



Principal Relevant Objectives and Framework for Integrated Learning and Education in Switzerland

Bern, March 15th 2017

A mandate of the Joint Commission of the Swiss Medical Schools
Prof. P.-A. Michaud, Dr. P. Jucker-Kupper and the members of the working group



Profiles/Principal Relevant Objectives and Framework for Integrated Learning
and Education in Switzerland - March 2017
Produced by a Working Group under a Mandate of the Joint Commission
of the Swiss Medical Schools

Approved by the Joint Commission of the Swiss Medical Schools [SMIFK/CIMS],
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Profiles does not aspire to describe the whole range of medical practice.
Rather, it outlines **the level of expertise that a physician must possess at
the beginning of his/her postgraduate training.**

Profiles purposely focuses on roles, tasks and situations that integrate
medical disciplines. To accomplish such tasks and address each of the situ-
ations listed, **the student must acquire the scientific foundations of medi-
cine and the knowledge inherent to each medical discipline.**

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Introduction

The Joint Commission of the Swiss Medical Schools (SMIFK/CIMS) decided in 2000 to establish a Swiss Catalogue of Learning Objectives for Undergraduate Medical Training (SCLO), which was based on a similar Dutch blueprint. A second version of the SCLO was developed and launched in 2008. The catalogue includes a common set of learning objectives that the students of all faculties should reach by the end of their master curriculum. Moreover, the document, according to the Federal Act on the University Medical Professions (MedBG/LPMéd) defines the contents of the Federal Licensing Examination (FLE); it is also a prerequisite for the accreditation of the curricula of the Swiss faculties of medicine.

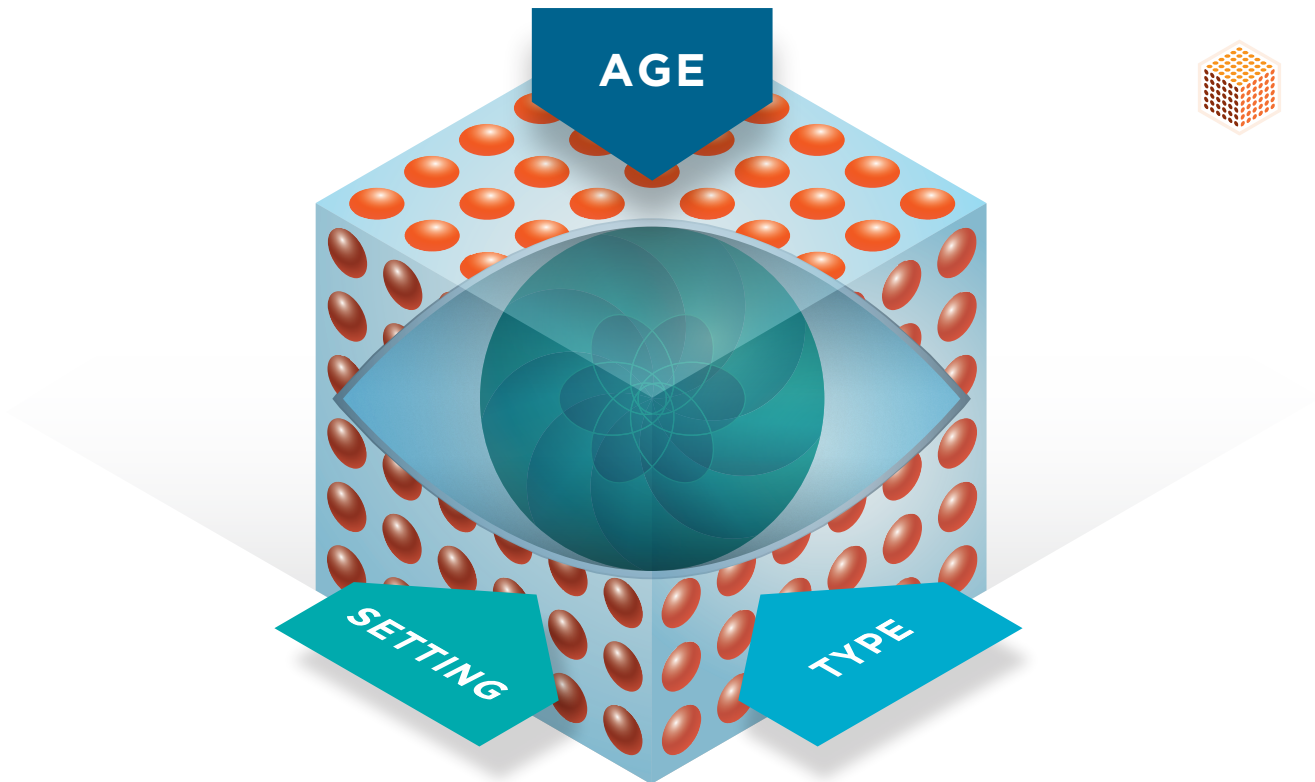
Given the evolution of the field of medicine and of medical education, the SMIFK/CIMS has decided to embark on a total revision of the SCLO. The working group in charge of this work comprised experts from all Swiss medical faculties and of other institutions involved in undergraduate medical education, as well as representatives of students and postgraduate medical education.

