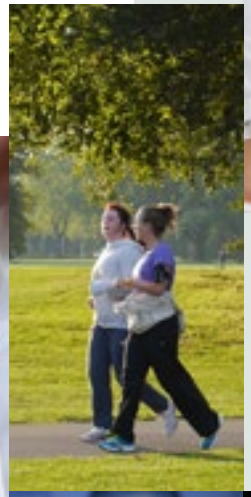
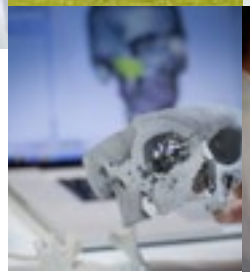
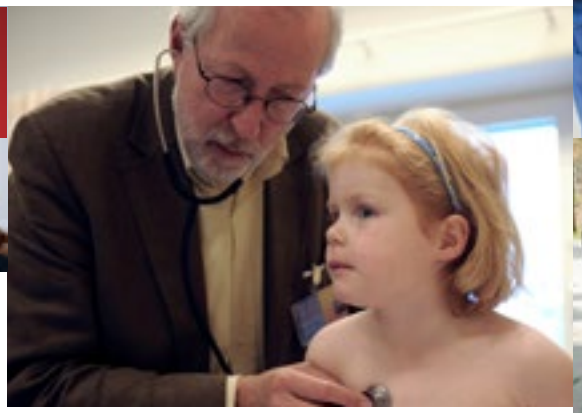
NEDERLANDSE FEDERATIE VAN
UNIVERSITAIR MEDISCHE CENTRA






Medical training framework **2020**


Monitoring and treating
Positive health
Diagnostic possibilities
Treatment
Context factors
Challenges
Lifelong learning
Greying of the population
Exponentially increasing knowledge
Joint decision -making
Scholar
Sustainable and widely applicable
Socio-cultural diversity
Collaborator
Inclusivity
Own control
Behavioural change
Medical expert
Quality of life
Integrative role
Health promotion
Lifestyle
Leader
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Medical training framework **2020**

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1 Foreword

In April 2018 under the auspices of the NFU, a working conference was organised that was called “The general practitioner of the future”. The outcomes of this meeting formed the prelude to the revision of the Medical training framework 2009, which was commissioned by the NFU executive from a national project group at the end of 2018. A core group was formed within this project group and charged with preparing the report, consulting with external parties, organising meetings and elaborating the conclusions of the project group. This core group consisted of Prof. Roland Laan (project group chair), Dr. Marjolein van de Pol (project coordinator) and Marlou Hacfoort, MSc (project secretary). This is the elaboration of that assignment, to which many others have contributed along with the members of the project group.

Keeping in mind the rapid developments in care, education & training, science and society, a need arose for a new framework in the NFU context, one that could respond better to the changes. It would have to be a framework in which the final qualifications of medical training would be formulated in such a way that the “Decree on the educational requirements of doctors” could be based on it. A framework that offers possibilities for training programmes to shape their own curriculum, in harmony with their vision and within the legal framework. And finally, a framework that provides a foundation for inspection rounds.

The starting point of this new framework was the question, “What are the most important competencies that a doctor in 2025 must have?” To answer this question, the project group consulted professionals from around the country. Initially, the education organisations of the UMCs were asked for their input, and student organisations and patient/client advisory councils from the UMCs were consulted. Input was also collected from professional associations and healthcare-related organisations. Next, five working conferences were organised with representatives of various organisations and professions (see appendix 3). Feedback was also received from the Committee for Undergraduate Medical Education & Training of The Netherlands Federation of University Medical Centres (OCG/NFU), and the content was aligned with the Medical Specialties Council of the Royal Dutch Medical Association(CGS/KNMG) and the Medical Specialist Training Board of The Netherlands Federation of University Medical Centres (CMV/NFU).

Using the input from all these parties, a framework was prepared that received widespread approval. We trust that the UMCs can call on these parties when adjusting their programmes based on the framework.

2 The doctor of the future

Tempora mutantur et nos mutamur in illis

2.1 Developments in healthcare

The healthcare sector in the Netherlands is faced with major challenges. On the one hand, there is increasing socio-cultural diversity, along with greying of the population. The number of people aged 75+ and 90+ is expanding strongly, which means the number of people with multiple chronic diseases is also rising sharply. On the other hand, there is the exponential increase in medical knowledge. Together with the rapid technological developments, this is leading to more diagnostic, preventive and therapeutic options. Plus the elderly are remaining independently in their own home for longer. All these factors together are producing a rapid increase in the demand for care. Continuing to focus on monodisciplinary specialist care means that the care will be less effective, because the multimorbidity is increasing. More and more people will have to work in the healthcare sector as well, although we already have shortages of labour. The money spent on care will have to increase to levels that are no longer realistic. The accessibility and affordability of care are under considerable pressure.

To be able to face these challenges, we shall not only have to innovate and reorganize care, we shall have to pay more attention to integral care, prevention and health promotion. Lifestyle factors deserve attention, and concepts like positive health, quality of life, preventive care, anticipatory care and integral, multidimensional care are important. At the same time, we have to uphold the high level of curative care and safeguard the accessibility of our care. Ultimately, it concerns guaranteeing sensible and good care, at the right place and at the right time for everyone.

Doctors have an important role to play in the healthcare of the future. But they cannot meet the demand for care on their own. Firstly, intensive collaboration with patients and their loved ones is needed, and also with many other professionals. Sometimes these professionals are in professions that have been around for a long time. But increasingly often, professionals from other disciplines and sectors are involved, such as welfare or technology, trained to a secondary or tertiary vocational or academic education level. The described developments in healthcare require a revision of the medical training.

2.2 Medical training

The Dutch medical training educates medical students to be doctors in a three-year bachelor's degree programme and a mandatory subsequent three-year master's degree programme. After these six years of training, most graduates follow an advanced programme for one of the different specialisms. This medical training must offer the students a broad basis for acquiring competencies in lifelong development and learning and being able to work in multidisciplinary teams that extend outside the bounds of their own specialism. This medical training gives future doctors a common basis and a common language, enabling them to develop further in whatever direction they choose.

This new framework describes the intended final qualifications of the medical training. They can be considered as start qualifications for the medical specialist training. In this introductory chapter, we present the perspective from which this framework was written.

Essentially, we want to train doctors who can apply competencies and medical knowledge integrally, sustainably and widely, wherever needed. These doctors are medical experts in the field of prevention, diagnostics, and treatment and monitoring, continue developing throughout their life, collaborate well in networks, and promote health and the related quality of life of people, even in the palliative phase, and matching the needs of both individuals and groups of people.

The described changes in society and healthcare exert considerable pressure on the medical training. Along with medical expertise, the student must acquire competencies such as dealing with technological developments, collaboration, demonstrating leadership, scientific thinking, communication, awareness of societal developments and threats to public health. The influence of external factors on health is being increasingly recognised and acknowledged, and ways of identifying and removing them promptly are being developed. Medical students must acquire during their training the competencies to exercise their medical expertise for the individual patient or groups of patients[1] in this complex context.

Given the already mentioned rapid dynamic, it is clear that we cannot yet know exactly what knowledge and skills the students who are starting their medical training now will need in the future. Therefore, the students must primarily learn to analyse and approach problems systematically using fundamental knowledge, basic competencies and a learning attitude. This requires essential information processing skills, problem-solving abilities and the ability to deal with change and developments (digital and otherwise).

The doctor utilises his or her expertise to provide good care. The doctor does that in consultation with the patient and their loved ones or with the group of patients and other involved care professionals. The doctor concurrently pays attention to costs and the availability of means. The doctor is trained on the one hand to treat diseases in a multidisciplinary and multidimensional way and monitor patients, even if the disease is incurable. The doctor takes into account the stage of life (child, adult, elderly, dying) and the potential vulnerability of the patient and their environment. On the other hand, the doctor is trained in advising about behavioural changes to promote health and prevent disease wherever possible. The doctor of the future takes into account the patient's or patient group's resilience and ability to manage themselves, and encourages adjustment to living with a disease or reduced health. This doctor thus has an integrating role in healthcare. The doctor has the knowledge, attitude and skills to think scientifically and critically and can be a discussion partner for both patients and loved ones and other professionals, as well as insurers and governments. It is also extremely important that the doctor has learned to look after his/her own welfare. To be able to care for others and remain sustainably active, you have to care well for yourself first. An attitude of lifelong learning and reflection is essential for this.

Because doctors move on into different specialist training programmes after their initial medical education, the medical training provides time for a free choice of deepening and broadening and reflection on this. Attention needs to be paid to providing a realistic impression of the different specialisations and what societal need there is for different types of doctors. It's also important to consider monitoring when making choices for the relevant specialisations and career perspectives.

1 The term "patient" can also emphatically refer to "citizen with a health question"

2.2.1 Translation into intended final qualifications

The considerations mentioned above have been translated in this framework into the intended final qualifications – formulated as competencies that integrate the knowledge, skills and attitudes of the newly graduated doctor.
The work field of the doctor is broad; chapters 4 and 5, which describe the knowledge domain and the issues around health and disease, respectively, provide the framework for the scope of the competencies.

The recently graduated doctor has mastered the entire continuum of prevention, diagnostics, prognostics, joint decision-making and monitoring and treatment for both the individual patient, patient groups and the population. They also contribute, for example, to the continuity of care, the quality of healthcare, and the safety in direct and indirect patient care. The doctor also contributes to training others.

Many different competencies are required to do all of this well. The descriptions of the competencies are based on the CanMEDS framework 2015 (see figure 1) and arranged into different competency domains. A doctor should not only be a medical expert, s/he has to be a communicator, a collaborator, a leader, a health advocate who acts in society's interests, a scholar who thinks in scientific and moral-ethical terms, and a professional who shares knowledge, attitude and skills with others.

According to the CanMEDS model, the doctor integrates medical expertise with the competencies from the other six domains. The resulting scope is much larger, however, than just the sum of all individual competency domains: the doctor is characterized in particular by being a medical expert. The integration of competencies encourages the training of doctors who think in generalistic and holistic perspectives. In chapter 3 the different competencies are elaborated further. The levels of the competencies are partly determined by the fact that a recently graduated

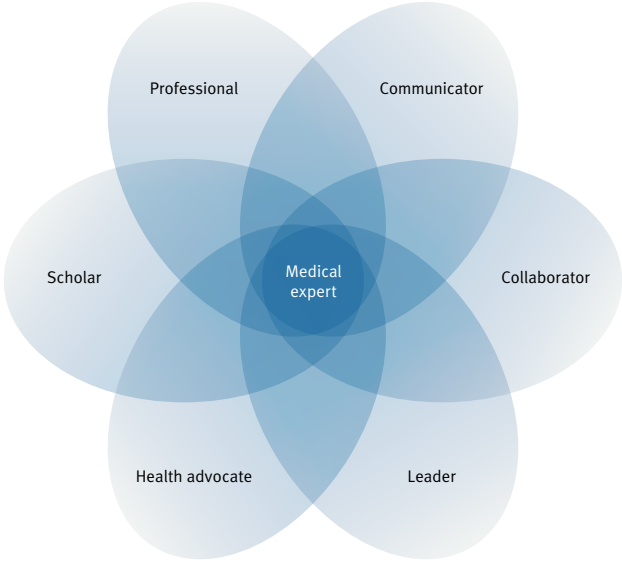

Figure 1: the competency domains of the doctor

doctor is a beginning professional. Depending on the type of specialist training to follow, the different competencies will be developed further more or less.

Because competencies are applied together rather than individually in practice, many specialist training programmes have translated them into concrete professional activities that the doctor in training to medical specialist must ultimately be able to conduct independently. In chapter 6 (Recommendations for organising medical education), professional activities are described that integrate several competencies and partial competencies. Medical students should gain experience with these

professional activities already during their initial training, to aid them in making different competencies and partial competencies more concrete and explicit.

2.2.2 The doctor and other healthcare professionals

Doctors work together with many other professionals, like carers, nurses, nursing specialists, physician assistants, nurse practitioners, doctors' assistants, physiotherapists, ergotherapists, dietists, social workers, laboratory technicians, technicians, psychologists, policy-makers, researchers, spiritual counsellors and medical technicians.

The competency profiles of all these other care professionals are often derived from the CanMEDS model. The distinction between doctors and other professionals can be based on the characteristic field of expertise and/or the level of training.
The characteristic field of expertise of doctors is broad medical expertise. Other professionals each have their expertise in part of this field or in their own field. This can overlap with that of the doctor [2].

2.2.3 Scientific training as doctor

Professionals in the healthcare sector are trained at the secondary and tertiary vocational training and academic level. Doctors have completed a university master's degree. The different training levels are described in the Dutch qualification framework (Netherlands Qualification Framework, NLQF), which has eight levels: bachelor programmes are classified in level 6 and master programmes in level 7. It is typical that professionals at this level "can cooperate in an unknown, variable living and/or work environment with a great amount of uncertainty, including internationally with peers, colleagues, specialists, non-specialists, managers and relevant third parties". The distinction between vocationally and academically trained masters derives from the professional (HBO) or academic (WO) orientation. In the training of doctors, academic and scientific shaping is a clearly recognisable element. Doctors follow a programme during their training in which contact with the conduct of science and with scientific researchers is ensured. In patient care, doctors are capable of integrating the best available scientific knowledge and clinical expertise with the patient's values and expectations. Aside from medical specialist training, the medical training prepares them for PhD programmes.

2.2.4 Scope of the Dutch doctor's qualification

Dutch doctors can work as doctors in all member states of the European Union. Comparisons of the training between these member states is possible because the national frameworks, like the NLFQ, are linked to the European Qualifications Framework for Lifelong Learning (EQF; see also appendix 5). Even outside the member states of the European Union, Dutch doctors can exercise their profession in many countries. The World Federation of Medical Education (WFME) provides an accreditation framework that enables the international recognition of the Dutch doctor's qualification if it complies with the standards specified in it.

2.3 From starting points to training

In the previous sections, the developments in healthcare were sketched along with their meaning for medical training. In the following chapters this is elaborated further. In chapter 3 the intended final qualifications for the bachelor programme and the master programme are defined separately. Chapter 4 covers the doctor's knowledge domain, and chapter 5 deals with the health issues that doctors must be competent in, and that partly

2 Physician assistants are considered medical experts. In contrast to doctors, the medical actions of physician assistants are exclusively ones of restricted complexity, routine actions and actions whose risks are evident or actions carried out in line with nationally valid guidelines, standards and protocols derived from them.

determine the intended final qualifications.
The programmes to be designed by the training and the education and learning environments to be established must ensure that the students can achieve the intended final qualifications. The assessment programme must be able to ascertain whether a student has succeeded adequately. Earlier versions of the framework were not concerned with the programme, education and learning environment, and assessment. This new Framework does consider them. In chapter 6 the starting points for medical education are formulated, and chapter 7 covers under the title “Change challenges” the necessity to change that the training faces when taking the above-mentioned developments into account. In addition, a proposal is presented in appendix 9 to incorporate the patients’ perspective thoroughly in the medical training. These new components (chapters 6 and 7, appendix 9) are not intended to be compulsory requirements but stimuli to encourage a dialogue about the desirable changes. This dialogue remains necessary on different levels: within training programmes, between individual training programmes, in specialist training and organisations of patients and professionals, and for society and its representatives in a broad sense.

3 Competencies of doctors

3.1 Clarification

In chapter 2 ("The doctor of the future") it is explained that the final qualifications of doctors are formulated as competencies in different competence domains, based on the CanMEDS framework. In this chapter these competencies are elaborated for both the bachelor and the master programmes.

We employ the following definition of the term competence:

> "A competence is the trainable ability - that contains an integrated whole - of knowledge, insight, skills, values and attitudes, to be able to carry out professional activities in an authentic context in an adequate, substantiated and process- and result-oriented manner."

Briefly: competencies are the qualities needed to conduct professional activities independently.

Newly graduated doctors possess basic level competencies in the different competence domains. These competencies will be developed further in the specialist training - depending on the type of specialist training - and diverge. Doctors can work inside or outside hospitals and in individual or public healthcare.[3] Their broad competence profile gives them a common basis and language regardless of their further specialization which they can draw on during collaboration.

