxillofacial surgery. Apart from guidance by the Faculty of General Dental Practice UK (FGDP(UK)) in *Training Standards in Implant Dentistry* (2016) [2] that set the standards for training in implant dentistry for dentists who wish to practise dental implant

Best Practices in Implant Dentistry, First Edition. Simon Wright, Cemal Ucer, and Rabia Khan.

treatment, there are no specific national guidelines in this field. Nevertheless, it should be noted that *Training Standards in Implant Dentistry* has been adapted by the General Dental Council (GDC) to set the training standards for acquiring clinical competence in this field of dentistry.

Delivery of satisfactory dental implant treatment and its long-term success and maintenance require complex and invasive surgical and restorative procedures using a variety of highly specialised products, biomaterials and equipment. These interact with the host tissues both biologically and mechanically [3]. Satisfactory delivery of dental implant treatment also requires a well-trained team of dental professionals, therefore dentists who provide dental implant treatment have a legal and ethical duty to develop and maintain up-to-date evidence-based knowledge and competence in the field. The treatment provided should involve the use of evidence-based techniques and products, with the exception of a clinical trial consented to explicitly by the patient. The patient is entitled to, and expects, that the members of the dental team have the right skills, and that the products they use are safe and proven [3]. The patient is also entitled to have adequate information and advice on the alternative techniques, products, risks and outcomes, as well as the experience and scope of practise of the clinician proposing to carry it out before autonomously deciding to commence treatment [4].

Dental implant treatment is mainly an elective dental treatment option that requires complex and invasive procedures, followed by a need for meticulous life-long maintenance. Patients' understanding of the nature and the mechanics of treatment, as well as their expectations regarding a realistic result, can often be lacking Figure 1.1. Thus, as in all elective surgery, dental implant treatment requires a higher standard of patient education and documentation, as well as meticulous attention to detail throughout every stage of treatment, from assessment and planning to delivery of treatment and maintenance phases.

These dynamic standards are intended to be good practice guidelines that could be applied to any clinical practice to promote safety and quality of care, rather than didactic or prescriptive rules that dictate how treatment should be delivered. *Training Standards in Implant Dentistry* is intended for the whole dental implant team. It covers all stages of treatment from assessment and surgery to maintenance phases. In this context, greater responsibility rests with the most experienced member of the team, particularly within the domains of professionalism, communication, leadership and management [2].

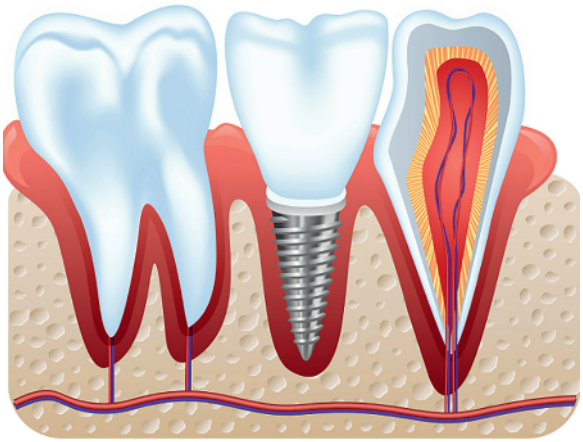


FIGURE 1.1 Diagrammatic representation of dental implants in jaw.

The standard of implant dentistry refers to the expectations and requirements that dental professionals must meet when providing implant treatment to patients. This standard is established to ensure that dental implants are placed safely, effectively and with the best possible outcomes for the patient. The standard of implant dentistry is constantly evolving with new research and developments in implant technology and techniques [5].

The standard of implant dentistry encompasses several areas, including the application of knowledge, skills and competence, professionalism, teamwork, safety and the quality of treatment equipment and products, and the provision of adequate information, communication and consent to patients. Dental professionals must gain adequate training and experience appropriate to each level of complexity of implant treatment offered, and recognise and work within the limits of their competence. They must update their knowledge and skills regularly through structured continuing professional development (CPD) in implant dentistry and take care and prudence in applying their knowledge and skills to deliver the treatment satisfactorily as planned [6].