The new document encompasses the common medical situations that a physician should be able to handle on the first day of his residency. It outlines a generic profile of the physician and describes the **P**rofile of **R**elative **O**bjectives and a **F**ramework for **I**ntegrative **L**earning and **E**ducation in **S**witzerland. Thus, *PROFILES* provides a generic description of competence-driven learning objectives that cover the field of medicine without focusing on specific disciplines. This means that although basic medical sciences and medical disciplines are not explicitly mentioned, their knowledge must be acquired to meet the objectives given in *Profiles*. This approach strives to promote the intellectual autonomy of students and fosters a holistic vision of the practice of medicine. It also stresses the characteristics of a good doctor, such as communication skills, professionalism, capacity for interprofessional collaboration as well as the ability to adopt a reflective view of the progress of medical science.

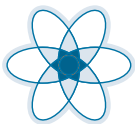
Based on the deliberations of the Joint Commission of the Swiss Medical Schools, the Profiles document builds on the scientific foundations of medicine and acknowledges that scientific teaching and training is an integral part of undergraduate medical education. As such, it also establishes an important basis for postgraduate and lifelong learning, for scientific progress and for evidence-based medicine.

The working group has been greatly stimulated by the different versions of the Dutch Framework for Undergraduate Medical Education in the Netherlands (http://www.nfu.nl/img/pdf/09.4072_Brochure_Raamplan_artsopleiding_-_Framework_for_Undergraduate_2009.pdf) and gratefully acknowledges the support of Professor Olle Ten Cate (University of Utrecht), initiator of the concept of Entrustable Professional Activities. The first chapter of general objectives has been adapted with permission from the 2015 CanMEDS document. CanMEDS 2015 is a publication of the Royal College of Physicians and Surgeons of Canada (<http://canmeds.royalcollege.ca/en/framework>). The second chapter on Entrustable Professional Activities is based with permission on a series of training objectives built by the American Association of Medical Colleges (<https://www.aamc.org/initiatives/coreepas/>). The members of the Working Group express their gratitude to the above mentioned institutions and to the many colleagues who have made comments and suggestions over the three years of work on Profiles.

As illustrated by the graphic below, all the objectives and situations apply to any age group [baby, child, adolescent, young and middle-aged adults, old and very old persons], to any set of circumstances [prevention, acute, rehabilitation, chronic and palliative care] and to any type of setting [ambulatory, hospital, long-term and community]. Also, the general objectives of Chapter 1, the entrustable professional activities [EPAs] described in Chapter 2 and the situations listed in Chapter 3 as starting points are closely interconnected. To achieve the expected level of expertise, the student must master the corresponding discipline-related knowledge and skills, and must also adopt the attitude appropriate to the circumstances.