Most competencies for the master programme are so designed that direct supervision is no longer required after graduation. For a few competencies this does not apply: when "in consultation with supervisor" or "in agreement with supervisor" is included in the competence description, this means that direct or indirect supervision is still required after graduation.

Competence development begins during the bachelor programme, usually in a simulated and low-complexity setting. In the following overview, the numbering of all competencies for the bachelor and master programmes is synchronised: a hyphen indicates particular competencies and partial competencies that are not yet developed in the bachelor programme.

According to Individual Healthcare Professions Act (Act BIG), the newly graduated doctor is formally competent to practise medicine to the limit of the restricted procedures. Competence forms the limit for medical actions, and the newly graduated doctor always retains the responsibility for his/her own actions.

3 According to the framework decision of the Medical Specialisms Board, which took effect on 1 January 2020, three clusters are distinguished. Cluster 1 includes the specialisms of general practitioner, geriatrics and medicine for mentally handicapped patients, along with the profiles of addiction medicine, international healthcare and tropical medicine, and aesthetic medicine. Cluster 2 includes the different medical specialisms, along with the profiles of emergency medicine and hospital medicine. Cluster 3 includes the specialisms of occupational medicine, occupational insurance medicine, and society and health, along with the profiles within the society and health specialism.

3.2 Elaboration of the different competence domains

Medical expert

Doctors integrate the role and competencies of the medical expert with all other competencies from the CanMEDS competence domains. Doctors apply medical knowledge and clinical skills and act on the basis of professional values to provide good-quality, effective, efficient and safe patient- or population-oriented care and preventive care.

Bachelor The newly graduated bachelor is capable of:	**Master** The newly graduated doctor is capable of:
1. Analysing simple health issues, using relevant biopsychosocial knowledge and scientific sources in the simulated practice or simple practice setting of direct or indirect patient care	**1. Analysing multidimensional health issues through clinical reasoning[4] (chapter 5), using the relevant biopsychosocial knowledge and scientific sources (chapter 4), and applying direct or indirect patient care in practice and prevention targeting the individual** 1.1 thinking in a context-dependent manner and making decisions that support actions in the professional medical practice 1.2 applying the different phases of the clinical reasoning process (diagnostic, therapeutic and evaluation phases) at the right moments 1.2.1 using for this competencies 2 - 5 of the medical expert competence domain
2. In a simulated professional situation[5] or simple practice setting[6], carry out a consult with an individual patient in an effective, efficient, ethically responsible and patient-oriented manner 2.1 using the relevant biopsychosocial knowledge, conduct a simple consult 2.2 take a full (hetero)anamnesis 2.3 conduct a physical examination of a patient or simulated patient in practice situations selected by level and complexity 2.4 prepare a differential diagnosis of a simple problem 2.5 prepare a summary in clear terms of a patient's case 2.6 explore and formulate possible goals of treatment for simple health issues	**2. Apply effective, efficient, ethically responsible and patient-oriented prevention, diagnostics, prognostics, joint decision-making and treatment/ monitoring and prepare a treatment plan for an individual patient, patient groups or the population.** 2.1 using the relevant biopsychosocial knowledge, conduct a simple consult 2.2 take a full (hetero)anamnesis or document population information, taking into account the prior medical history and contextual factors at the patient level (age, multimorbidity, labour participation, socioeconomic status, gender, health skills, language and cultural, spiritual or religious background) or population level

4 Appendix 6 contains more background information about clinical reasoning
5 A "simulated professional situation" involves the practice being simulated in some way, for example, using patients or simulated patients or students practicing on each other
6 By "simple practice setting" we mean that the complaints are simple, without complex interactions

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Bachelor The newly graduated bachelor is capable of:	**Master** The newly graduated doctor is capable of:
2.7 explain a treatment plan 2.7.1 discuss it in understandable language 2.7.2 check that the patient has understood everything 2.7.3 structure the talk adequately	2.3 based on the (hetero)anamnesis, examine the relevant organs and organ systems of the patient and document the patient's functioning and jointly decide on the treatment goals, taking into account the patient's context. 2.4 integrate the information from the anamnesis and physical examination or the available population information into a differential diagnosis and present a proposal for a treatment plan (diagnostics, treatment, prevention, health promotion) 2.5 in clear terms discuss the proposed treatment plan with the supervisor 2.6 together with the patient and their loved ones, and in agreement with the supervisor, establish treatment goals in the entire spectrum of delaying disease progression, treating symptoms, cure, improving function and palliative care 2.7 prepare a treatment plan together with the patient and their loved ones that considers the patient's wishes and aims (joint decision-making) and 2.7.1 discuss this in understandable language 2.7.2 check that the patient has understood everything 2.7.3 structure the talk adequately

Medical expert

Doctors integrate the role and competencies of the medical expert with all other competencies from the CanMEDS competence domains. Doctors apply medical knowledge and clinical skills and act on the basis of professional values to provide good-quality, effective, efficient and safe patient- or population-oriented care and preventive care.

Bachelor The newly graduated bachelor is capable of:	**Master** The newly graduated doctor is capable of:
3. In a simulated professional situation or simple practice setting for individual problems, determine which examinations should be done for diagnostic, preventive and/or therapeutic purposes	**3. Institute the correct examinations and/or therapies for diagnostic, preventive and/or therapeutic and/or symptom-oriented policy**
3.1 apply basic first aid, including resuscitation 3.2 in een gesimuleerde beroepssituatie of eenvoudige praktijksetting een conceptplan op te stellen voor een behandeling of procedure voor enkelvoudige gezondheidsproblemen 3.3 - 3.4 -	3.1 apply basic first aid, including resuscitation 3.2 in consultation with the supervisor, set the indication for a treatment, procedure or preventive measure 3.2.1 explain this to the patient in understandable language 3.2.2 arrange informed consent and support the patient and their loved ones in this process 3.2.3 recognise complex situations (such as vulnerable elderly, in the case of multimorbidity or restrictions (multiple)) and discuss them proactively with the supervisor to align the process to be followed 3.3 conduct several simple surgical procedures (local anaesthesia, incision and cutaneous sutures) and apply therapy and pharmacotherapy (prescribe and check medication) and 3.3.1 carry this out in a competent and safe manner 3.3.2 ask for supervision as necessary 3.4 assign priority to examinations and therapy on the basis of urgency (clinical) and available means and 3.4.1 refer to or consult with other professionals/care professionals as necessary 3.4.2 focus on the patient and his/her safety in the policy to be followed 3.4.3 ask for supervision as necessary

Medical expert

Doctors integrate the role and competencies of the medical expert with all other competencies from the CanMEDS competence domains. Doctors apply medical knowledge and clinical skills and act on the basis of professional values to provide good-quality, effective, efficient and safe patient- or population-oriented care and preventive care.

Bachelor The newly graduated bachelor is capable of:	**Master** The newly graduated doctor is capable of:
4. -	**4. Ensure continuity of care and follow-up** 4.1 Prepare an adequate plan for continuing care in consultation with the supervisor and 4.1.1 if applicable, organise follow-up, check of treatment and referral
5. In educational situations, work safely in a professional manner 5.1 focus on the patient and his/her safety in the medical consult 5.2 apply the prin ciples of safe work in healthcare 5.3 reflect on one's own actions and request feedback on them 5.4 work effectively together 5.5 - 5.6 - 5.7 - 5.8 - 5.9 -	**5. Demonstrate being a medical expert and contribute to the continuous improvement of the quality of healthcare and patient safety at the individual, patient group and population level** 5.1 focus on the patient and his/her safety in the medical consult 5.2 work according to the applicable safety protocols and report incidents adequately and prevent further damage 5.3 reflect on one's own actions and request feedback on them 5.4 collaborate effectively and in the patient's interest with other professionals/care professionals to optimize the care (preventive) 5.5 in consultation with the supervisor, adopt a scientific and/or socially responsible view regarding prevention 5.6 assume responsibility for pointing out health risks at the patient and population level (e.g. work, lifestyle, domestic violence and obligation to report infectious diseases) 5.7 in consultation with the supervisor, explain developments in the care field and financing to patients and citizens 5.8 in consultation with the supervisor, contribute to the quality of care by interpreting quality indicators and working towards care improvement 5.9 act in a cost-conscious manner and cope adequately with scarce materials in care

Communicator

The doctor strives for an effective and empathic relationship and fosters it with patients, their loved ones and other professionals/care professionals to collect and share the essential information required for good (preventive) care and to provide good monitoring.

Bachelor The newly graduated bachelor is capable of:	**Master** The newly graduated doctor is capable of:
1. In a simulated professional situation or simple practice setting, maintain contact with patients based on mutual understanding, empathy and trust and as well 1.1 communicate both verbally and non-verbally in an empathic and respectful manner 1.2 - 1.3 - 1.4 recognise contextual factors in the communication 1.5 recognise and acknowledge differences of opinion and emotionally charged talks and experiment with alternative behaviours to cope with this (under supervision by the teacher)	**1. Building a professional relationship with both patients and their loved ones and with fellow care professionals or other agencies and maintain it on the basis of mutual understanding, empathy and trust** 1.1 communicate both verbally and non-verbally in an empathic and respectful manner 1.2 in the communication, support the trust and autonomy of the discussion partner and provide insight into his/her own role 1.3 optimise the physical environment to promote comfort, dignity, privacy, engagement and safety of the discussion partner 1.4 take into account contextual factors (age, multimorbidity, functionality, phase of life, labour participation, socioeconomic status, gender, health skills, language and cultural and religious background) in the communication 1.5 deal adequately with differences of opinion, personal background information introduced by the patient (e.g. internet, hypes) and emotionally charged talks 1.5.1 engage assistance from colleagues or supervisors where necessary
2. In a simulated professional situation or simple practice setting, collect and analyse relevant biopsychosocial information about a medical problem and also 2.1 clarify underlying care needs and preferences by using person-oriented anamnestic questions 2.2 -	**2. Collect, arrange and integrate relevant biopsychosocial information about a medical problem in consultation with the people concerned** 2.1 clarify underlying care needs and preferences by using person-oriented (anamnestic) questions 2.2 in consultation with the supervisor and if necessary after obtaining *informed consent* from the patient, request information from others (loved ones, other care professionals or agencies)

Communicator	
The doctor strives for an effective and empathic relationship and fosters it with patients, their loved ones and other professionals/care professionals to collect and share the essential information required for good (preventive) care and to provide good monitoring.	
Bachelor The newly graduated bachelor is capable of:	**Master** The newly graduated doctor is capable of:
3. -	**3. Share health information and treatment plans with patients and other professionals/care professionals** 3.1 in consultation with the supervisor, share information about the diagnosis, prognosis, and treatment and prevention possibilities (or lack of them) in an engaged and respectful manner with the patient and their loved ones and 3.1.1 match the care demand and care need 3.1.2 check whether the information is understood 3.1.3 if necessary, share the information with other professionals/care professionals 3.2 in consultation with the supervisor, inform patients, their loved ones and involved fellow professionals/care professionals about damaging incidents regarding patient safety
4. In a simulated professional situation or simple practice setting, involve patients and their loved ones in preparing treatment plans that reflect their wishes and aims and also 4.1 (for a simple problem) discuss the patient's wishes and aims and take contextual factors into account	**4. Involve patients and their loved ones in preparing treatment plans that reflect their wishes and aims** 4.1 Support the patient and their loved ones to take well-considered decisions about their health, quality of life and treatment plan (joint decision-making), as well as 4.1.1 communicate in a culture-sensitive and non-judgemental way and deal adequately with diversity 4.1.2 exclude no one group on the basis of cultural, social or religious background, gender, sexual preference or whatever characteristic 4.1.3 take contextual factors into account, including work (see 1.4) 4.1.4 refer patients and their loved ones to reliable sources of information that can support them with improving their health 4.1.5 advise patients and their loved ones as far as possible and motivate them while taking into account their wishes regarding quality of life

Communicator

The doctor strives for an effective and empathic relationship and fosters it with patients, their loved ones and other professionals/care professionals to collect and share the essential information required for good (preventive) care and to provide good monitoring.

Bachelor The newly graduated bachelor is capable of:	**Master** The newly graduated doctor is capable of:
5. In a simulated professional situation or simple practice setting, document medical information adequately	**5. Document medical information adequately and thus optimally support the decision-making, safety, and confidentiality and privacy**
5.1 - 5.2 -	5.1 Obtain medical information in an accurate, respectful and accessible manner -taking into account the legal requirements - from direct or indirect patient contact for processing in the medical file 5.2 Share medical information with the patient, their loved ones and involved professionals/care professionals, after obtaining permission and with respect for the patient's privacy 5.3 Use medical information systems adequately and efficiently (particularly electronic patient files) and specify their possibilities, points of attention and limits

Collaborator

The doctor works effectively and efficiently together with other professionals/care professionals and patients and their loved ones to provide safe, high-quality care (preventive) with the focus on the patient

Bachelor The newly graduated bachelor is capable of:	**Master** The newly graduated doctor is capable of:
1. Effective collaboration in educational situations 1.1 establishing and nurturing a relationship 1.2 collaborating with other students and care professionals 1.3 conducting joint decision-making talks under supervision that respect the patient's preferences, aims and values in simulated professional situations or simple practice settings	**1. Effectively working together with other professionals/care professionals and patients and their loved ones** 1.1 establishing and nurturing a relationship to enable the provision of joint care or prevent the occurrence of disease 1.2 collaborate with other professionals/care professionals to realise the continuity of suitable, high-quality and efficient care (preventive) 1.3 foster decision-making together with the patient and their loved ones and with other professionals/care professionals that respects the patient's preferences, aims and values (joint decision-making)
2. In educational situations and simulated professional situations or simple practice settings, maintain good relationships by understanding each other and resolving differences of opinion and conflicts 2.1 respectfully dealing with each other 2.2 asking for help to develop good collaboration skills	**2. Maintaining good professional relationships in order to provide good care together by understanding each other and resolving differences of opinion and conflicts** 2.1 respectfully dealing with fellow professionals/care professionals, patients and their loved ones and 2.1.1 contributing to good collaboration in teams (interprofessional) 2.1.2 acknowledging the potential added value of the group process 2.2 recognising barriers and opportunities for good collaboration and asking for help to improve the collaboration

Collaborator	
The doctor works effectively and efficiently together with other professionals/care professionals and patients and their loved ones to provide safe, high-quality care (preventive) with the focus on the patient	
Bachelor The newly graduated bachelor is capable of:	**Master** The newly graduated doctor is capable of:
3. In a simulated professional situation or simple practice setting, transferring care or other tasks adequately to ensure continuity and safety 3.1 - 3.2 - 3.3 arrange a verbal or written transfer	**3. Transfer the care for a patient or other tasks adequately and promptly to fellow professionals/care professionals to ensure continuity and safety** 3.1 Be well aware of one's own role and its limits and the roles of other care professionals and care-providing agencies and indicating one's own limits in time 3.2 Determine in consultation with a supervisor when care or a task must be transferred to another professional/care professional 3.3 Adequately arrange a verbal or written transfer to another professional/ care professional while ensuring continuity and safety

Leader

You handle in line with a vision of care and take responsibility for your own personal development on the one hand and your professional development on the other. Doctors reflect and show personal leadership with regard to their own development. Doctors work together with others to ensure a high-quality and efficient healthcare system, optimal care and a continuous professional development of themselves and their colleagues.

Bachelor The newly graduated bachelor is capable of:	**Master** The newly graduated doctor is capable of:
1. Having a learning attitude and developing personal leadership 1.1 learn to develop self-reflection and self-insight 1.2 set priorities in study and private life to safeguard the balance and promote one's own, sustainable availability	**1. Demonstrating personal leadership and adopting a learning attitude throughout a career** 1.1 Show self-reflection and self-insight, partly in relation to others with whom s/he works and to the processes in which s/he is involved, and 1.1.1 On this basis set personal, educative and professional goals and adjust them periodically during the training and career 1.1.2 By taking responsibility for one's own actions and acting as a role model for others (model behaviour) 1.2 Developing time-management skills 1.2.1 Deliver qualitatively and quantitively good work under time pressure 1.2.2 Set priorities to retain a good balance between work and private life to promote one's own, sustainable availability
2. Take responsibility for developing into a medical professional 2.1 reflect on own professional development 2.2 collaborate with colleagues 2.3 give and ask for feedback safely and discuss important matters together	**2. Demonstrating being a leader while exercising the medical profession** 2.1 Taking the initiative to improve one's personal practice by evaluating a problem, setting priorities, carrying out a plan and analysing the results 2.1.1 Reflecting on one's own medical actions and taking the responsibility to act accordingly 2.2 Working together with colleagues and taking the initiative and supporting others in change and improvement processes to improve the quality of care 2.3 Giving and asking for feedback safely and discussing important matters together (intervision) 2.4 Choosing one's own viewpoint, doubting, specifying own limits (aware of limitations) and taking action as a result.