Dental professionals must also seek and act on feedback from patients, colleagues and their team using specific outcome measures, audit results and treatment outcomes regularly, and use these to improve any shortcomings in their dental implant practice. They must follow best practice guidelines and keep up to date with evidence-based developments in materials and procedures to ensure safe, predictable and effective treatment outcomes. The techniques, treatment and products used must be safe and predictable, and unproven products or techniques should be avoided unless carrying out clinical trials with explicit patient information and consent.

When providing implant treatment, dental professionals must work closely with patients and other colleagues in formulating patient-centred, evidence-based treatment plans to ensure that the desired expectations of the outcome can be achieved effectively for each patient. They must carry out a full risk assessment and consider the anatomical, functional, psychological and financial needs of the patient when formulating a treatment plan for each individual patient. They must also discuss the relative indications, advantages and disadvantages of the alternatives and provide adequate information, communication and consent to patients [7]. This includes informing patients of the expected prognosis of the proposed treatment with specific reference to the possible impact of each patient's individual systemic and local risk factors on the intended outcome, discussing the likely impact of the patient's dental and medical history, systemic condition and vulnerabilities on the prognosis of the proposed treatment, and providing itemised and transparent financial information.

Implant dentistry is a well-established and rapidly growing field in the United Kingdom, and there are a number of standard practices and guidelines that are followed to ensure the safety and success of implant treatments. Here are some of the key training standards in implant dentistry in the United Kingdom:

- *Qualifications and training*: To practise implant dentistry in the United Kingdom, dentists must have completed specific training and qualifications in implantology. The GDC has established standards for implant dentistry training, and dentists must be registered with the GDC to practise in the United Kingdom.
- *Consent and patient selection*: Prior to any implant treatment, the dentist must obtain informed consent from the patient. This includes discussing the risks, benefits and alternatives to implant treatment, as well as ensuring that the patient is a suitable candidate for implants.

- *Sterilisation and infection control*: Implant treatment requires a sterile environment to minimise the risk of infection. Dental practices must follow strict protocols for sterilising instruments and equipment, as well as maintaining a clean and hygienic environment.
- *Implant placement*: The placement of dental implants must be carried out in accordance with established guidelines and protocols. This includes careful planning and assessment of the patient's oral health, as well as the use of appropriate techniques and materials.
- *Follow-up and maintenance*: After implant treatment, patients require ongoing care and maintenance to ensure the longevity of the implant. This may include regular check-ups, cleaning and adjustments, as well as appropriate hygiene and home-care instructions [2–4, 8].

Implant dentistry in the United Kingdom is subject to strict regulations and standards to ensure the safety and success of treatment. Dentists who practise implantology must have the necessary qualifications and training, and must adhere to established guidelines for patient selection, treatment and follow-up care.

1.2 AIMS FOR STANDARDS IN IMPLANT DENTISTRY

The key aim of *Training Standards in Implant Dentistry* is to provide good practice guidelines on the knowledge, clinical competence and skills required of dentists who provide dental implant treatment to enhance the national standards of quality and safety of care (Figure 1.2).

Training Standards in Implant Dentistry incorporates general principles from the GDC guidance to dentists, FGDP good practice guidelines as well as Committee of Postgraduate Dental Deans and Directors (COPDEND) curriculum for Dental Foundation Training.