Profiles displays three interdependent chapters of equal importance :



A first chapter listing a series of learning objectives related to the different roles of doctors, inspired by the CanMEDs Roles used worldwide



A second chapter presenting a set of entrustable professional activities (EPAs) reflecting the main medical tasks that a physician must be able to perform autonomously on the first day of his residency



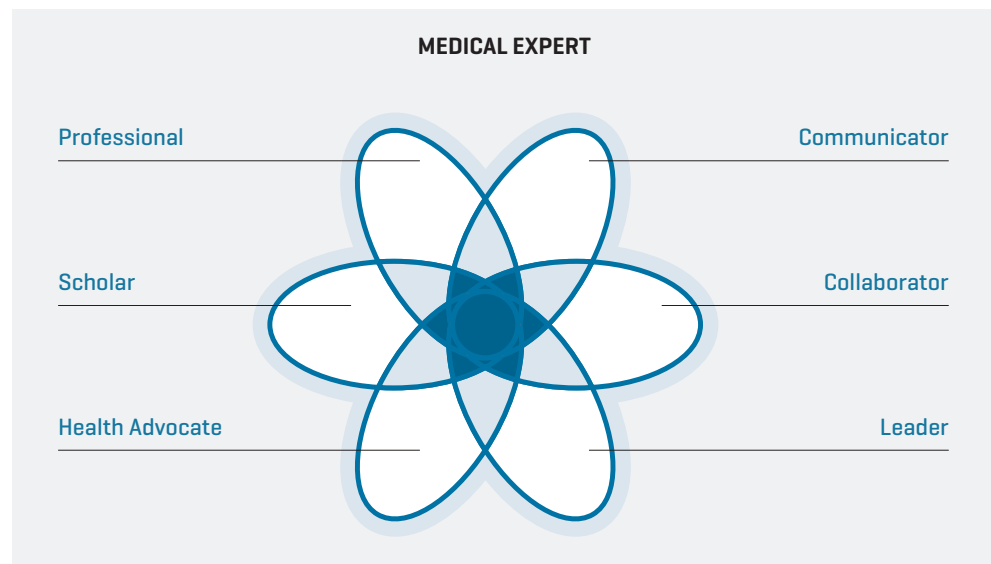
A third chapter listing around 265 common clinical situations that a doctor is expected to deal with after passing the Swiss Federal Licensing Examination

General Objectives

[Adapted from the CanMEDS 2015 model and the second Swiss version of the SCLO]

The original *CanMEDS Physician Competency Framework*, developed by the Royal College of Physicians and Surgeons of Canada, already inspired the description of the roles of physicians in the second version of the SCLO. *Profiles* defines the following set of training objectives, building on the review of the CanMEDS model as presented in the latest available version [2015]. The objectives are organized on the basis of a short description of seven generic roles of physicians, as illustrated in the figure below. While two chapters cover specific aspects of the practice of clinical care, the objectives listed below represent the core of the undergraduate curriculum for all Swiss medical faculties. This chapter promotes an integrative interdisciplinary vision of the practice of medicine and public health, contributing to the adaptability of future doctors.

1 See: Frank JR, Snell L, Sherbino J, editors. *The Draft CanMEDS 2015 Physician Competency Framework – Series IV*. Ottawa: The Royal College of Physicians and Surgeons of Canada; March 2015 <http://www.royalcollege.ca/rcsite/canmeds/can-meds-framework-e>



The seven CanMEDS *roles* [see figure above] define the framework of daily practice for both training and trained physicians, whatever their discipline and setting. In the *Profiles* document, *these roles are expressed as specific training objectives / competencies* that the student must attain by the end of his undergraduate training. As illustrated by the CanMEDS 'flower' above, any physician integrates all of the other six roles as an expert.

While this section and the next two sections do not provide an explicit and comprehensive list of discipline-related knowledge, the acquisition of this knowledge [both fundamental and clinical] constitutes an essential prerequisite for any medical activity, especially in the area of clinical reasoning.