Leader

You handle in line with a vision of care and take responsibility for your own personal development on the one hand and your professional development on the other. Doctors reflect and show personal leadership with regard to their own development. Doctors work together with others to ensure a high-quality and efficient healthcare system, optimal care and a continuous professional development of themselves and their colleagues.

Bachelor The newly graduated bachelor is capable of:	**Master** The newly graduated doctor is capable of:
3. In a simulated professional situation or simple practice setting, contributing to optimal care provision and also 3.1 - 3.2 - 3.3 coping adequately with relevant information technology	**3. Contributing to the improvement of care provision in teams, organisations and systems** 3.1 in consultation with the supervisor, contribute to quality improvement projects in the workplace 3.2 recognise critical situations and safety risks and discuss them with the supervisor and 3.2.1 analyse one's own actions and learn from this 3.2.2 be open to feedback 3.2.3 show a listening attitude 3.2.4 while taking into account the team members (and their capacities) 3.3 use relevant information technology for medical care application 3.3.1 cope with large quantities of information 3.3.2 suggest and explain this information to the patient 3.3.3 ask for help from the supervisor and/or collaborate with other professionals/care professionals to make effective use of information technology
4. Have general knowledge about available means to finance the healthcare	**4. Contribute to the efficient use of the available means for healthcare** 4.1 In consultation with the supervisor, strive for an optimal balance between cost, effectiveness and value of means and services and 4.1.1 make ethical decisions about this 4.2 in collaboration with colleagues and the supervisor, strive for an optimal, longitudinal care for individual patients and/or the population, taking into account the value of this for the patient(s)

Leader	
You handle in line with a vision of care and take responsibility for your own personal development on the one hand and your professional development on the other. Doctors reflect and show personal leadership with regard to their own development. Doctors work together with others to ensure a high-quality and efficient healthcare system, optimal care and a continuous professional development of themselves and their colleagues.	
Bachelor The newly graduated bachelor is capable of:	**Master** The newly graduated doctor is capable of:
	4.2.1 by utilising knowledge of the structure, function and financing of the Dutch healthcare system 4.2.2 by making adequate use of the available technological developments

Health advocate

Doctors employ their knowledge and expertise to improve the health and welfare of the individual citizen, population and public health as a whole, taking into account the available means.

Bachelor The newly graduated bachelor is capable of:	**Master** The newly graduated doctor is capable of:
1. In a simulated professional situation or simple practice setting, charting aspects of disease prevention and suitable care for the patient that take into account the individual patient's needs in their context 1.1 introducing health promotion and disease prevention as topics of discussion with patients 1.2 determining which determinants of health and disease contribute to health (as experienced) 1.3 -	**1. Contributing to disease prevention and suitable care for the patient that take into account the individual patient's needs in their context** 1.1 Making health promotion and disease prevention a standard aspect of consultations with patients 1.2 Determining for an individual patient which determinants of health and disease contribute to health (as experienced) and how they affect each other 1.2.1 Prepare a plan together with the patient to improve health or prevent disease 1.3 Ensuring that patients have access to the right care and 1.3.1 promoting healthy behaviour and offer the patient means to develop the necessary skills and promote resilience and wellbeing (empowerment) 1.3.2 identifying obstacles to obtaining the right care 1.3.3 being well informed of prevention possibilities from other care professions and using them adequately
2. In a simulated professional situation or simple practice setting, identify health needs in a patient group or population and also 2.1 identify determinants of health and disease 2.2 recognise risk populations	**2. Identify health needs in a patient group or population and prepare plans for health promotion** 2.1 Identify determinants of health and disease together with the supervisor for the population to be provided with care and 2.1.1 Prepare plans to adjust the practice of prevention and care provision 2.1.2 Help to reduce differences in health 2.2 identify populations at risk together with the supervisor and 2.2.1 prepare plans to improve health or prevent disease in the populations at risk

Health advocate	
Doctors employ their knowledge and expertise to improve the health and welfare of the individual citizen, population and public health as a whole, taking into account the available means.	
Bachelor The newly graduated bachelor is capable of:	**Master** The newly graduated doctor is capable of:
	2.2.2 discuss these plans with policymakers in healthcare
3. In educational situations form an opinion about societal themes under discussion	**3. Contribute to important societal themes and discussions of healthcare** 3.1 Form an opinion about important societal themes and discussions of healthcare 3.1.1 Discuss them periodically with the supervisor to assess where there are possibilities for improving the quality of care

Scholar

Doctors contribute as academics to the application, spread, translation and proliferation of knowledge in practice through lifelong learning, training others, evaluating evidence and contributing to scientific research.

Bachelor The newly graduated bachelor is capable of:	**Master** The newly graduated doctor is capable of:
1. Transferring acquired knowledge and skills to colleagues 1.1 - 1.2 contributing to a safe learning environment 1.3 - 1.4 organising a simple learning activity 1.5 giving feedback safely 1.6 constructively evaluating educational activities to improve education	**1. Transferring knowledge, skills and attitude to fellow professionals/care professionals, students, patients and society** 1.1 function as a role model for other learners 1.2 create a safe learning environment 1.3 in consultation with the supervisor, ensure that patient safety is guaranteed 1.4 organise a learning activity 1.5 give feedback safely to other learners, colleagues, supervisors and patients 1.6 constructively evaluate educational activities to improve education
2. In a simulated professional situation or simple practice setting, apply the best available evidence 2.1 recognise that there can be clinical uncertainty 2.2 find adequate protocols and guidelines, select and correctly apply them in a simulated professional situation 2.3 critically review research data and the research literature 2.4 - 2.5 -	**2. De best beschikbare evidence en klinische ervaring te integreren in de praktijk** 2.1 Cope with clinical uncertainty 2.1.1 inform supervisor and patients of this and 2.1.2 ask specific questions to reduce the uncertainty 2.2 find adequate protocols and guidelines, select and apply them correctly in practice 2.3 critically review the available information (scientific and not scientific), research data and the research literature, weigh it and estimate its value 2.4 integrate the available evidence in the clinical decision-making in the care of the patient/patient groups or population 2.5 help those in need of care with decision-making by using “best evidence” and its restrictions, taking into account the recipient’s wishes, needs and values

Scholar

Doctors contribute as academics to the application, spread, translation and proliferation of knowledge in practice through lifelong learning, training others, evaluating evidence and contributing to scientific research.

Bachelor

The newly graduated bachelor is capable of:

3. Participate under supervision in medical scientific research

3.1 formulate a good problem definition and choose a suitable method to answer a hypothesis under supervision
3.2 recognise the ethical principles of research
3.3 contribute under supervision to ongoing scientific research
- 3.3.1 conduct and analyse part of a study under supervision
- 3.3.2 report on it and present this to professionals

Master

The newly graduated doctor is capable of:

3. Contribute to the proliferation and spread of knowledge that applies to health

3.1 formulate a good problem definition and choose a suitable method (design) to assess a simple hypothesis for scientific research and
- 3.1.1 analyse the data
- 3.1.2 report the results
- 3.1.3 draw conclusions

3.2 identify under supervision the ethical principles of research and
- 3.2.1 assess when medical ethical assessment should be requested for research with test subjects
- 3.2.2 protect the rights of individual patients in medical research
- 3.2.3 apply the principles of scientific integrity

3.3 participate under supervision in medical scientific research
- 3.3.1 independently conduct one's own, not complex, descriptive or assessing part of a study and adequately analyse it
- 3.3.2 report on this and present it to professionals and laypeople, covering background, methodology, results, discussion, conclusions and references

Professional

The doctor works for the health and wellbeing of both individual patients and the population (groups) through an ethically responsible practice that complies with the valid norms of conduct and legislation, by ensuring his/her own personal health and wellbeing and by collaborating well with other care professionals.

Bachelor The newly graduated bachelor is capable of:	**Master** The newly graduated doctor is capable of:
1. Continuously working on self-development by maintaining a learning attitude 1.1 setting learning goals and acting accordingly 1.2 asking for feedback regularly and reflecting on one's own actions 1.3 actively engaging to ensure a good collaboration in teams 1.4 -	**1. Continuously working on self-development as a professional through lifelong learning** 1.1 Preparing a personal development plan and revising it periodically 1.2 During the clinical and other work, identify possibilities to learn, ask for feedback and reflect on one's own actions 1.3 Using collaborative learning in the workplace to develop as an individual and as a team 1.4 Keep actively updated about new developments (especially technical ones) in one's own specialism and share this knowledge with colleagues
2. Behaving in contact with patients and colleagues in conformance with the ethical values and norms of the medical profession 2.1 appropriate professional behaviour 2.2 - 2.3 handling medical information confidentially 2.4 -	**2. Behaving in contact with patients and colleagues in conformance with the ethical values and norms of the medical profession** 2.1 Exhibit appropriate professional behaviour. Core values for the newly graduated doctor in practice are: honesty, integrity, compassion, modesty, helpfulness, respect, attention for diversity and confidentiality 2.1.1 taking into account dealing with tasks, others and oneself 2.1.2 translating 'do no harm' into practice as the initial starting point of medical treatment 2.2 recognising risks due to conflicts of interest and anticipating them transparently 2.3 respecting the confidentiality of medical information, partly in relation to the use of digital registration methods 2.4 taking the available means into account and acting with awareness of costs

Professional

The doctor works for the health and wellbeing of both individual patients and the population (groups) through an ethically responsible practice that complies with the valid norms of conduct and legislation, by ensuring his/her own personal health and wellbeing and by collaborating well with other care professionals.

Bachelor The newly graduated bachelor is capable of:	**Master** The newly graduated doctor is capable of:
3. Keep to the legal framework and required professional responsibilities in a simulated professional situation or simple practice setting and also 3.1 practise under supervision 3.2 recognise and acknowledge unprofessional behaviour and discuss it with the supervisor 3.3 apply peer review under monitoring	**3. Keep to the legal framework and required professional responsibilities of the doctors' profession** 3.1 Practise within the professional, ethical and legal frameworks of the professional practice of doctors and 3.1.1 in consultation with the supervisor, integrate societal themes and discussions about healthcare while practising 3.2 recognise unprofessional behaviour in oneself or others, critically analyse it and bring it up for discussion with colleagues 3.2.1 and request help with this from colleagues or supervisor 3.3 insert peer review with colleagues into the daily practice
4. Take care of one's own health and wellbeing given the challenges of the study and the future professional practice 4.1 reflect on one's own wellbeing 4.2 be willing to learn about good self-care 4.3 monitor the balance between study and private life	**4. Take care of one's own health and wellbeing to ensure optimal patient care** 4.1 Monitor one's own wellbeing and functioning in practice and reflect on it 4.2 Modify one's own behaviour according to self-reflection and feedback from others 4.2.1 be willing to learn about good self-care, practice and work relations 4.3 monitor and maintain the balance between work and private life 4.3.1 reflect on this together with the supervisor

4 Knowledge domain

4.1 Clarification

The final qualifications of the medical training are described as competencies. The development of the medical student's knowledge and insight (summarised as "understanding") serves the development of competency throughout the entire training. The necessary knowledge is elaborated in this chapter. The diverse pathophysiological mechanisms are formulated in general terms and do not concern specific disease pictures or organ systems. That is why this chapter should be considered together with chapter 5 about issues concerning health and disease.

In medical science, new insights are rapidly displacing existing knowledge. The emphasis in this chapter lies on the underlying mechanisms as a basis for further deepening and then use of knowledge. It is also important that people remain curious, prepared to spend a lifetime learning more and developing the capacity to integrate new knowledge in the professional practice.

To give programmes a basis for elaborating the final qualifications in their curricula, we have listed the most important knowledge aspects in section 4.2. We decided on the formulation "The newly graduated doctor has an understanding of…", supplemented with a clarification that positions the knowledge in a clinical context. The clarification specifies which competencies the relevant knowledge can be used with, without providing an exhaustive listing. The overview is not aiming at a hierarchy, all aspects are equally important. They can be considered building blocks for competency development with regard to the described issues regarding health and disease.

To provide the reader with a more detailed picture of the relevant knowledge aspects, appendix 7 includes a list of key words. This is not meant to be a "checklist", but can help programmes to formulate learning goals to realise the final qualifications from this framework.

4.2 Knowledge aspects

The newly graduated doctor has an understanding of

1. the philosophical, ethical and historical principles of medical treatment.

This knowledge contributes to a sustainable and lifelong reflection on one's own actions in the medical process and the changes involved, as well to coping with tasks/processes and collaborating with others.

The doctor can act in a morally responsible way by recognizing and acknowledging the experience of disease and health from the context of the individual and respecting their autonomy. This is associated with specifying the limits of medical treatment (one's own actions), responsibly choosing means, coping with dilemmas (including ethical ones), and protecting the integrity of the person.
The principles of such actions are based on the historical development of medicine and the manner of thinking about health and disease derived from it in the full scope of society. The principles of evidence-based medicine and being able to translate them to the treatment context of the individual patient or the population are important tools.

2.the structural and physiological properties, and the links between them, of the most important biomolecules and molecular systems in the cells, tissues, organs and organ systems in the human body.

Knowledge of the structure, function and working of the molecules and the various parts in the human body and its cells is essential to understand the physiological and pathophysiological mechanisms of various issues regarding health and disease.

By understanding the structural and physiological basis of the various processes in the body and the functional connection between them, symptoms can be recognized or even prevented and adequate treatment or prevention can be instituted. For example, these processes can involve the storage and transfer of genetic material, the regulation of chemical and/or metabolic reactions, repair mechanisms for arising defects or trauma, intra- and intercellular transport and communication. Imaging and other techniques in relation to the structure and function of the human body support these efforts.

3. the striving of the human organism towards homeostasis at every level, while adjusting to the surrounding conditions and communicating with the environment.

The human organism adjusts to conditions at various levels in the continuum from molecule to population. Insight into the homeostatic mechanisms contributes to identifying the health need(s) of individuals or groups.

A health need can refer to combatting disease and recovery from it, or to prevention or sustaining the best quality of life possible, even in the terminal phase of life.
Various physiological control mechanisms in the body and their interactions are involved in the interaction with the environment and the striving for homeostasis. These control systems are influenced by both internal and external factors, and the individual responds from their own biopsychosocial context.
Lifestyle, diet, exercise, work/labour and the concept of positive health are important tools in maintaining and/or repairing various control systems and thus health and/or the experienced quality of life.

4. the response to damage or threat to structural or functional integrity, on the molecular, cellular, tissue, organ and organism level.

This knowledge serves the recognition of bodily responses to damage or disease, and determining the most suitable treatment and/or therapy or pharmacotherapy.

Physiological adjustments to environmental conditions occur at the level of cells, tissues, organs and organ systems. In the case of damage or disruption (or threat of them) at the molecular, cellular and/or tissue level, cell death, acute and chronic inflammation, and hypersensitivity reactions of the immune system can occur. After adjustment, with or without medical intervention, recovery or regeneration can take place.

5. the conception, development, growth, maturation, ageing and death of an organism

This knowledge is useful when defining the term health in the different phases in the course of a human life.

The course of a human life begins in the pre-conception phase, is followed by fertilisation and continues through the development of the embryo during pregnancy, birth, and growth and development in the successive phases of life until death. In each of these phases there are specific molecular, cell biological, and physiological and pathophysiological processes that influence the health experienced by an individual in their context.

6. links between genetic information and the associated phenotype. The doctor recognises and understands the influence of non-genetic factors on this phenotype.

Basic knowledge of the human genome and inheritance patterns and genetic variation is essential to recognise genetic disorders and treat or prevent them, if possible.

Genetic disorders have a molecular and cellular basis and a genetic profile. This molecular-biological backgrounds of every genotype and phenotype play an important role in the health of organisms and offer a starting point for treatment.