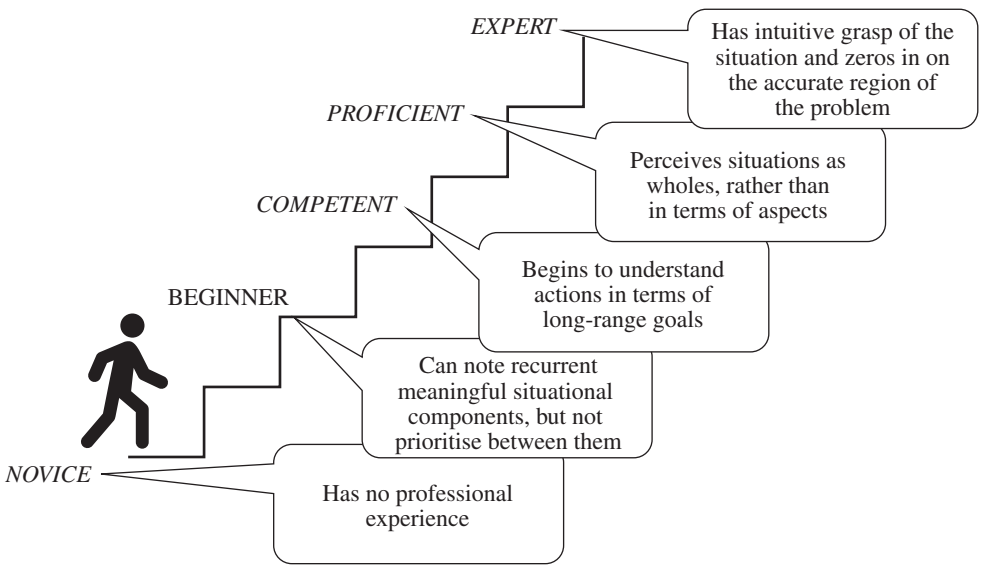


FIGURE 1.2 Educational requirements and constraints.

1.3 KEY FEATURES AND OBJECTIVES OF THE STANDARDS IN IMPLANT DENTISTRY

a. Application of knowledge, skills and competence:
   - Gain adequate training and experience appropriate to each level of complexity of implant treatment offered.
   - Recognise and work within the limits of your competence, seeking advice or referral to another colleague when the complexity of the case falls out of your scope of practise.
   - Update knowledge and skills regularly by undertaking structured CPD in implant dentistry using your personal development plan (Figure 1.3).
   - Take care and prudence in applying your knowledge and skills correctly to deliver the treatment satisfactorily as planned.

b. Professionalism, teamwork, safety and quality of treatment equipment and products:
   - Seek and act on feedback from patients, colleagues and your team using specific outcome measures.
   - Audit results and treatment outcomes regularly, and use these to improve any shortcomings in your dental implant practice.
   - Follow best practice guidelines and keep up to date with evidence-based developments in materials and procedures to ensure safe, predictable and effective treatment outcomes.
   - Ensure that techniques, treatment and products used are safe and predictable.
   - Avoid using unproven products or techniques unless carrying out clinical trials with explicit patient information and consent.
   - Maintain a log book or register of techniques and products used.

Schema theory proposes that our knowledge and experiences are organised into mental frameworks or 'schemas' that guide our perception, interpretation and memory of new information. In the context of implant dentistry, schema theory can be applied to understand how a patient's pre-existing schemas about tooth loss, dental treatments and dental professionals can influence their perception and response to dental implant procedures (Figure 1.4).

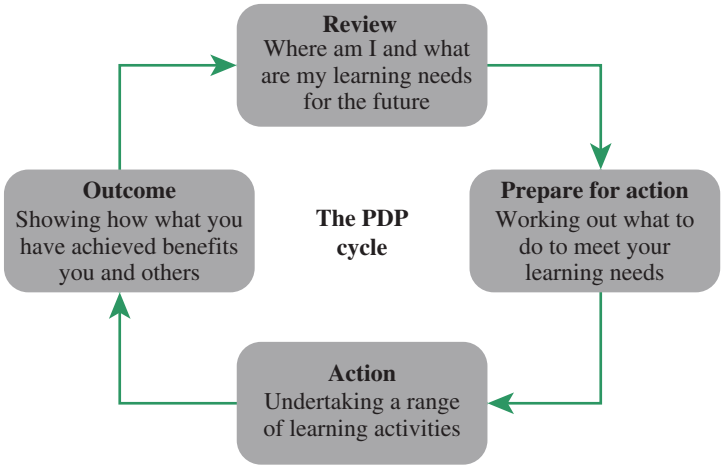


FIGURE 1.3 Creating an individualised professional growth strategy for every member of the dental team. PDP, personal development plan.