As illustrated by the Profiles graphic and shown in the Table below, the CanMEDS roles and the list of Entrustable Professional Activities (EPAs) listed in Chapter 2 are all highly interconnected, although some connections are stronger than others. For example, to take the history of a patient, the physician must be a good communicator and exhibit professionalism. Confronted with the need to select relevant hypotheses for a differential diagnosis, or the requirement to elaborate a complex management plan, the physician must base these processes on the available literature and evidence [scholar role]. When performing emergency procedures on a patient with severe wounds and blood loss, the physician must be particularly aware of the importance of an interprofessional and coordinated team approach.



		EXP	COM	COL	LEA	ADV	SCH	PROF
1	Take a patient's history	XX	XX	X	X	X	X	XX
2	Assess physical & mental status	XX	XX	X	X	X	X	XX
3	Prioritize a differential diagnosis	XX	X	X	X	X	XX	X
4	Order & interpret tests	XX	XX	XX	X	X	XX	X
5	Perform general procedures	XX	XX	XX	XX	X	X	XX
6	Recognize & treat an emergency	XX	XX	XX	XX	X	X	XX
7	Prescribe & develop management plan	XX	XX	XX	XX	X	XX	XX
8	Document and present a clinical encounter	XX	XX	XX	X	XX	X	XX
9	Contribute to a culture of safety	XX	XX	XX	X	XX	XX	XX

Thus, in the first chapter on General Objectives, all seven roles described refer to a varying extent to some of the EPAs of Chapter 2. These links are provided in green.

1. Medical Expert (EXP)

As Medical Experts, physicians possess a comprehensive body of knowledge and skills which they apply in medical practice. They collect and interpret information, perform problem analyses, and make appropriate clinical decisions within their area of expertise and competence. They check whether their decisions and associated actions are up to the appropriate quality standard and have the desired effects. They assess the extent to which they need supervision in their professional activities. They deliver curative and preventive care using evidence-based, ethically sound, and economically viable standards. Medical care includes both somatic and psychosocial aspects and tackles acute and chronic disorders and situations. Medical experts engage in effective oral, written, and electronic communication with patients, relatives, and other professionals in social services or healthcare. They keep themselves updated on developments in the field of medicine and acquire a critical awareness of the social and ethical issues associated with the progress of science.

The following “expert” section synthesizes the key objectives of undergraduate training, and as such overlaps with the objectives provided in the six other roles (as shown in the CanMEDS ‘flower’).

As Experts, physicians are able to:

- GO 1.1** describe and integrate the structures and underlying mechanisms governing the function of the human body, from molecular to organ level
- GO 1.2** demonstrate a good knowledge of all common situations in each discipline
- GO 1.3** perform a patient-focused consultation in the time allowed
- GO 1.4** identify and prioritize issues to be addressed in a patient encounter, and elicit a relevant, concise and accurate personal and family history from the patient and other sources
- GO 1.5** perform triage assessment and interventions, taking into account clinical urgency, the potential of deterioration, and available resources
- GO 1.6** conduct an effective general or specific physical examination
- GO 1.7** analyse and interpret data to establish a differential and a working diagnosis [clinical reasoning]
- GO 1.8** integrate the foundations of basic medical sciences into their clinical reasoning and the selection of relevant procedures and investigations
- GO 1.9** establish a patient-centred, shared management plan and deliver high quality cost-effective preventive and curative care, especially when dealing with a patient who is vulnerable and/or multimorbid (elderly) or who suffers from a terminal illness
- GO 1.10** demonstrate safe prescribing
- GO 1.11** prioritize and perform procedures in a skilful and safe manner
- GO 1.12** obtain and document informed consent, explaining the risks, benefits and rationale for the proposed options
- GO 1.13** advise and counsel patients on their health and lifestyle in an empathetic non-judgmental manner. Perform a motivational interview
- GO 1.14** set up and conduct a discussion with the family/caregivers and manage options/decisions regarding the patient’s health, condition and outcomes