7. the physiological and pathological relationships between host and micro-organisms.

Knowledge of the general characteristics, structure and physiology of infectious agents is necessary to recognize or prevent the associated disease pictures.

The body has natural barriers against infectious agents and its own microbiome. Molecular and cellular mechanisms are activated by contamination/infection with virulent micro-organisms. Knowledge of the working mechanism of vaccinations, the pathophysiology of transplantation and the pharmacological regulation of rejection provide a deeper understanding of the immune system's pathophysiology. Adequate medical treatment becomes possible by understanding the societal impact, aetiology, pathogenesis and consequences of many common infections, as well as the backgrounds of congenital and acquired immune deficiencies (including auto-deficiencies).

8. the influence of external factors on sustaining or promoting health and their role in the origin of diseases.

This knowledge serves the protection of health, health promotion, disease prevention and care provision that meets the health needs of individual patients or groups, and is important in discussions about important social themes regarding healthcare.

A healthy diet and other adjustments to lifestyle form part of an integral prevention or treatment programme. With health promotion, consideration is given to the effects on health of stimulants (drink and drugs), diet, habits and living and/or work conditions at the level of the

cells, tissues, individuals and the population. This applies also to the treatment of health problems like eating disorders, excessive stimulant use or damage due to intoxication.

9. mechanisms to influence behaviour to promote health..

This knowledge is used to help people take conscious decisions regarding their health and their treatment plan (including preventive), partly associated with the contributions from other caregivers.

With regard to both individuals and groups, different care-related prevention methods involving counselling and information provision are implemented. Concerning the individual, consideration is given to the extent of disease insight, forms of behaviour (e.g. therapy compliance) and the influence of alternative sources of information on their autonomy/considerations.

10. the most important aspects of aetiology, pathogenesis and pathophysiology of neoplasia on the cell, tissue, organ and patient level, and on systemic effects.

This knowledge enables the doctor to employ the correct examinations and therapies for the diagnostic, preventive and/or therapeutic plan in both the curative and palliative setting for neoplasia (suspicions of it) – and explain this in an understandable way to the patient and their loved ones.

Aspects that are included here are the relationship between tumour growth (invasion and metastasis) and the immune system, systemic effects of tumours, heredity, definitions and classification of tumours.

11. commonly used examination and measurement methods, referring to the structure and function of molecules, cells, tissues, organs and organisms.

This knowledge enables the doctor to employ the correct examination or measurement methods for diagnosis, prevention and/or therapy, and to specify the resulting data and estimate their value.

Understanding of examination methods involves aspects of medical-biological examination (also with animal models), genetic screening and diagnostics, and analysis techniques in the fields of pharmacology, immunology, microbiology, pathology or physical diagnostics.

12. scientific basis of therapeutic action.

This knowledge contributes to preparing and applying an adequate treatment plan in an effective, ethically responsible and patient-oriented manner.

The emphasis lies on the extent and correct context of prescribing medicines, with consideration for an explanation to the patient and therapy compliance and feasibility. Knowledge about physical therapy, radiotherapy, immunotherapy and surgical procedures directs therapeutic actions.

13. psychological and socio-societal factors that influence normal human development

This knowledge ensures that the doctor can establish professional relationships with people or groups with different development backgrounds, while taking into account the psychological and socio-societal factors that influence development.

People or groups differ in e.g. stage of life, cognitive development, social and/or work environment and personal characteristics, and their

health needs are partly determined by these features. Adequate care or prevention for individuals or groups is likely to be involved in the care process through these aspects.

14. psychological and sociological mechanisms in relation to disease and health and quality of life

This knowledge is important when collecting, organising and integrating the relevant biopsychosocial information about a medical problem in consultation with the person(s) involved, in order to contribute to disease prevention and suitable medical care matched to the needs of the individual patient in their context. Waiving treatment can also be seen as a realistic option.

It is important to determine for an individual patient which determinants of health and disease are contributing to the health and quality of life (experienced), and how they affect each other. For example, emotional and behavioural aspects, plus the role fulfilled (e.g. partner, professional, patient) and the interaction between someone's self-image and their disease.

15. mechanisms underlying the origin and maintenance of mental problems (and insufficiently explained physical symptoms) and conditions, associated with the individual's socio-societal context.

Understanding of these mechanisms enables a diagnosis to be made based on information from the anamnesis and examination, and if necessary referral to other care professionals.

Genetic predispositions, stage of life, personality characteristics acquired later and environmental factors, along with their interactions, influence the individual's mental health.

16. building up society in a globalising world

This knowledge is important for recognizing differences in concepts about health and disease and the relationship between the social context/complexity of society on the one hand, and health and the experience of health on the other.

The context (social and otherwise) of individuals and groups influences health and the experience of health, and thus also healthcare. Suitable care is made possible by charting this context in association with the society's influence.

17. the organisation, quality (legal) control and financing of care in the Netherlands.

This knowledge ensures that the doctor can practise within the professional, ethical and legal frameworks of the professional practice and can uphold the professional responsibilities of the doctor's profession.

Understanding of the Dutch healthcare landscape and of social security for work disability due to disease and the role in this of governments, insurers and compliance officers is essential to produce the correct care pathways, for both individuals and groups. Collaboration with other professionals promises continuity and good quality of care. The doctor should always be aware of conditions that can affect this, such as agreements in the chain of care, covenants (e.g. with the pharmaceutical industry), privacy, and legislation regarding care (e.g. BIG) and its amendments.

18. the practice of scientific research

Understanding of the different aspects of scientific research is needed to integrate the best available evidence in the clinical decision-making in practice and to share relevant information with fellow professionals.

Following the empirical cycle and principles of evidence-based medicine ensures that scientific knowledge can be distinguished from non-scientific knowledge.
When analysing scientific publications, terms like validity, reliability, verifiability and generalisability are important, as is an understanding of

clinical uncertainty. Protocols or scientific guidelines derived from big data and/or based on machine-learning can then be deviated from with substantiation.

19. the most important research designs and statistical methods and measures of health and disease

This knowledge is important when conducting scientific research and/or analysing the results of scientific research with the aim to spread verifiable knowledge that is applicable to health and disease.

Every form of qualitative or quantitative research has research designs and methods that are suitable for this purpose, with the associated statistical terms, measures and indicators to analyse the results. Knowledge about these measures and methods supports the correct evaluation of research results, so they can contribute to the correct care for both individuals and populations.

20. the most important aspects of quality of care and the different perspectives that can be used to approach them (patient, doctor, insurer, government, etc.)

This knowledge contributes to the smooth functioning in professional practice by handling problems critically, reflecting on one's own medical actions, and taking the responsibility to act accordingly.

This includes protecting the frameworks (legal or otherwise) and boundary conditions and complying with ethical and safety norms, for example regarding the prevention of infection or scientific research. Safeguarding care quality also includes actively following new developments (technical) in one's own specialism and considering the consequences from different perspectives.

21. the necessity of and possibilities for innovation in healthcare

This knowledge helps doctors contribute to the quality, accessibility and affordability of healthcare as part of social action.

Doctors need the knowledge that enables them to recognise situations in healthcare which influence its quality, accessibility and affordability. Knowledge is also required about the way in which innovations respond, take shape, are examined and implemented. The doctor makes connections with the knowledge about social, scientific and technological developments.

22. theoretical backgrounds of the doctor-patient relationship, health skills and communication..

This knowledge is important for a professional doctor-patient relationship and an adequate communication with patients and their loved ones, taking into account contextual factors, health skills and/or differences in opinions.

During the different phases and types of consults, the doctor is aware of his/her own role and that of the patient, and the meaning of the doctor-patient relationship for the medical process. In the communication, attention is paid to the discussion partner's trust and autonomy and their role is clarified.

23. different dimensions on which the term professional behaviour is based

This concerns, for example, dealing with tasks, with others and with yourself. This knowledge is important for personal leadership in the professional medical practice and maintaining a learning attitude throughout one's career.

Self-reflection and self-insight, partly in relation to others and to tasks and processes, enable the doctor to set personal, educational and professional goals and adjust them periodically during the training and career. This includes the ability to set priorities to maintain a good balance between work and private life. Aspects of a learning approach in the contact with others include e.g. impartiality, empathy, harmonization with emotions and power of comprehension, giving and receiving feedback safely, dealing with differences of opinion, and aligning informed consent.

24. the core of medical professional behaviour as expressed in the Dutch doctor's oath and in the rules of professional confidentiality

Knowing the content of the Dutch doctor's oath and the rules of professional confidentiality is a precondition for exercising the medical profession.

5 Issues concerning health and disease

5.1 Clarification

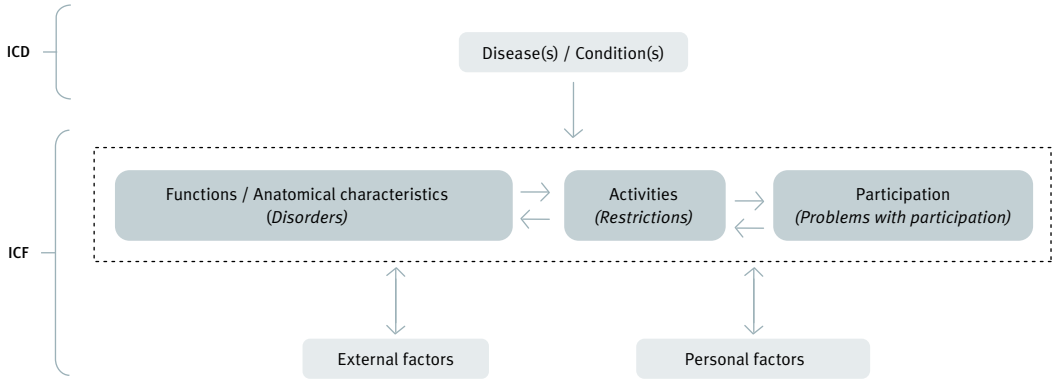
Doctors work in the broad terrain of healthcare and are concerned with a wide range of health issues of both the individual patient and groups of patients and on the social level. This chapter describes the main outlines of the issues regarding health and disease that every doctor can be confronted with and that he or she must be able to analyse systematically. The issues provide a framework for the process of clinical reasoning and lay a basis for the medical expertise of doctors.

5.1.1 Choice of classification principles of the issues

To classify the issues regarding health and disease described in this chapter, four categories are used that match the list of health issues of the International Classification of Functioning, Disability and Health (ICF)[7] and the International Classification of Diseases (ICD). The ICF offers ways for describing human functioning from three perspectives: the person as organism (functions & anatomical properties), human action (activities), and participation in society (participation). We chose this classification because it links to the concept of health as the active adjustment to loss and disease, while retaining a certain measure of autonomy. This concept also links disease, functioning and participation. Because the classification is also used by other care training programmes, its use ensures a common language for interprofessional and other collaboration.

The International Classification of Diseases (ICD) is not part of the ICF but is associated with it. The ICD classifies the medical and other causes of disorders, restrictions, and problems with participation.

Figure 2: Overview of relationship between ICF and ICD



7 See https://www.whofic.nl/familie-van-internationale-classificaties/referentie-classificaties/icf

The list of issues regarding health and disease is divided into four main categories:

I. Issues in relation to disorders (of functions and/or anatomical properties)
II. Issues in relation to restrictions and problems with participation
III. Issues in relation to external and personal factors
IV. Issues in relation to the organisation of care and specific contexts.
The main groups I to III directly reflect the ICF.

5.1.2 Relationship of the issues to the doctor's competencies

The issues outline the theme within which the newly graduated doctor uses the knowledge acquired (chapter 4) and displays his/her competencies (chapter 3). The newly graduated doctor is capable of:

- Recognising the issues and analysing causes and consequences;
- Initiating an adequate policy under remote supervision (diagnostics, monitoring, treatment), including an adequate referral policy that takes into account one's own competency limits and shows insight into the specific issue;
- Applying prevention and early detection where possible.

5.2 Issues

I. Issues in relation to disorders of functions and/or anatomical properties of the human body

Clarification:
This main category first contains individual issues, specified to a certain level (categories A - E).
The list of health issues does not contain specific clinical pictures. However, the newly graduated doctor is expected to be able to consider specific clinical pictures as well as the general mechanisms when analysing, monitoring and treating disorders. The choice of which specific clinical pictures are included in the education programme is left up to the programme managements. This choice will take into account the frequency of occurrence, severity and didactic value for illustrating general principles. Categories A and B derive directly from the ICF. Categories C, D and E contain suggestions for treating many common symptoms and problems.

A. Disorders of functions of the human body
- Mental functions
- Sensory functions
- Voice and speech
- Cardiovascular system
- Haematological system
- Immune system
- Respiratory system
- Digestive system
- Metabolic system
- Hormone system
- Urogenital system
- Reproductive functions
- Locomotory system
- Skin and adnexa

B. Disorders of anatomical properties of the human body
- Nervous system
- Eyes and ears
- Nose, mouth and throat
- Airways
- Heart and blood vessels
- Lymph system, spleen and bone marrow
- Salivary glands, oesophagus, stomach, intestines, liver, gallbladder and pancreas
- Endocrine glands
- Urogenital system
- Skeletal and locomotory system
- Skin and adnexa

C. General, frequently occurring symptoms, like fatigue, weight loss, weight gain, fever, pain, swelling, insomnia

D. Acute, life-threatening problems, like circulatory collapse and apnoea, shock, acute abdomen, delirium, coma, severe (poly)trauma, severe burns

E. Issues in specific stages of life[8], like growth and development disorders, contraception, disorders in reproductive functions, pregnancy (including unwanted pregnancy), menopause and menopausal symptoms, ageing and geriatric diseases, dying.

8 In this subcategory a conscious choice was made to mention issues in the title rather than disorders. The monitoring of a normal pregnancy and menopause are considered health issues, even if there is no indication of a disorder.

II. Issues in relation to restrictions in activities & problems with participation

Clarification:
By combining data about disease with data about human functioning, the doctor obtains better insight into the health status of an individual or population. In this main group, therefore, issues are included that are related to restrictions in activities and problems with social participation. The newly graduated doctor is capable of recognising restrictions and problems in these areas and carrying out an adequate and relevant treatment plan (or referral). That is especially important regarding the consequences of being chronically ill, including medically unexplained somatic symptoms (MUSS).

The following areas are distinguished:

A. General and health skills

- Learning and applying knowledge
  To what extent is the individual capable of learning, applying what is learned, thinking, solving problems and making decisions for the problem in question
- General tasks and requirements
  To what extent is the individual capable of conducting simple or multiple tasks, routine actions and coping with stress for the problem in question
- Communication
  To what extent is the individual capable of communicating via language, signs and symbols for the problem in question

B. Activities of daily living

- Mobility
  To what extent are mobility restrictions involved in functioning
- Self-care
  Caring for oneself, washing and drying oneself, taking care of the body and body parts, dressing oneself, eating and drinking, and taking care of one's own health
- Household
  To what extent can the carrying out of daily household activities and tasks be restricted?

C. Social environment and context

- Interpersonal interactions and relationships
  What role does the problem in question play in the individual's functioning when carrying out actions and tasks that are needed for basic and complex interactions with people
- Important areas of life
  What restrictions in function does the individual experience when carrying out tasks and actions for training, work and profession and economic transactions
- Social, societal and civilian life
  What restrictions in function does the individual experience at the level of the actions and tasks required to participate in social life

III. Issues in relation to personal and external factors

The newly graduated doctor is capable of recognising the influential factors of the individual (personal factors) and of the environment (external factors) and carrying out an adequate and relevant treatment plan (or referral), partly with the aim to improve adjustment to the disease and restrictions. This also applies especially to:

A. Preventie
- Universal prevention, individual and collective
- Selective prevention, individual and collective
- Indicated prevention
- Care-related prevention

B. Violence / mistreatment in relationships between people, including
- Domestic violence
- Child abuse
- Abuse of the elderly

C. Deviating care consumption
- Overconsumption
- Underconsumption

D. Diversity
- The role of race, gender, socioeconomic background and diversity in relation to disorders (of functions and/or anatomical properties of the human body)

IV. Issues in relation to specific perspectives and contexts

The following issues belong to the theme in which the newly graduated doctor uses his/her knowledge (chapter 4) and displays competencies (chapter 3):

A. Triage emergency care
B. Basic reception of trauma patient
C. Sport injuries
D. Abnormal findings in people without symptoms
E. Multimorbidity
F. Frailty
G. Polypharmacy
H. Addiction
I. Chronic care
- Rehabilitation care
- Nursing home/institution care

J. Suitable care
- Advance care planning
- Cost awareness
- Signalling under- and overtreatment

K. Palliative care
L. End of life support
M. Moral-ethical issues

6 Recommendations for organising medical education

6.1 Clarification

In the final qualifications of medical training, a stress is placed on every doctor continuing to develop throughout their entire life. The basis for this is laid during the medical training. That is why several didactic starting points, principles and recommendations to help promote the student's learning are discussed in this chapter.