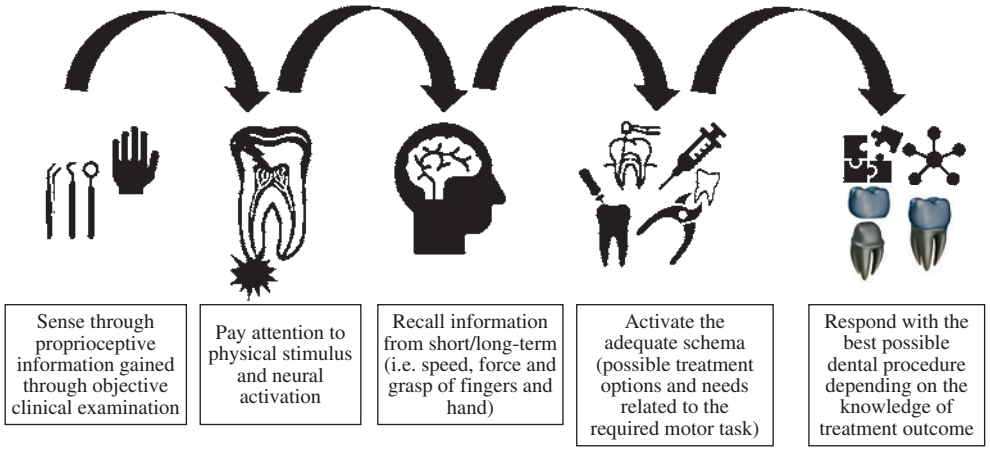


FIGURE 1.4 The applicability of schema theory in the context of dentistry.

For example, a patient who has negative schemas about dental procedures may have increased anxiety or fear about undergoing a dental implant surgery. Alternatively, a patient who has positive schemas about dental professionals may be more receptive to treatment recommendations and more likely to follow postoperative care instructions [9].

By understanding a patient's pre-existing schemas, dental professionals can tailor their communication and patient management strategies to address any misconceptions or concerns and improve patient outcomes. Additionally, incorporating schema-based cognitive and behavioural interventions, such as cognitive restructuring or exposure therapy, may also help alleviate negative schemas and improve treatment acceptance and adherence.

c. Provision of adequate information, communication and consent:
   - Work closely with patients and other colleagues in formulating patient-centred, evidence-based treatment plans to ensure that the desired expectations of the outcome can be achieved effectively for each patient.
   - Carry out a full risk assessment and consider the anatomical, functional, psychological and financial needs of the patient when formulating a treatment plan for each individual patient.
   - Discuss the relative indications, advantages and disadvantages of the alternatives.
   - Inform patients of the expected prognosis of the proposed treatment with specific reference to the possible impact of each patient's individual systemic and local risk factors on the intended outcome.
   - Make sure patients are given enough information to make an autonomous decision and have time to reflect before deciding whether or not to have dental implant treatment.
   - Discuss the likely impact of the patient's dental and medical history, systemic condition and vulnerabilities on the prognosis of the proposed treatment, and how these may impact any additional remedial treatment that may become necessary in case of failures or complications.
   - Discuss the strength of the need to treat, including risks complication, side effects if treatment fails, possible remedial treatment that may become necessary as well as the consequences of failure to treat if any.

- Provide itemised and transparent financial information, fees and charges, and provide structured policy information on how to deal with any failures or future remedial treatment if needed.

1.4 THE LEGAL STANDARD OF CARE

Whilst clinicians are generally required to exercise the degree of skill and competence ordinarily possessed by their fellow practitioners ('peers') under similar circumstances, any practitioner (generalist or specialist) undertaking any surgical and/or prosthodontic procedure that is particularly deemed to be of an advanced or complex nature should do so to the same standard of care (*SOC*) expected of a specialist or, in the case of a specialist, to a standard equal to a reasonable body of his/her peers [10]. A clinician could be legally held responsible for failing to refer to a specialist or more experienced colleague.

1.5 THE CLINICAL STANDARD OF CARE

The doctrine of the clinical SOC is a highly relevant concept to risk management, and therefore setting standards in healthcare is an essential prerequisite for achieving a high quality of patient care. Standards or 'good practice guidelines' help clinicians to achieve better outcomes by benchmarking their clinical activities and how they practise. This reduces variations in quality of healthcare and establishes national norms by helping to increase the ability of practitioners to predict, recognise and treat complications arising from any treatment they provide. The standard of care is a dynamic concept that evolves continually with the introduction of new techniques, products and case law.