- GO 1.15 demonstrate appropriate medical data and information management
- GO 1.16 integrate the advancements produced by evidence-based scientific research into clinical practice
- GO 1.17 develop a critical awareness of common stereotypes that might bias clinical activities, related to factors such as age, gender, ethnicity, culture and representations.
- GO 1.18 identify the impact on health of sex [i.e. biological difference related to sexual determination], and gender [cultural and social differences between men and women in terms of roles and expectations]. Address these issues in medical activities
- GO 1.19 incorporate and apply the foundations of biomedical and clinical ethics in patient care; respect values such as autonomy and dignity; identify and weigh up, in situations posing ethical dilemma, the various options available and how principles and values may affect them
- GO 1.20 recognize and disclose conflicts of interest that might compromise equitable, high quality care at individual and collective levels
- GO 1.21 comply with the code of ethics and the recommendations of the Swiss Academy of Medical Sciences
- GO 1.22 take Swiss legislation into account in the care of the patients, in particular coverage for disease, accidents, occupational disease and disability; display awareness and respect for the rights of the patient
- GO 1.23 understand the population perspective as a core aspect of public health, and the application of basic principles of social medicine; advocate for the health and healthy environment of the local community and society as a whole
- GO 1.24 take into account the economic, social and cultural aspects of health maintenance prevention and care at individual and community levels
- GO 1.25 practise self-reflection and critical thinking related to evolution of the health system; recognize and respond to the complexity, uncertainty, and ambiguity inherent in medical practice



2. Communicator (COM)

[linked EPAs: 1, 2, 4-9]

As communicators, physicians establish and maintain effective relationships with patients and relatives. They use communication skills to provide high-quality care and prevention / health promotion.

They are able to:

- GO 2.1 engage in and maintain therapeutic relationships with patients based on mutual understanding, empathy, and trust
- GO 2.2 accurately and adequately convey relevant information and explanations to patients, families, colleagues and other professionals, foster a common understanding of issues and problems, and jointly develop a healthcare plan
- GO 2.3 manage disagreements and emotionally charged conversations
- GO 2.4 deal effectively with diverse groups of patients such as children, adolescents and seniors; men, women and people with other gender identities [e.g. transgender]; and patients with different cultural backgrounds and languages

- GO 2.5 disclose adverse events [diagnostic and treatment failures, errors] accurately to patients and their families
- GO 2.6 share bad news with patients and their families appropriately [“breaking bad news”]
- GO 2.7 develop effective, shared strategies with their patients to increase their adherence to therapeutic options and improve their adoption of healthy habits and lifestyles
- GO 2.8 assist patients in the adoption of health promoting habits and provide effective counselling in the use of personal data obtained through screening procedures, imaging, serologic or genetic findings [precision / prediction medicine]
- GO 2.9 improve patient’s and family’s health literacy by assisting them to identify, access, and make use of information and communication technologies to support their health care and the adoption of healthy lifestyles

3. Collaborator (COL)

[linked EPAs: 4-9]

As collaborators, physicians are team players who effectively work together in interdisciplinary and interprofessional partnerships in order to provide optimum patient care, education, and/or research.

They are able to:

- GO 3.1 optimize health care delivery in identifying and understanding the roles and responsibilities of individuals such as physicians from other disciplines, nurses, pharmacists, physiotherapists, psychologists, dieticians, social workers, religious ministers and, when appropriate, the patient him/herself
- GO 3.2 communicate with respect for and appreciation of team members, and include them in all relevant interactions; establish and maintain a climate of mutual respect, dignity, integrity and trust
- GO 3.3 participate in team building strategies and conflict resolution approaches based on the model of interprofessional education and practice; define overlapping and shared responsibilities between colleagues from all healthcare professions as required
- GO 3.4 prioritize team needs over personal needs in order to optimize delivery of care

4. Leader/Manager (LEA)

[linked EPAs: 5-7]

As managers and individuals demonstrating leadership, physicians are engaged individuals who take the initiative to contribute in a collaborative way towards positive and sustainable change in health care, from the level of an individual patient to that of the healthcare system [leaders do not need a formal title to lead]. Managers take responsibility for the delivery of excellent patient care through their activities as clinicians, administrators, scholars, or teachers.