In the past few decades much research has been done into how students can learn most effectively. The results revealed that education founded on certain didactic principles, profound learning and motivation promotes and contributes to the development of an attitude of lifelong learning.
The "State of the art" report of QANU, produced after the inspection round of the medical programmes in the Netherlands, advises paying more attention to integral curriculum development, in which the ambitions of the training programmes are more in line with education and assessment programmes.

The starting points, principles and recommendations described below can be used to design the medical curricula. This is a response to the recommendations from the "State of the Art report" of QANU and the accreditation requirements of the World Federation of Medical Education (WFME). Medical education is always changing, and the different medical programmes in the Netherlands are free to place their own accents within these starting points, principles and recommendations and to experiment with new forms and techniques of education. Faculties are encouraged to work together and learn from each other. Patients can play a role in elucidating the patients' perspective (see appendix 9). Appendix 10 lists the sources of these didactic starting points.

The medical training involves a bachelor programme, followed by a master programme. In both programmes, attention is paid to building up knowledge and acquiring skills and attitude. The majority of the practical training takes place during the master programme. This chapter consists of two parts. The first part presents general starting points for all medical education. The second part focuses more on learning in practice in internships.

6.2 General starting points for medical education

This section provides starting points and recommendations for the learning environment, didactics and assessment - as means to shape the final qualifications described in this framework.

6.2.1 Learning environment

An optimal learning environment stimulates learning and supports an attitude of lifelong learning. Starting points and recommendations for this include:

- Make as much use as possible of context-bound (e.g. practice-oriented, patient-oriented), authentic learning environments (workplace learning) and tasks ('experiential learning').
  - Offer workplaces that give the student an idea of their future field of work (both inside and outside the hospital and in individual and public healthcare).[3]
  - During workplace learning, assuming responsibility (supervised) promotes the student's learning.
  - Restrict the number of transitions and short internships wherever possible; this promotes the learning climate.
- A combination of learning in the workplace and formal learning (e.g. knowledge processing and education about issues) is mutually

reinforcing.
- Arrange the learning environment so explicit attention is paid to the student's feeling of competency.
- Ensure longitudinal monitoring to enable simple or complex competence development. Experiential learning and feedback contribute to this.
- Offer space for interprofessional learning.
- Take into account differences in study level and offer support and challenges.
- Give students freedom of choice in part of the education programme.
- Ensure an inclusive climate in which diversity is permitted and differences between students are valued and used.
- Ensure that students have sufficient contact with a diversity of good role models, whom they can learn from, and who can supervise them and advise them about the choices for their future.

6.2.2 Didactics

Certain work methods can help students acquire an attitude of lifelong learning. Starting points and recommendations for this include:
- Stimulate constructive learning by activating prior knowledge, integrating knowledge, and letting it be thoroughly processed by the students (so-called "elaborating").
- Stimulate collaborative learning to teach students to acquire competencies with each other and to teach them effective collaboration, both intra- and interprofessional.
- Support self-regulating and self-controlling learning by having them formulate personal learning goals, consciously "learn to learn" and self-evaluation.
- Devote attention to personal and professional development to promote the student's autonomy.
- Stimulate an attitude of lifelong learning. Reflecting on one's own actions is a prerequisite for this; personal development plans can contribute here.
- Offer feedback and assessment that support and stimulate learning.

6.2.3 Assessment

Assessment can contribute to guiding and supporting the learning process. Starting points and recommendations for this include:
- Ensure that the learning goals of the education are evident in the assessment ("constructive alignment").
- Provide narrative feedback on the assessment product or result where possible. Offer the student the possibility for self-reflection.
- Assessment of complex skills is best done by observation of behaviour, with feedback being key.
- Stimulate lifelong learning by making use of formative assessment moments and effective feedback where possible, and use summative assessment forms where required.

6.3 Competence-oriented learning during practical training

This section concerns acquiring competencies during practical training and is primarily applicable to the medical master (internships). During the practical training the recommendations apply equally that were made in the previous section about the learning environment, didactics and assessment.

At the end of the master programme, the final qualifications (formulated as competencies) of the training are achieved. In the doctor's daily practice, different competencies and partial competencies are integrated and applied during the conduct of different activities in different contexts. In most specialist training programmes, that is why concretely formulated professional activities are now employed, which the doctor in training as specialist will ultimately have to do independently. Even during the initial training the medical student will have to employ different integrated competencies and partial competencies. This section considers the topic

in greater depth. The student is after all part of different teams at different workplaces during the internships.

6.3.1 Professional activities to support learning in practice

The medical master consists largely of different internships. During this range of internships, the students work on their competence development. They learn in the workplaces of doctors and other care professionals who supervise them and form part of a team, in which they assume increasing responsibility under supervision. It is not always immediately clear to a student which competencies can be developed in which location. Primarily, competencies (parts of them) are integrated in the doctor's daily activities. Making these actions or professional activities, in which different competencies are integrated, more concrete enables a student with good training and under supervision to work towards carrying them out independently. Making professional activities concrete also helps students and teachers to actively recognise and develop the different competencies and partial competencies, as the formulation of a professional activity specifies which competencies and partial competencies are needed to carry them out independently. Carrying out certain professional activities can help with the transition to other workplaces.
The content of some internships is so specific that the development of more generally applicable competencies receives less attention in the daily course of events. Formulated professional activities can help to give these generally useful competencies the attention that they deserve, as the student obtains more insight into what steps are needed to be able to conduct the relevant activity at the intended level of independence. The professional activities contribute in this way to a continuous process of learning throughout the different internships.

6.3.1.1 Choice for limited set of professional activities

Medical training is broad, and enables the newly graduated doctor to develop further in one of the many different specialist training programmes. The professional activities for the doctor proposed in this chapter are therefore generically formulated. They are applicable in the different contexts of work: inside or outside the hospital, curative or preventive, individual medicine or public health, etc.

How the professional activities proposed in this section should be given shape during practical training is left up to the medical programmes. In the following sections a global description of the professional activities is given (in appendix 8, one of the professional activities is elaborated in a detailed description as an example).

The selected professional activities are generally described and indicate which competence domains they are primarily included in. These professional activities were chosen on the basis of the following considerations:

- Different competencies are needed to carry out professional activities.
- The intention is to have a manageable number of professional activities used to sketch the general practice of a doctor directly after completing medical training.
- We follow on from existing curricula of medical programmes in the Netherlands that already use professional activities, and the systematics of the Association of Faculties of Medicine of Canada.
- Several themes, such as lifestyle, prevention and reflection on one's own actions, which receive more attention in the new framework than previously are recognisable in the elaboration of the professional activities from the list below.

NB: during the master's programme medical students partly pass through the same type of internships and work towards the same learning goals, oriented to obtaining the final qualifications. In the last year of the master programme, there is often more room for elective elements, and the students' actions or professional activities differ more and more.

Depending on the choices made, it is very likely that medical students during the last phase of medical training carry out other professional activities than those specified here. In this chapter only those professional activities are formulated that every newly graduated doctor must be able to conduct after concluding the master programme in medicine, regardless of the electives chosen.

6.3.2 Description of the different professional activities

Professional activity 1	MEDICAL CONSULT
Specifications	**Specifications:** • Professional activity 1 is limited to just haemodynamically and ventilatory-stable, legally competent patients. For other patient categories the tasks may be carried out but under a suitable level of supervision. • Includes history taking, physical examination, preparing a differential diagnosis, preparing a plan for supplementary diagnostics, interpretation of diagnostics and preparing a treatment or monitoring plan. • The medical consult has been mastered in a variety of settings (of GPs, geriatric specialists and doctors for mentally handicapped patients, medical specialists, social practitioners)[3] and with or without the assistance of digital support (e-health, digital consult, etc.)
Professional activity 1.1 Anamnesis and physical examination	**Specifications:** • Includes taking a complete and specific history and hetero-anamnesis in combination with a correctly conducted and relevant physical examination in an organized manner. The history and the examination are suitable for the specific clinical situation and the specific patient contact. • Several specialist facets are defined in this professional activity that will primarily be needed for specific patient groups **Anamnesis:** – General anamnesis – Family history/social anamnesis – Neurological anamnesis – Psychiatric anamnesis – Developmental anamnesis (child) – Sexual/obstetric anamnesis – Geriatric anamnesis **Physical examination:** – General physical examination (including locomotory system) – Neurological examination – Psychiatric examination – Examination of newborn infant – Gynaecological examination – Sensory examination

Professional activity 1.2 Preparing a differential diagnosis	**Specifications:** • Includes formulating a list of priorities for possible diagnoses in a diversity of practice settings and patient characteristics, using a systematic approach. By integrating the collected information and applying skills in clinical reasoning, the doctor arrives at a working diagnosis or hypothesis.
Professional activity 1.3 Preparing a plan for supplementary examination	**Specifications:** • Includes preparing a concrete plan for supplementary diagnostic examination based on the differential diagnosis to arrive at a targeted proposal for a follow-up plan, taking into account test characteristics, guidelines, availability, cost, adverse effects and potential impact on the patient.
Professional activity 1.4 Interpreting diagnostics	**Specifications:** • Includes recognising and interpreting normal and deviant outcomes of a diagnostic or screening test and explaining what they mean.
Professional activity 1.5 Preparing a treatment or monitoring plan	**Specifications:** • Includes preparing (including evaluation and adjustment) a treatment or monitoring plan (or proposal) for common problems in different practice settings. The plan can consist of e.g. a referral, consult request or prescription. The doctor consults other care professionals as necessary.

Professional activity 2	**EMERGENCY CARE**
Specifications	**Specifications** • Professional activity 2 is restricted to actions at the Basic Life Support level. • Includes recognising that a patient needs emergency medical care and quickly stabilising the patient and getting help.
Professional activity 2.1 Recognising an emergency situation in a patient	**Specifications** • Includes recognising that a patient needs emergency medical care and carrying out a quick and targeted assessment that estimates which areas pose a danger for the patient and where s/he needs help (ABCDE-system).
Professional activity 2.2 Provide first aid including Basic life support and get help	**Specifications** • Includes the rapid stabilisation of the patient, harmonising with fellow care professionals and patient/family and getting help. • Being able to estimate when basic life support in the form of resuscitation and ventilation is essential and carrying it out properly.

Professional activity 3	MONITORING AND INFORMING
Specifications	**Specifications:** • Professional activity 3 is restricted to legally competent patients with a non-life-threatening condition. For other patient categories the tasks may be carried out but under a suitable level of supervision. • Includes discussions about diagnostic and therapeutic options, outcomes, prognosis, healthy lifestyle, prevention and conducting a motivating discussion, setting goals and documenting them. Also includes special conversations (forms of them), such as broaching bad news or talking to a dissatisfied patient. • Providing basic information and advice to a patient and family about diagnostics, therapy and prognosis (e.g. based on decisions taken in a MDO or visit/consultation) and asking for informed consent.
Professional activity 3.1 Discussing diagnostic and therapeutic options	**Specifications:** • Includes conducting a conversation with a patient and/or loved ones about diagnostic and therapeutic options. • Asking for informed consent, during which statistical aspects, indications and contraindications, complications, risks and alternatives of the diagnostic and therapeutic options (or deciding against them) are discussed. • Deciding on the treatment plan in consultation with the patient (joint decision-making) and discussing with the patient how s/he thinks the proposed therapy can be integrated in his/her daily life (therapy compliance). • Documenting the discussion and informed consent in the patient's file.
Professional activity 3.2 Discussing result and prognosis	**Specifications:** • Includes conducting a talk with a patient and/or loved ones about the outcome, diagnosis and associated prognosis. This includes communicating both good and bad news. • Documenting the discussion in the patient's file.
Professional activity 3.3 Conducting special conversations	**Specifications:** • Includes communicating in difficult, challenging situations with patients and/or loved ones, colleagues or other caregivers. This includes, for example, broaching bad news, talking to a dissatisfied, emotional or aggressive patient, or a difference of opinion with a colleague or supervisor. • Documenting the discussion in the patient's file.
Professional activity 3.4 Providing information and advice about a healthy lifestyle and prevention of disease	**Specifications:** • Includes recognising situations that allow an opportunity to provide the patient with information about the cause of the disease, conditions for improvement of functioning, healthy lifestyle and prevention of the disease or complaint (or worsening of the situation), explain the importance of this to the patient, using a motivating discussion method and valid guidelines and the patient's context. • Documenting the discussion in the patient's file.

Professional activity 4	COMMUNICATING AND COLLABORATING
Specifications	**Specifications:** • Includes written and verbal transfer of patient information. • Includes inter- and intraprofessional collaboration: collaboration between two or more professionals of different professions (interprofessional) or medical disciplines (intraprofessional).
Professional activity 4.1 Written and verbal transfer of patient information	**Specifications:** • Includes status management, sharing information with people concerned in the patient's surroundings, preparing a discharge or referral letter and conducting verbal patient transfer, in a complete and clear manner with the essence and all positive and negative findings that are relevant for the clinical context, while taking into account privacy considerations and legislation.
Professional activity 4.2 Inter- and intraprofessional collaboration	**Specifications:** • Includes collaboration with other caregivers and the patient, with the common goal of safer and better care that focuses on the patient, community or population. • Delivering an effective contribution to inter- and intraprofessional teams in the field of patient care, education and research.

7 Change challenges

This framework is the successor to the Medical Training Framework 2009. An important revision in that framework was the introduction of and emphasis on the general competencies in the intended final qualifications of medical training, in conformance with the CanMEDS system. The Medical Training Framework 2020 retains this revision and uses the CanMEDS framework that was revised in 2015. At first glance, therefore, it can seem that the new framework does not deviate much from the previous framework. At the same time, it is undeniable that the vision of the doctor of the future formulated in chapter 2 does call for serious changes that are included in this framework in the defined final qualifications. These are changes that have already been taken into account in different medicine programmes in the Netherlands.

To stimulate the essential changes further, this final chapter restates the most important change challenges.

More emphasis on promoting and retaining health and quality of life

This new framework requires that much more attention than in the Medical Training Framework 2009 be paid to the role of the doctor in promoting and protecting health and optimizing the functionality and quality of life despite disease or limitations, along with their task in diagnosing and treating disease. The Medical Training Framework 2020 employs the concept of positive health and pays more attention to prevention (at the level of the population, specific groups and individuals) and preventing unnecessary care. It emphasises the importance of a person-oriented approach, with citizens and patients considered as partners. This approach changes the communication between doctors and patients or specific groups. The participation of patients in education can contribute considerably to acquiring the associated competencies.

Learning to work together better: intra- and interprofessional

A person-oriented approach requires professionals who can work together well, certainly in today's healthcare and in the future, and with the patient to take decisions together. The new framework encourages giving learning to collaborate a more important place in the training. This concerns the collaboration between doctors working in different fields[3] (intraprofessional collaboration), as well as that between doctors and other medical, care and welfare professionals (interprofessional collaboration). Traditional examples are dentists, nurses, paramedics, pharmacists. But the care landscape is expanding, and new groups of caregivers are joining in. Examples include physician assistants and medical technicians. One special category of interprofessional collaboration is that of doctors with the (bio)medical scientists and healthcare researchers. Attention paid to this collaboration during training will contribute to the relevance and quality of scientific research into care.

Ensuring sensible and good care, in the right place and at the right time for everyone

Under the influence of societal changes, changes in the patient population (such as ageing, migration and socio-cultural diversity) and increasing medical technological developments, a greater diversity of care needs is developing. Not every patient automatically has access to the right care; this is partly dependent on the context (socio-economic, etc.). Doctors and their patients are also faced with the question: "does everything possible have to be?" The increased socio-cultural diversity is accompanied by

new issues regarding health and disease. Care must take into account the differences between patients and pay attention to the usefulness and affordability of that care. This demands innovation of care to which doctors should contribute. In that respect, this framework pays more attention to the development of competencies in the domain of being a health advocate and and that of being a leader.