On the other hand, the SOC does not mean a clinician should possess a minimum standard of extraordinary knowledge or skills or provide treatment that never fails. The SOC is the manner in which a clinician must practise bringing about a good result.

It must be noted that as long as the clinician can show that he/she has applied reasonable care, knowledge and skills correctly in a prudent way, treatment that ends in a bad result will not be a successful cause of action because of the doctrine of 'error in judgement'.

Training Standards in Implant Dentistry provides a framework of good practice guidelines in implant dentistry to ensure that an intervention can be skilfully planned, executed and delivered to bring about a good result that has been predicted using reasonable care and caution. Tables 1.1 and 1.2 summarise the key features of the clinical doctrine of SOCs.

1.6 TRAINING STANDARDS IN IMPLANT DENTISTRY DOMAINS OF COMPETENCE AND CLINICAL APPLICATION

The *Training Standards in Implant Dentistry* are presented in a framework consisting of two distinct categories of *clinical* and *non-clinical domains* (Figure 1.5). These are in turn mapped against the four main domains of dentists' competence (Figures 1.6 and 1.7).

TABLE 1.1 Upholding competence, care, and patient autonomy as the foundation of clinical standards.

The standard of care means that a clinician should:

1. Have a reasonable degree of knowledge and skills that is ordinarily possessed by a skilled and prudent clinician acting in the locality.
2. Use reasonable care, prudence and best judgement in correctly applying knowledge and skills that a reasonably prudent practitioner would apply under similar circumstances to bring about a good result that has been planned or predicted.
3. Keep up to date with evidence-based knowledge and skills development.
4. Use approved or evidence-based methods in general use. When adopting new products and techniques must use prudence and be competent in their use.
5. Give proper advice and instructions to patients regarding how they need to care for themselves after treatment.
6. Respect patients' autonomy about making decisions concerning their healthcare.

TABLE 1.2 Ensuring informed, evidence-based, and safe adoption of new dental materials and devices.

When employing new materials, devices or products a dentist should:

- Consider the strength of the evidence when comparing the availability, effectiveness and safety of the new method or products with the established ones.
- Be properly trained in the use of the new method or product.
- Obtain informed consent with full disclosure of adequate information and any material risks to allow for autonomy.
- Ensure that safety and efficiency of the medical devices have been documented and conform to the guidelines of the Medicines and Healthcare Products Regulatory Agency and/or the European Union's Medical Devices Directive.
- Follow the recommendations of the manufacturers for the use of products.

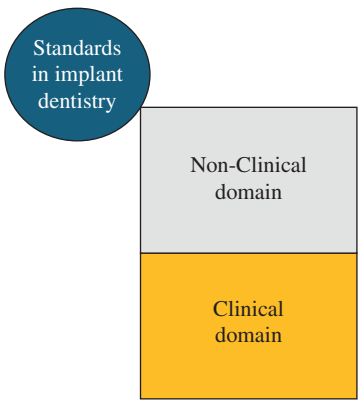


FIGURE 1.5 The *Training Standards in Implant Dentistry* framework consists of clinical and non-clinical domains.

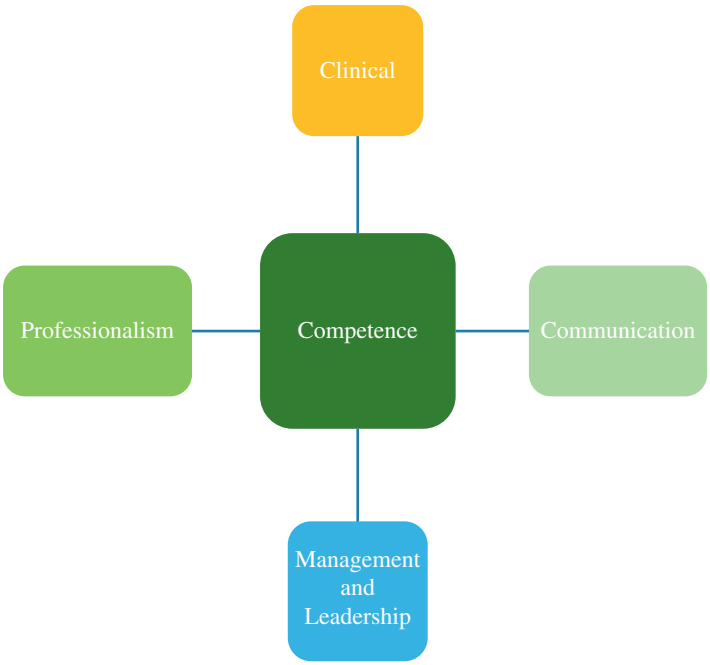


FIGURE 1.6 Standards in implant dentistry have been mapped with the competencies expected of practicing dentists.