And it's not just patients who differ. So do care professionals. Diversity is enriching and can also contribute to the necessary innovation of care. That demands an inclusive medical training, one that takes into account the differences between students and teachers/trainers and between different students. It concerns becoming aware of differences in, for example, generational and socio-cultural background, as well as combatting unconscious stereotypes.

Create preconditions for lifelong learning

Scientific and technological innovations lead to new possibilities for diagnostics, risk estimation, prevention, monitoring and treatment. Often, these innovations are associated with "artificial intelligence" and digitisation. They are also associated with changing social concepts of the roles of patients and citizens and the associated role of care professionals. Changes in the organisation and financing of care and in the landscape of care providers and healthcare professions are asking doctors to be capable of learning and adjusting. This new framework requires students to prepare for this during their training. Even more than in the previous versions, the emphasis lies on the importance of competencies needed for lifelong learning: being able to learn in and from the practice, reflecting, asking for feedback, giving feedback and coping with it, both individually and together with others. As a professional you must have learned to make choices, to understand how you can influence your environment with your own values, to cope with the high demands made on you as a doctor while maintaining the balance between work and private life. Therefore, the development of personal leadership receives more attention in the Medical Training Framework 2020.

Responsibility and accountability of programmes

The individual medicine study programmes and the UMCs bear the primary responsibility for realising the changes in the four areas mentioned above. They are responsible for the regular external quality care cycles. It seems evident that the future assessment committees will have to talk to the programmes about the way in which they have realized and will continue to realise these changes.
The UMCs rely in their change task on good collaboration with patients, students and partners in their regional and other networks. Given the focus on academic care, they should also intensively involve the partners in primary and secondary care and in social healthcare in designing and carrying out medical training. Only then will it be possible to organise the training so students can learn in workplaces with a good mix of relevant practice situations from the different clusters[3] within which doctors work. The considerations that every study programme makes as a result are expected to be topics of discussion during future educational assessments.

8 Appendices

Appendix 1. NFU revision of medical training framework

DEFINITIVE version, 17 September 2018

Framework 2009

The intended final qualifications of the Dutch medical training are described in the Medical Training Framework. The last version dates from 2009, and this means a complete revision of the earlier version. At that time a profile was created of the graduate and intended final qualifications of both the bachelor and the master programmes. For the master programme they are given for the first time as general competencies, in line with the CanMEDS system and the specialist training system. The Framework 2009 introduced different levels at which competencies can be acquired and must be assessed during the medical training. At the highest levels (IV and V), the graduate is required to demonstrate the general competencies in authentic professional situations. Part of the Framework 2009 was a list of issues in the field of health and disease with which the doctor must be familiar. In addition, the doctor is also expected to demonstrate a competent approach to the issues included in the list in context-rich test situations (level II) and thus not always in authentic professional situations.

From 1 January 2011 the training requirements resolution for doctors has been based on the Medical Training Framework 2009. The resolution refers to the above-mentioned general competencies (chapter 6 of the Framework) and the list with issues (chapter 7 of the Framework).

In the recent educational assessment of the medical training for both bachelor and master programmes, the texts from the Framework 2009 were used as a guide. The assessments are now complete, and the revised accreditations are expected soon. The assessment committee will also publish a *"State of the Art"* report soon.

A new version of the Framework

Developments in care and education and training are making a new version of the Framework desirable.

The demand for care is increasing and changing in character. The demographic developments are leading to an increase in the number of elderly and the number of patients with multi-morbidity. Other health concepts are being considered. The concepts of the role of citizens and patients and caregivers are changing. The professional structure in healthcare is developing, and the necessity for interprofessional collaboration is widely supported. The importance of prevention is becoming increasingly evident. Developments in technology, including information and communication technology and artificial intelligence, are leading to new possibilities for prevention, diagnostics and treatment.

Since the appearance of the Medical Training Framework 2009, new versions of the CanMEDS model have been presented, and the specialist training has continued developing. An important example is the introduction of "Entrustable Professional Activities" (EPA) in the specialist training (primarily).

The Dutch medical training focuses on these new developments. The assessment committee was asked to consider this in the "State of the Art" report. It is clear that responding to the described developments demands some "experimentation" room. A new version of the Framework must provide this space and continue to do so, while remaining within the necessary frameworks.

Setting up New Medical Training Framework Project group

As a result of these considerations, the Education and Research Steering committee (O&O) of the Dutch Federation of University Medical Centres (NFU) set up a New Medical Training Framework 2019 Project group at the request of the Medicine Education Committee (OCG).

Assignment

The project group was given the assignment to prepare a new version of the Medical Training Framework while taking into account the above-mentioned considerations and ensuring that the Framework fits within the international and European frameworks.

O&O emphasises the importance of programmes being distinguishable and that the University Medical Centres can translate their vision of the care and developments in it in their education programme.

O&O emphasises further that the university medicine programmes, to which the Medical Training Framework applies, form only the first part of a training continuum. In that first part of lifelong learning, acquiring general competencies that are relevant for every doctor is key. The various specific areas of attention are secondary in importance.
It is important that doctors develop the attitude and skills during their initial training that stimulate and enable lifelong learning.

Medical education is a subject of scientific research. That leads to new insights. One example of this is that longer-lasting internships have other effects than a sequence of short internships. The insights gained from scientific research must also be applicable in practice. The framework must offer sufficient room for this.

O&O advises the Project group to let itself be inspired in its work by the following documents:

- The Medical Training Framework 2009
- The reports of the medicine assessment committee and particularly the “State of the Art” report expected soon from the assessment committee of the medical programmes
- The reports “Towards new care and care professions. The contours” (2015) and “Look differently, learn differently, act differently” (2017) of the National Health Care Institute
- Report of the Working conference General practitioner of the future (2018) and the added appendices
- Report “The right care in the right place” and other new reports especially about developments in healthcare
- FMS-vision the Medical Specialist 2025
- NFU-plan Sustainable Health
- All viewpoints and requests to the NFU about the Framework (overview memo to be prepared)
- Viewpoints and comments in O&O and OCG

Duration

The project group was asked to have the draft Framework 2019 ready by 1 December 2019.

Composition and procedure

Within the project group there is a core group that is charged with preparing the report, consulting with external parties, organising meetings and elaborating the conclusions of the project group. The project group as a whole is responsible for the final report. The core group consists of the chair of the project group, the project coordinator and a secretary. The members of the key group form part of the project group.

The project group also includes one member from each University Medical Centre. Attention was paid when composing the project group to include

a range of the different disciplines. In the project group a student-advisor, a recently graduated general practitioner and a young starting medical specialist are included. The University Medical Centres are responsible for representing the nursing and paramedical professional group in the project group. The KNMG, the Ministry of VWS, platform CRAZ, the Dutch Association for Medical Education were asked to appoint a representative to the project group.

The members of the project group are all addressed by their personal title and may not be considered representatives of their own institution or discipline.

The project group takes care of reporting about the progress during the meetings of OCG and for the meetings of O&O via the O&O portfolio manager.

The project group is encouraged to obtain advice on specific themes from external experts and other parties.

<u>Procedure for staffing the core and project group</u>

1. Chair of the project group is one of the OCG members: Prof. Roland Laan (Radboud UMC).
2. The chair recruits a project coordinator and secretary.
3. Each UMC appoints two candidate members, with the aim to include a distribution across the houses in the following categories:
   - General practitioner medicine
   - Social medicine
   - Geriatrics
   - Nursing sciences
   - Basic medical sciences
   - Hospital specialism, examination
   - Hospital specialism, surgery
   - Hospital specialism, diagnostic

   The UMCs are asked to propose a joint representative from the paramedical professional group as a member of the project group. A professor of Education Research is asked to take part in the project group.
4. A balanced committee is composed from all the nominees (including the student member, the recently graduated doctor and the young specialist) by the OCG, in consultation with the O&O-portfolio manager.
5. The committee is ultimately appointed by the NFU board at the request of the O&O.
6. The other mentioned parties are asked by the NFU to nominate their members.

Good communication about the development of the new framework is essential. The communication is the responsibility of a communication advisor of the NFU.

Appendix 2. Composition of project group

Core group

Within the project group there is a core group charged with preparing the report, consulting with external parties, organising meetings and elaborating the conclusions of the project group. The core group consists of the chair of the project group, the project coordinator and the secretary. The members of the core group form part of the project group.

1	Prof. Roland Laan, director of Radboudumc Health Academy and Professor of Medical Education at Radboud University (chair)
2	Dr. Marjolein van de Pol, general practitioner with a specialism in geriatrics at Radboudumc and medical training director at Radboudumc Nijmegen (project coordinator)
3	Marlou Hacfoort, MSc, education policy advisor at Radboudumc Health Academy (project secretary)

Project group

The project group as a whole is responsible for the final report and consists of the following members, while ensuring representation from different disciplines and areas of expertise.

4	Dr. Jos Bramer, orthopedic surgeon and active in new curriculum medicine (Amsterdam UMC, AMC location)
5	Irene Bruggeman, Academic Hospitals Client Council (CRAZ), chair of client council UMC Utrecht
6	Prof. Monique van Dijk, professor of nursing science (Erasmus MC)
7	René Héman, Society & Health doctor, company doctor, MBA and chair KNMG
8	Menno Hoogendoorn, deputy head/programme coordinator (VWS)

9	Prof. Henriëtte van der Horst, general practitioner and Professor of General Practitioner Medicine (Amsterdam UMC, VUmc location)
10	Prof. Debbie Jaarsma, Professor of Research and Innovation in Medical Education (UMCG)
11	Dr. Marielle Jambroes, society & health doctor, university senior lecturer in social medicine UMC Utrecht and vice-chair Medical Specialties Council (KNMG)
12	Dr. Jan Krikken, cardiologist (UMCG)
13	Dr. Piet Leroy, paediatrician-intensivist and medical didactics, member of the Curriculum Redesign team FHML (Maastricht UMC+) – until June 2019
	Marion van Lierop, MSc, general practitioner and medical didactics, programme coordinator Master medicine (Maastricht UMC+) – from June 2019
14	Sid Morsink, MSc, specialist trainee in Psychiatry (Erasmus MC)
15	Dr. Friso Muntinghe, internist (UMCG) and adjunct coordinator of medicine master's programme UMCG
16	Prof. Marcel Olde Rikkert, Professor of Geriatrics and principal lecturer (Radboudumc), representative for clinical geriatrics (NVKG), specialists in geriatrics (Verenso) and internists in geriatrics (NIV)
17	Prof. Cees van der Vleuten, Professor of Didactics for Medicine Maastricht UMC+ (vice-chair)
18	Wineke Remijnse, policy advisor for quality, Dutch Association of Dietists (NVD)
19	Joni Remmits, student-advisor and member of Medicine Education Committee (OCG/NFU)
20	Dr. Andrea Woltman, bachelor medicine coordinator, chair Advisory Council of Institute of Medical Education Research Rotterdam (Erasmus MC)
21	Dr. Alexandr Šrámek, radiologist and bachelor medicine programme director (LUMC)

Collaboration with the NFU

During the revision process, alignment with the NFU repeatedly took place. The core group and project group were successfully facilitated by Dr. Dov Ballak, Research & Education senior policy advisor, NFU.

Appendix 3. Consulted organisations

Representatives of the UMCs and their internal education organisations

Academic Medical Centre, Amsterdam (AMC)
Erasmus MC, Rotterdam (Erasmus MC)
Leiden University Medical Centre, Leiden (LUMC)
Maastricht UMC+, Maastricht (Maastricht UMC+)
Radboud university medical centre, Nijmegen (Radboudumc)
Groningen University Medical Centre, Groningen (UMCG)
Utrecht University Medical Centre, Utrecht (UMC Utrecht)
VU medical centre, Amsterdam (VUmc)

Representatives and members from various institutes, associations, organisations and health organisations

Anders Gezond
Cliëntenraad Academische Ziekenhuizen (CRAZ)
Cliëntenraad LUMC
Cliëntenraad UMC Utrecht
College Geneeskundige Specialismen (CGS/KNMG)
College Medische Vervolgopleidingen (CMV/NFU)
Decanenoverleg Medische Wetenschappen (DMW/NFU)
De Geneeskundestudent (DG/KNMG)
De Jonge Specialist
Federatie voor Gezondheid (NPHF)
Federatie Medisch Specialisten (FMS)
Health Holland
Institute for Positive Health
Interfacultair Medisch Studentenoverleg (IMS)
Koepel Artsen Maatschappij en Gezondheid (KAMG)
Koninklijke Nederlandsche Maatschappij tot bevordering der Geneeskunst (KNMG)
Landelijke Huisartsen Vereniging (LHV)
Landelijke Organisatie van Aspirant Huisartsen (LOVAH)
Landelijk Overleg Sociaal-Geneeskundigen in Opleiding (LOSGiO)
Landelijke Vereniging van Artsen in Dienstverband (LAD)
Ministerie van Volksgezondheid, Welzijn en Sport (VWS)
Nederlandse Federatie van Universitair Medische Centra (NFU)
Nederlandse Vereniging voor Arbeids- en Bedrijfsgeneeskunde (NVAB)
Nederlandse Vereniging van Artsen voor Verstandelijk Gehandicapten (NVAVG)
Nederlandse Vereniging van Diëtisten (NVD)
Nederlandse Vereniging voor Klinische Geriatrie (NVKG)
Nederlandse Vereniging van Verzekeringsgeneeskunde (NVVG)
NVMO-werkgroep Klinische Vaardigheden
Onderwijscommissie Geneeskunde (OCG/NFU)
Patiënten Advies Raad (PAR) Radboudumc
Stichting Student en Leefstijl
Vereniging Arts en leefstijl
Vereniging voor Artsen in opleiding tot Specialist Ouderengeneeskunde Nederland (VASON)
Vereniging van Specialisten Ouderengeneeskunde (Verenso)
Wageningen University and Research (WUR)

Working conferences and speakers

During the entire process, five working conferences were organised, each with its own theme. These conferences were prepared by a varying combination of project group members and were always opened by the project coordinator, Dr. Marjolein van de Pol.

1. Positive health, prevention and lifestyle medicine in the Medical Training Framework. Roles of doctor and citizen in healthcare (February 2019)
- Nutrition as part of medical training. Focus on the use of lifestyle/nutrition as treatment in the consultation room - *Hanno Pijl, Internist and Professor of Diabetology, Leiden University Medical Centre*
- Approaching lifestyle/nutrition from a social perspective - *Prof. Jaap Seidell, Professor of Nutrition and Health, Vrije Universiteit Amsterdam*

2. Technical developments, including information technology and artificial intelligence, and their consequences for the Medical Training Framework (April 2019)
- *Lecture by Dr. Erik-Jan Vlieger, doctor, entrepreneur and author*

3. The CanMEDS-role "leader": intended final outcomes for the general practitioner (June 2019)
- *Lecture by Dr. Marjolein van de Pol, general practitioner and medical training director Radboudumc*

4. Professional activities in medical training (October 2019)
- What went well on day 1 and what was lacking? - *Myrthe Verhees, MSc, young doctor lecturing*
- Work-based training: practical tips for doctors, without checklists - *Prof. Pim Teunissen, Professor of Workplace Learning in Healthcare, Maastricht University*
- EPAs as aid to help doctors with concrete tasks - *Prof. Jacqueline de Graaf, chair NFU Medical Specialist Training Board*

5. The new framework and the role of patients in education (November 2019)
- Framework 2020 from the patient's perspective - *Irene Bruggeman, chair Client Council UMC Utrecht*

Appendix 4. Abbreviations and definitions used

Begrip	Definitie
BIG	Wet op de Beroepen in de Individuele Gezondheidszorg; Individual Healthcare Professions Act
Biopsychosocial	The biopsychosocial model is an extension of a medical model of human functioning, which pays attention not only to biomedical aspects, but also to psychological and social factors involved in functioning.
CanMEDS	The CanMEDS model is derived from the Canadian method to qualify the training of caregivers in terms of competencies.
Comorbidity	Several conditions are related to a chronic disease, for example depression with dementia.
Final qualifications	Concise descriptions of the minimum knowledge, insights and skills that a pupil or student must have mastered by the end of the training.
EQF	European Qualifications Framework for Lifelong Learning
Formative assessment	Assessment with an educational character. The test is meant as an aid to help guide learning: the student receives feedback on the test result. The feedback does not have an assessment aim.
Health skills	Cognitive and social skills that are needed to obtain, understand and apply information to promote or retain good health (WHO, 2014).
ICF	International Classification of Functioning, Disability and Health, classification of the World Health Organization (WHO). The ICF offers aids for describing human functioning from three perspectives: humans as organisms (functions & anatomical features), human action (activities) and participation in society (participation).
Interprofessional collaboration	Collaboration between professionals who are active in different work terrains
Intraprofessional collaboration	Comparable to interprofessional collaboration, but in this process the same professionals from different specialisms interact with each other, thus for example only doctors or only nurses.
KNMG	Koninklijke Nederlandsche Maatschappij tot bevordering der Geneeskunst; Royal Dutch Medical Association
Multimorbidity	There are several conditions/diseases present at the same time, for example, Parkinson and incontinence or dementia and heart failure.

Multidisciplinary collaboration	Different professionals agree with and about the patient and work then further separately, each from their own perspective.
NFU	Nederlandse Federatie van Universitair Medische Centra; The Netherlands Federation of University Medical Centres
NLFQ	The Dutch Qualification Framework NLQF provides clarity and certainty about the level of qualifications
OCG	Committee for Undergraduate Medical Education & Training
Palliation/ palliative care	Palliative care is care that improves the quality of life of patients and their loved ones who are faced with a life-threatening condition or vulnerability, by preventing and alleviating suffering, by early alerting and careful evaluation and treatment of problems of a physical, mental, social and spiritual nature. During the course of the disease or vulnerability, palliative care pays attention to maintaining autonomy, access to information and choice options. (= Definition of Quality Framework for palliative care IKNl 2017, modified WHO 2002)
Positive health	New definition that describes health as “the ability to adjust yourself and take control, in light of the social, physical and emotional challenges of life”. It is an alternative to the WHO definition, which defines health as “a condition of completely physical, mental and social well-being and not just the lack of disease or defect”.
Profile	One category of medicine, a deepening of the doctor’s expertise level not (yet) leading to the expertise level of a specialism that is designated as a profile by a board (official definition of CGS).
QANU	Quality Assurance Netherlands Universities. Independent foundation that supports education and research assessments in higher education and provides advice and training in the field of quality control.
Summatieve toetsing	Assessment with an evaluative nature (it is accompanied by a mark or grading).
Umc	University Medical Centre
WFME	World Federation for Medical Education (WFME)
WGBO	Medical Treatments Contracts Act
WHW	Higher Education and Academic Research Act

Appendix 5. Relevant legislation

Higher Education and Academic Research Act (WHW)

The Higher Education and Academic Research Act (WHW) aims to offer one legal framework for e.g. scientific education, higher vocational education, education at the Open University and the academic hospitals.

Individual Healthcare Professions Act (BIG)

General

The BIG Act contains rules for professions recognised by the Minister of Public Health in the field of public health and for the professionals who provide assistance to individual patients. The Act applies to both independently established professionals and ones working in employment. Its aims are safeguarding and promoting the quality of the professional training and that of the professional practice.

Title protectionThe starting point of the BIG Act is that the ban on exercising medicine by unauthorised persons no longer applies. With the exception of a number of reserved activities, everyone can carry out medical activities without using the professional title (see 2.2.3). Concurrently, for the professions specified in article 3 of the Act, including doctors, there is a system of constitutive registration and professional title protection in place. Registered professionals are granted the right to use a legally protected title. By using this title, it is evident that the person is uniquely expert in a particular subfield of healthcare. A number of legal requirements must be met if the doctor wants to use the protected title. Meeting the training requirements is the most important one. The Act determines that the one who wishes to be entered as a doctor in the register must possess a certificate confirming that s/he has met the legal training requirements.

Reserved activities

An important part of the BIG Act concerns the regulation of the reserved activities. As already stated, the Act takes as its starting point that in principle everyone may carry out medical activities without using the professional title. An exception applies only for a number of activities that can present a great risk for patients if they are carried out by inexpert professionals. For those activities a competence scheme remains applicable. This means that the reserved activities can only be carried out independently by BIG-registered professionals who are competent according to the BIG Act and are expert in them. Caregivers who are not independently authorized may only carry out these activities under the supervision of an independently authorised person (taking into account the relevant legal conditions).

The Act specifies the following reserved activities: surgical operations, midwifery operations, catheterisation and endoscopy, biopsies and injections, narcosis, use of radioactive substances and ionizing radiation, cardioversion, defibrillation, electro-shock, pulverization of stones, artificial fertilisation and prescribing medicines only available on prescription.

Independently authorised doctors

According to the BIG Act, doctors are considered competent in the entire field of medicine, and are therefore independently authorised for carrying out all reserved activities. They may make an assessment themselves and decide whether they shall carry out the activities themselves or refer them to another professional.

However, the competence to independently carry out the reserved activities using the title of doctor is limited by the individual doctor's proficiency required for carrying out the activity properly. A newly

graduated doctor is authorised to carry out all surgical activities but not competent in the entire field of surgery and thus may not carry out all surgical operations according to the BIG Act.

BIG Act in relation to the Medical Training Framework
The Higher Education and Academic Research Act (Wet WHW) contains general articles about education plus an article that refers to the BIG Act for specific training requirements for the doctor. Based on the BIG Act, the training requirements for the profession of doctor are documented in the Decree on educational requirements for doctors. This general administrative measure (amvb) contains the general final qualifications for the training, as specified in the Medical Training Framework. If the Framework is modified, the amvb must also be revised. The original amvb (from 19 July 1997, Law Gazette 379, date of entry into force 1 December 1997) has been revised twice: in the decree of 3 May 2004 (Law Gazette 286, date of entry into force 23 September 2004) and in the decree of 26 August 2010 (Law Gazette 704, date of entry into force 1 January 2011).

Medical Treatment Contracts Act (WGBO)

Since 1995 the Medical Treatment Contracts Act (WGBO) has been in force. A doctor and a patient who enter into a treatment relationship together conclude in legal terms a "treatment contract". The WGBO arranges the rights and obligations of doctor and patient in that framework. The goal of the WGBO is strengthening and clarifying the patient's legal position. A basic norm in the WGBO is the provision that the caregiver must comply with the conduct of a good caregiver in his/her work and must also act in agreement with his/her responsibility, which derives from the professional standard valid for caregivers. The WGBO also establishes the principle of "joint decision-making". "Joint decision-making" means that the patient and doctor decide together on the most suitable care – based on the patient's wishes and situation. The WGBO also arranges the patient's privacy, the right to a second opinion, the keeping of a medical file and the patient's right to access that file, and the representation of patients if they cannot decide themselves.

National and international frameworks

The Treaty establishing the European Community states that the member states shall aim to remove restrictions to the free movement of people and services. This means, for example, that the subjects of the member states can exercise their profession in another member state than where the professional qualifications were acquired. The same treaty specifies that guidelines will be established for the mutual recognition of diplomas, certificates and other titles. As a result, on 20 October 2007, the European directive 2005/36 EC concerning the recognition of professional qualifications came into force, specifying the minimum conditions for the initial medical training in Europe which must be met.
The way in which medical programmes in Europe implement this varies. To enable the qualifications of professions in Europe to be compared, a European qualification network was designed: the European Qualifications Framework for Lifelong Learning (EQF) was approved by the European parliament on 23 April 2008. The EFQ describes eight general reference levels that are related to the level of the learning outcomes regarding knowledge, skills and competencies. The so-called "Dublin descriptors", which describe the final qualifications for higher education in Europe, are incorporated in levels 5 - 8 of the EQF/NLQF.
Countries in Europe can compare their programmes through a qualification framework at the national level with those in the EQF, which standardizes mutual comparisons.
In the Netherlands the characteristics of many programmes are documented in the Dutch qualification framework (Netherlands Qualification Framework, NLQF). University master's programmes, like training to be a doctor, are assigned to level 7 (see also chapter 2 of this framework).

International frameworks

The World Federation of Medical Education (WFME) was established in 1972 by the World Medical Association (WMA) and the World Health Organization (WHO). The organisation is still housed in the WHO and aims to promote the quality of medical programmes worldwide. The accreditation framework of the WFME, the so-called WFME Recognition Programme, provides standards for different levels of medical programmes. International recognition of the Dutch doctor's qualification is possible if it meets the standards formulated by the WFME regarding the initial training to be a doctor.

Appendix 6. Background information about clinical reasoning and decision-making

Clarification

Clinical reasoning forms an important part of a doctor's work. Clinical reasoning concerns critical thinking and solving problems and arriving at a substantiated treatment plan (and decision-making) for health issues and patient-related problems (at both the individual and population level) in medical practice. We consider the practice of medical action more broadly than just reasoning about the individual patient problem.

This appendix provides a definition of clinical reasoning and decision-making and specifies the necessary competencies for a doctor. With clinical reasoning the doctor integrates a sound knowledge basis and knowledge about issues of health and disease with the contribution of the individual patient or health issue in the population.
Clinical reasoning is approached from the "biopsychosocial model" of Engel, in which health and disease are constantly seen increasingly from the biological (including pathophysiology and epidemiology), psychological and social, spiritual/sensory and cultural components of a health complaint / symptom or social health issue.
We shall talk in this appendix about 'patient', but it can also be read as citizen with a health need or a social health issue.

Definition of clinical reasoning and decision-making

Clinical reasoning is a context-dependent way of thinking and deciding, to support the work in professional practice (in this case, medical). In relation to the structure, it can best be described as a cyclical process that starts with a patient-related problem or health issue, in which three phases can be distinguished:

1. Diagnostic phase
2. Therapeutic phase
3. Evaluation phase

Clinical reasoning phase	Individual patient problem	Population health issue
1. Diagnostic phase	a process describing the route from complaint/symptom to diagnosis	
2. Therapeutic phase	Goals (treatment) are formulated, and doctor and patient jointly agree on a treatment plan (joint decision-making)	Goals are formulated, and doctor and health promotion agency agree on treatment plan choices
3. Evaluation phase	Goals (treatment) are evaluated together with the patient, and there is a reflection moment for the doctor. If necessary, a new starting point to the cycle follows, and the doctor will ascertain whether the diagnosis must be adjusted and then adjust any treatment or treatment goals and finally evaluate again, etc.	Evaluation of the goals set by the doctor and health promotion agency and reflection on the process. If necessary, a new starting point to the cycle follows, and the doctor together with the health promotion agency will ascertain whether the problem definition of the health issue must be adjusted and then any goals adjusted if necessary and finally evaluate, etc.

Clinical reasoning and decision-making

The newly graduated doctor is capable of:

- Carrying out the diagnostic phase of the clinical reasoning process for a patient-related problem (complaint/symptom) or health issue and preparing hypotheses suitable for the patient's phase of life (child, adult, elderly) or the nature of the population issue
    - For this purpose, the doctor collects biopsychosocial data from the history/heteroanamnesis, physical examination, possibly the patient's own data (wearables, etc.) and that from other caregivers, prior history and supplementary examination (diagnostic or preventive) or information from population data or social health data

- Based on the information from the diagnostic phase of the clinical reasoning process, carry out the therapeutic phase
    - For an individual patient-related problem or health issue
        - Formulate a goal (treatment) matching the patient's context, life phase and wishes
        - Arrive at a decision together with the patient that reflects the formulated goals
        - Referral to another caregiver as necessary
    - For a population-related health issue
        - Advise measures for a health issue to an individual patient or agency regarding health promotion matching the context of the population-related health issue

- Carry out the evaluation phase of the clinical reasoning process
    - Evaluate the set goals (treatment)
    - Referral where necessary
    - Reflect on one's own actions
    - As necessary, repeat the clinical reasoning cycle

Appendix 7. Keywords for the knowledge domain

The newly graduated doctor has an understanding of

1. the philosophical, ethical and historical principles of medical practice.

Key words:

- individual as subject assigning meaning
- individual experience and action (disease experience, quality of life)
- respect for autonomy and identity, do no harm, equity and do good
- limits of medical (technical) action, choices in care
- team, society
- dealing with scarcity (prioritising, rationing, selection) and with abundance, efficiency
- dealing with dilemmas, for example, abortion, euthanasia, gene therapy, organ transplantation, vaccinations
- the moral implications of being a leader by the doctor
  desirability or not of implementing increasing technical possibilities
- influence of technical innovation on cost/availability of care
- desirability or not of digitalisation/storage of personal research data and data protection when collecting big data
- privacy legislation
- history of biological, psychological and social definitions of health and disease
- most important historical landmarks (for example, mechanistic thinking about the body, development of antibiotics, anaesthesia)
- principles of evidence-based medicine and its customization according to the patient and treatment context.
- complexity and unpredictability of disease interactions with multimorbidity
- current thinking about disease and health in historical and lifespan perspective

2. he structural and physiological properties, and the connections between them, of the most important biomolecules and molecular systems in eukaryotic cells, tissues, organs and organ systems in the human body.

Key words

- structure, function and biosynthesis of DNA/RNA, proteins, fats and sugars, vitamins and minerals, and regulation mechanisms that are involved
- interactions of macromolecules to macromolecular complexes and cell membranes (or: structure and function of macromolecules, formation of macromolecular complexes and cell organelles from macromolecules)
- storage and transfer of genetic information and repair mechanisms when defects occur
- principles of working of enzymes in chemical reactions
- regulation of inter- and intracellular signal transduction
- structure and function of cell organelles, cytoskeleton and intracellular compartimentalisation
- metabolism (energy, anabolism, catabolism), basal metabolism rate
- regulation of cell cycle, division, migration and ageing mechanisms
- membrane transport and communication of cells with the outside world
- cell differentiation and functional aspects of cell specialisation; stem cells
- functional cellular structure of primary tissues and organs
- functional structure and topography of the human body
- imaging techniques in relation to the structure and function of the body

3. the striving of the human organism towards homeostasis on every level, involving adjustments to conditions and communication with the environment.

Key words:

- homeostasis, physiological control systems and their mutual relationships: endocrine, neurological and neuro-endocrine regulation
- central and peripheral nervous system, autonomous nervous system
- water compartment and temperature regulation, acid-base balance, electrolyte composition
- interaction with the environment and adjustments of the body to conditions
- changes that occur in the body under exertion, stress and disruption of sleep and circadian rhythms, and changes in nutritional intake (e.g. too much, too little, fasting)
- positive health: the capability of an individual to adjust to the challenges of life

4. the reaction to damage of or threat to the structural or functional integrity, on the molecular, cellular, tissue, organ and organism level.

Key words:

- physiological adjustment of cells and tissues to environmental conditions
- influence of nutrition, exercise
- cell and tissue damage and cell death
- acute and chronic inflammation: molecular, cellular and tissue aspects
- tissue repair, regeneration and healing
- hypersensitivity and immune-mediated tissue damage
- disruption of physiological functions of organs and organ systems
- pathophysiological mechanisms of conditions and diseases at the molecular, cell biological and tissue level

5. the conception, development, growth, maturation, ageing and dying of an organism

Key words:

- sexual reproduction: gametogenesis, fertilisation and implantation
- development of fertilised egg cell to multicellular organism
- embryogenesis
- pregnancy
- congenital developments and external influences on their development
- infertility
- physiology of development phases (growth, development, ageing, dying)
- molecular, cellular and physiological aspects of tissue and organ ageing and the functioning of an organism
- physiological mechanisms of ageing and their structural and physiological and patho-physiological consequences (e.g. disposable soma theory, wear and tear, mitochondrial/oxidative stress, network theory of ageing, atypical presentation)
- pathophysiology of dying and the death of an organism
- epidemiology of ageing-related diseases and death
- pharmacotherapy/polypharmacy
- interactions between diseases and medicines
- defining the term health in the different phases of the human lifespan

6. connections between genetic information and the associated phenotype. The doctor knows and understands the influence of non-genetic factors on this phenotype.