1.6.1 Level of Evidence

The level of evidence supporting each competency is graded as (i), (ii) or (iii).

- *Level (i)*: The body of literature is of high quality and consistency in supporting the recommendation and standards.
- *Level (ii)*: The body of evidence is of a good quality. Consensus statements developed through systematic review and good practice guidelines developed by national organisations support the recommendations and standards.
- *Level (iii)*: The body of evidence is based on expert opinion.

These levels are indicated in the grading system tables in the rest of the book.

1.6.2 Grading System

The applicability of recommendations and guidelines to clinical practise is paramount.

In this document, the clinical application of the standards is graded as Aspirational, Basic or Conditional.

- *Aspirational*: A standard of excellence has been achieved.
- *Basic*: Minimum or a good SOC is achieved.
- *Conditional*: This SOC is only acceptable in very specific and defined circumstances.

These grades are indicated by (A), (B) and (C) at the appropriate places in the text in subsequent chapters.

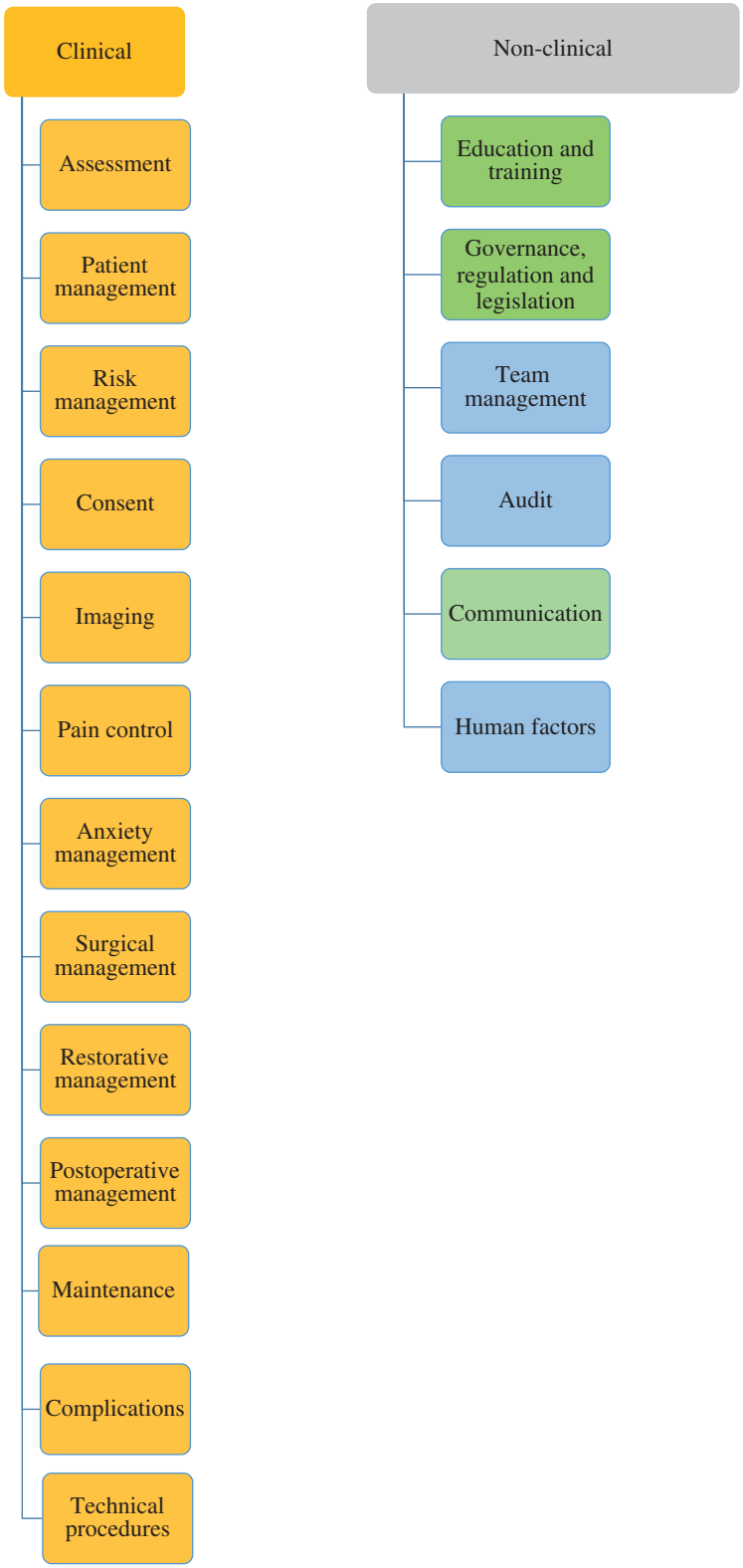


FIGURE 1.7 Clinical and non-clinical domains of competence in implant dentistry.

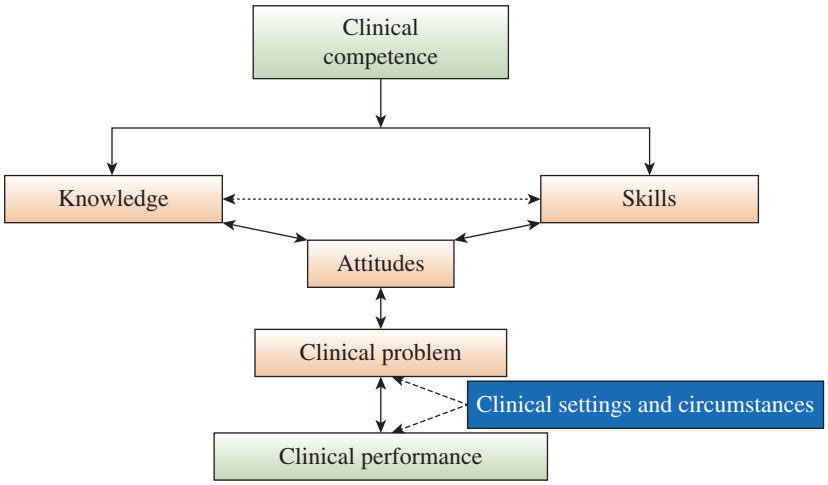


FIGURE 1.8 The constituents of clinical proficiency and execution, adapted from Newble's work [11].

Newble's work [11] proposed that clinical proficiency and execution can be broken down into eight key components, as illustrated in Figure 1.8. These components include:

- *Knowledge base*: the breadth and depth of knowledge relevant to the clinical task.
- *Cognitive strategies*: the ability to apply knowledge and problem-solving strategies to clinical situations.
- *Technical skills*: the physical ability to perform clinical procedures accurately and efficiently.
- *Interpersonal skills*: the ability to communicate effectively and build rapport with patients, colleagues and other healthcare professionals.
- *Clinical reasoning*: the ability to gather and interpret clinical data, make diagnoses and formulate treatment plans.
- *Professionalism*: the demonstration of ethical and professional behaviour in clinical practice.
- *Clinical management*: the ability to manage patient care effectively and efficiently, including time management and resource utilisation.
- *Lifelong learning*: the commitment to ongoing learning and professional development to maintain and improve clinical proficiency over time.

These eight components are interdependent and collectively contribute to the development of clinical proficiency and execution in healthcare professionals. By recognising and prioritising these components in clinical training and practice, healthcare professionals can improve patient outcomes and enhance the quality of care provided [12].

1.7 OTHER SOURCES OF GUIDANCE IN IMPLANT DENTISTRY

- FGDP(UK) guidelines
- International Team for Implantology guidelines and protocols
- International Congress of Oral Implantologists

- European Association for Osseointegration
- Academy of Osseointegration
- Association of Dental Implantology
- GDC.

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