Key words:

- human genome and the chromosomal basis of heredity
- Mendelian and non-Mendelian inheritance patterns and their molecular backgrounds
- molecular/biological backgrounds of genotype and phenotype
- genetic variation in individuals and populations: mutations and polymorphisms
- molecular and cellular basis of genetic conditions
- scientific basis of the identification of genetic conditions and

treatment of such conditions
- epigenetics
- matching treatment to genetic profile (genotype)
- genetic modification

7. the physiological and pathological relationships between host and micro-organisms.

Key words:
- general properties, structure and physiology of infectious agents
- microbiota of the body
- contamination, infection and virulence of micro-organisms
- molecular mechanisms of the working of antibiotics and resistance
- aetiology, pathogenesis and consequences of common infections
- the body's barriers to infectious agents
- molecular and cellular mechanisms of congenital defence
- molecular and cellular mechanisms of the humoral and cellular immune response
- backgrounds of congenital and acquired immunodeficiencies
- auto-immunity and hypersensitivity
- vaccination and its principles
- transplantation-immunology
- public health aspects: social impact of infections, reporting and measuring

8. the influence of external factors on maintaining or promoting health and their role in the development of diseases.

Key words:
- effects of stimulants, nutrition and lifestyles on health/tissue damage/cell death
- food safety and nutritional deficiencies
- nutrition, lifestyle (nutrition, exercise, sleep, stress, stimulants, risky sexual behaviour), prevention and health
- anorexia and obesity
- addiction
- hazardous influences from the environment
- intoxication
- living and working conditions
- lifestyle medicine as treatment (part of it)
- the most important diet adjustments for diseases, and general knowledge of healthy nutrition
- DOHAD (developmental origins of disease and health), Adverse Childhood Events and transgenerational effects

9. mechanisms to influence behaviour to promote health.

Key words:
- universal, selective, and indicated care-related prevention methods of education and information provision
- the association between prevention and treatment plan of governments and social trends in care and well-being
- conditions for "shared decision making"
- 'motivational interviewing', phases of behavioural change, medical psychology, knowledge and understanding of the interaction between functional illiteracy and disease insight and behaviour, therapy compliance.
- Association between contributions from different caregivers and their share in influencing behaviour and prevention (being a leader and being a follower and different styles of this)
- Influence of networks and social media (e.g. mis-information) on the patient's autonomy/considerations

10. the most important aspects of aetiology, pathogenesis and pathophysiology of neoplasia on the cell, tissue, organ and patient level, and on systemic effects.

Key words:
- neoplastic transformation and progression on the molecular and cellular level
- characteristics of benign and malignant tumours
- invasion and metastasis
- anti-tumour effect of the immune system
- points of application for the treatment of tumours
- definitions, nomenclature, staging and grading of tumours
- systemic effects of tumours

- heredity and risk factors for tumours
- tumour markers

11. commonly used research methods and measurement methods that concern the structure and function of molecules, cells, tissues, organs and organisms.

Key words:
- molecular-biological, biochemical, cell biological and histological techniques used in medical-biological research
- use of animal models in medical-biological research
- genetic screening and diagnostics
- biochemical, clinical-chemical and pharmacological analysis techniques
- immunological and microbiological analysis techniques
- diagnostic-pathological analysis techniques (for example, biopsy, autopsy)
- physical analysis techniques (for example, heart, lung examination, echo, radiograph)
- estimation of clinical relevance and prevention of over-diagnosis

12. scientific basis of therapeutic actions.

Key words:
- molecular mechanisms of action of medicines on cells, tissues, organs and organ systems and their adverse effects
- personalised prescribing in the correct context, person-oriented medicine (personalised medicine / health care) (e.g. involving pharmacogenetics) and explaining it to the patient
- therapy and carrying it out and writing prescriptions
- non-compliance with medication advice
- therapy compliance, principles of pharmacodynamics and pharmacokinetics, pharmacology and its clinical applications
- applying knowledge of adverse effects and interactions of medicines (general principles and frequently occurring problems)
- WHO 6-step method for rational prescription and STRIP method for evaluating medication
- surgical interventions and techniques
- physical therapy
- placebo and nocebo effect
- radiotherapy
- immunotherapy for cancer

13. the psychological and social factors that influence the normal development of humans

Key words:
- development during lifespan (baby, child, teenager, adolescent, adult, elderly)
- most important behaviour models and personality theories
- different roles of individuals throughout life (learning principles, cognitive functioning, behaviour)
- influence of social environment (family, relatives, environment, work), cultural and religious background and the health system
- influence of personality characteristics (sex, gender)
- normal coping mechanisms, symptom perception
- context
- participation

14. psychological and sociological mechanisms in relation to disease and health

Key words:
- basal characteristics of the bio-psycho-social model
- changes in feeling, behaviour and role with disease, secondary disease gain
- (health-related) quality of life and death
- iceberg phenomenon
- social network, group, culture, stigmatisation
- stress (choice), burn-out
- vulnerability and resilience
- varying roles of the individual (for example, partner, professional, patient, victim, informal carer)
- sexual health and sexuality with disease
- interaction between self-image of individual and disease
- dealing with restrictions, paying attention to adjustments / recovery of societal role (ICF: International Classification of Functioning, Disability and Health)

15. the mechanisms underlying the development and persistence of mental problems (and insufficiently explained physical symptoms) and conditions, in association with the societal context of the individual.

Key words:
- stressful living conditions (biographical, biological, psychological and social determinants)
- stress and coping mechanisms
- vulnerability of people
- resilience of people
- genetic predispositions
- brain conditions
- development as child and ageing of adult
- crucial experiences during lifespan
- cognition and behaviour
- support (social) in the patient's environment
- anxiety and depression
- role of the environment (for example, family, peer group, colleagues, work conditions, doctor)
- insufficiently explained somatic symptoms (SOLK)

16. the structure of society in a globalising world

Key words:
- composition of society (multicultural), inclusivity
- influence of diversity (e.g. age, life phase, culture, religion, handicaps, gender, sexual orientation, background) on disease and health (experience of them)
- long-term changes (for example, fit and vulnerable elderly, greying, immigration)
- social classes in relation to health
- influence on health and healthcare
- knowledge of non/functional illiteracy and health skills

17. the organisation, quality (legal) legislation and financing of care in the Netherlands.

Key words:
- aim, importance, supply and demand
- organisation of, for example, hospital, homecare, regional indication organ, general practitioner, informal carers (charting care network), network medicine, public healthcare
- intra-, trans- and extramural
- chain care (collaboration) and "disease management"
- central control and autonomy for the patient
- different classification principles of healthcare
- role of doctors and other care professionals, care providers, care insurers and patients' organisations
- role of supervisors (Inspectorate for Healthcare, labour inspectorate)
- role of governments in, for example, treatment plan, organisation, financing, accessibility, availability, quality of care regulations regarding work disability
- organisation/conduct of occupational healthcare, working conditions-curative collaboration
- global meaning of and differences between care insurance act and long-term care act
- informal care, participation society, municipal youth aid, elderly care and work reintegration, political developments, preparing treatment plan (ministry, institutes)
- influence of media on care
- covenants, dealing with industry (e.g. pharmaceutical)
- treatment stimuli (payment method to caregivers)
- multidisciplinary consultation
- vulnerable points: transfer of information (communication)
- privacy/GDPR/EPD/informed consent, medical-ethical aspects of scientific research
- rules concerning the doctor (for example, Professions in Healthcare Act)
- rules regarding the relationship between doctor and patient (Medical Treatment Contract Act, privacy, information obligation, entitlement to information)
- main aspects of WLZ (long-term care act), WPG (public health act), Youth Act, WMO (social support act), ZVW (care insurance act),

obligatory GGZ act and care and coercion act
- accessibility, cost and sustainability of care (at both the level of the professional and the healthcare institution and the individual level: deductible, supplementary insurance, care policy)

18. the practice of science

Key words
- the structure of medical-scientific publications
- distinction between scientific and non-scientific knowledge
- principles of evidence-based medicine (EBM)
- similarities and differences of quantitative and qualitative research
- empirical cycle and successive steps in the process of evidence-based medicine (formulating question, formulating and conducting search strategy, selecting and evaluating the information found)
- the aspects that are important for analysing a scientific publication (e.g. validity, reliability, verifiability and generalisability)
- Bayesian thinking
- Searching, finding and critically evaluating the medical-scientific literature ('critical appraisal')
- verbal and written presentation to fellow professionals and laypersons about scientific outcomes
- under supervision, formulate a research question and write a research proposal
- write/understand/evaluate/implement protocols and clinical practice guidelines
- scientific guidelines and substantiate a deviation from them (e.g. for protocols derived from big data and/or based on machine-learning)
- data from technological innovations (wearables, digital information) in individual treatment
- information collection and application (e.g. dealing with results obtained from big data, AI)

19. the most important research designs and statistical methods and measures of health and disease

Key words
- design of quantitative and qualitative research
- the research designs that are suitable for aetiological, prognostic, diagnostic research, or research into the effects of therapy (concerning effectiveness, cost and safety), intervention research, operations research, infection and epidemiological research
- the terms from descriptive statistics like (ab)normality, central tendency and spread, and the associated graphic presentations
- the terms statistical significance, reliability interval, sensitivity and specificity
- the chi-square test, the t-test, variance analysis and advanced analysis methods such as survival analysis, regression analysis and meta-analysis
- mortality ratios, disease ratios and indicators of disease and health
- aetiology, association, causality, validity, confounding, effect modification, representativity, cohort studies, charting determinants on the population level

20. the most important aspects of quality of care and the different perspectives from which they can be approached (patient, doctor, insurer, governments, etc.)

Key words:
- usefulness and limitations of guidelines, standards and protocols.
- role in different phases of the medical process
- legal boundary conditions
- evidence-based medicine, evidence-based practice
- hygiene, quality management (quality cycle, PDCA cycle), patient safety, safety management systems
- system approach versus person approach to errors
- reporting adverse effects to LAREB (legal obligation)
- implementation of new insights into the practice, change management
- health technology assessment
- medical-ethical assessment of scientific research
- quality indicators

21. the necessity of and possibilities for innovation of healthcare

Key words:

- importance of identifying and involving stakeholders
- way of describing the relevance and urgency of a problem in relation to evidence and perspectives of stakeholders, and how the quality, accessibility and affordability of care can be involved
- possibilities of technological *(new devices, wearables, e-/m-Health, domotics and robotics)* and biomedical (pharmacogenetic, genetic, immunology, oncology, etc.) developments in care and treatment
- possibilities of "big data" *(data science, prediction models, personalised medicine consequences and artificial intelligence)*

22. theoretical backgrounds of the doctor-patient relationship, health skills and communication.

Key words:

- the basic contextual terms of a consult ("symptom", "disease", "reason for coming", "care need", "anamnesis", "examination", "differential diagnosis", "diagnosis", "treatment", "monitoring")
- the consult phases, the types of consults (also preventive and palliative) and the roles of the doctor and patient in them
- classification systems of symptoms, diseases, syndromes and consequences of diseases
- the differences between the various types of care like curative, symptomatic, rehabilitating, palliative and preventive
- the different forms of clinical reasoning and their value in different conditions
- essential characteristics of communication (coding, sending, receiving and interpreting information)
- coping with the patient's resistance, outspoken patients, dealing with aggression/aggressive behaviour
- context, setting goals
- verbal, written, digital communication
- the effects of public communication (medical) (e.g. PO Box 51, general practitioner, vaccination campaign) on the individual (effects of differences in, for example, cultural background, sex, socioeconomic situation, age, psychological status)

23. the three dimensions the term professional behaviour is based on

Key words:

- dealing with tasks (lifelong learning, curious approach, responsibility, self-reliance, limits of own competencies, professionality and integrity, collaboration)
- coping with others (empathy, impartiality, searching for contextual information, matching with the other's emotions and capacity to understand, making concrete, verifying, transfer, referral, giving and receiving feedback, coping with differences in opinion and conflicts, coping with outspoken patients, coping with resistance, encouraging response, explaining, negotiating, meta-communication, implementation of "informed consent" procedures)
- dealing with yourself (self-observation, insight into own emotions and own role as doctor, motivation, cognition including values, norms, prejudices, the personal development history and its effect on one's own behaviour, requesting feedback, self-critical attitude, taking control, developing personal leadership, monitoring limits of own competence, balance between study/work and private life, "fit to perform", coping with high workload, stress and tension)

24. the essence of medical professional behaviour as formulated in the Dutch doctor's oath and in the rules of medical confidentiality

Appendix 8. Elaborated example of a professional activity

Professional activity	**Giving information about healthy lifestyle and prevention of diseases**
Specifications	**Specifications:** • Restricted to legally competent patients with a non-life-threatening condition. For other patient categories the tasks may be carried out under a suitable level of supervision. • Includes recognising situations in which there is room to provide the patient with information and advice about a healthy lifestyle and prevention of diseases, being able to explain the importance of this to patients, making use of the motivating discussion procedure and valid guidelines and the patient's context. • Documenting the talk in the patient's file.
Most relevant CanMEDS competence domains	☒ Medical expert ☒ Communicator ☒ Health advocate ☒ Collaborator ☐ Scholar ☐ Leader ☐ Professional
Required knowledge, skills and attitude	**The required knowledge includes:** • Aspects of different lifestyles and their influence on the patient's health and disease • Risk factors and possibilities to prevent commonly occurring clinical pictures • Theory of conducting motivating discussions • Insight into the different forms of prevention and their availability **The required skills include:** • Communicating clear information by using understandable language (avoiding jargon) and a proper balance of outlines and detailing, adjusted to the patient or loved ones • Assessment of the patients' and loved ones' understanding and illustrating with the use of examples • Conduct of motivating discussions, matched to the patient's current motivation • Time management **The required attitude includes:** • Creating a safe environment in terms of attitude and contact, in which the patient and family feel comfortable asking questions, without losing control over the conversation • Knowing one's own limits in terms of knowledge and expertise and asking for supervision or help, as necessary

Appendix 9. The new framework and the role of patients[9] in education

In this framework a lot of attention is paid to the role of the patient as partner: not only in care, but also in the learning environment of medical students. During an interactive meeting with representatives of patient and client councils from the various UMCs, the main question was how could patients help medical programmes to develop curricula that are oriented to realising the intended final qualifications.

Patients' organisations and advisory councils are proponents of a structural sounding board function for education in all UMCs, with the aim to draw attention continuously to the patient's perspective. By showing students and having them experience that a patient is more than just their disease, that the patient is someone who lives in their own context, and that being sick can have a radical effect on the patient's life, we are training doctors to watch out for these aspects and to be a good role model for others in turn.

How patients can participate in educating students differs from patient to patient and depends on the educational setting. Students can learn from patients, with patients and through patients. By learning from and with patients, the encounter between patients and students takes place in an authentic context, with attention being paid to the diversity of patients. Care can be found all around us, the educational material lies literally on the street. With learning through patients, the patient has a teaching role in a specific educational setting or as provider of feedback. Patients can participate in different educational settings, in which it is important to match goals and wishes closely.

The points that should be reflected in the medical training from a patient's perspective follow on to an important extent from the revisions formulated in the framework:

- More emphasis on promoting health, paying attention to lifestyle and prevention
- Learning to communicate adequately, oriented to human contact and following on from the skills and possibilities of those you are communicating with.
- Learning to realise that patients suffer if the communication between professionals is not smooth.
- Attention for diversity: the doctor must be able to deal with all kinds of people while also being able to employ cultural skills.
- Notice the person behind the patient, their context and the consequences of being ill. This includes the patient's well-being despite being sick.
- Regard for the patient's empowerment, for example by showing the patient where they can find the correct information (e.g. assisting choice).
- Shared decision-making: coming to the right decision together with the patients about the treatment plan to follow.

Patients can also contribute to the starting point of "lifelong learning". Learning is stimulated in a context that pays attention to diversity and customised care. Each consult could be concluded with mutual feedback; patients could also compliment doctors more often when something goes well. In addition, the patient benefits from a fit doctor: attention paid to the

9 Where the term "patient" is used, we also mean: representatives of patient or client councils, who are involved in some way with the education of medical students.

patient's situation and understanding of their context can have a positive effect on the student's understanding of the importance of maintaining a good balance between work/study and rest.

Conclusion

Patient participation in education offers many opportunities to enrich the learning environment, but this is not yet self-evident. Wherever the new framework stresses a larger role for the patient in his/her own health, the patient's perspective deserves a structural place in the learning environment.

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