- They are able to:**
- GO 4.1 understand the principles of population medicine and its strategies, and use the main tools which are used in epidemiology and public health. These include the gathering and use of health determinants and indicators, descriptive and explanatory statistics, risk and protective factors and the concepts of prevention and health promotion at individual, community and environmental levels
 - GO 4.2 define and illustrate health promotion and health-enhancing strategies at various levels, such as the monitoring and promotion of a safe environment and the promotion of effective public health policies and interventions. In doing so, they take into account financial, material and staffing resources, at both community and public health levels.
 - GO 4.3 recognize and respond to disease outbreaks, epidemics and pandemics
 - GO 4.4 identify and address the special needs of vulnerable populations, showing awareness of the importance of equity in the delivery of care. They seek collaboration with social services if appropriate
 - GO 4.5 address the psychosocial, insurance, financial and environmental aspects of handicaps and chronic diseases
 - GO 4.6 identify the roles and describe the functions of the health and invalidity insurance system and its impact on health and health care at both individual and collective levels
 - GO 4.7 integrate the principles of economic effectiveness and efficiency in daily work and the planning of healthcare provision
 - GO 4.8 identify and engage in opportunities for continuous improvement of the health-care system, based on a critical understanding of the continuous transformation of medicine and society



5. Health Advocate (ADV)

[linked EPAs: 8-9]

As health advocates, physicians recognize and actively promote the importance of public health and preventive healthcare for the individual patient, for patient groups, and for society. They advocate high quality healthcare to policymakers and, wherever possible, put preventive healthcare into practice. They work with those they serve to determine and understand needs, speak on behalf of others when required, and support the mobilization of resources to effect change. They take into account the historical and social aspects of the progress of science, medicine and public health.

- They are able to:**
- GO 5.1 recognize issues, settings, circumstances, or situations that require advocacy on behalf of patients, professions, or the general population, keeping in mind the structure and function of the healthcare system and insurance coverage of disease, accidents and disability in Switzerland
 - GO 5.2 incorporate health surveillance activities into interactions with individual patients [discussing lifestyles, counselling]. Such activities include screening, immunization and disease prevention, risk and harm reduction measures, and health promotion.

- GO 5.3 work with a community or population to identify the determinants of health that affect them, how to address them and promote system-level change in a socially accountable manner
- GO 5.4 recognize the central role and functions played by primary care in the population

6. Scholar (SCH) [linked EPAs: 3-4, 7,9]

As scholars, physicians recognize the need for lifelong learning and continual updating of their professional expertise. They strive to make scholarly contributions to the assessment, establishment, and understanding of knowledge and skills in healthcare. They actively participate in teaching, and facilitate the education of medical students, other health professionals, patients and members of the community. They develop and maintain critical thinking about the scientific progress of medicine and health.

They are able to:

- GO 6.1 develop and document a reflective attitude towards learning and education
- GO 6.2 apply principles of critical appraisal of sources to the best available evidence-based medical information. Identify ethical principles that apply to basic and clinical research
- GO 6.3 demonstrate the critical use of information technology to access accurate and reliable (online) medical information, taking into account the levels of evidence provided by the medical literature, and integrating it into patient care
- GO 6.4 understand the general theoretical principles of medical and scientific knowledge and show an awareness of its development, its problems and limits
- GO 6.5 identify and develop a research question or hypothesis, work out a procedure to address the issue, analyse and synthesize the results, and publish these as a scientific report or article. Effectively present medical information based on scientific evidence
- GO 6.6 adapt to new technological advances, e.g. big data, new imaging techniques and tools to monitor a patient's state of health and disease stage
- GO 6.7 facilitate the learning of patients, students and health professionals, provide effective feedback to enhance learning and performance, use assessment and evaluation tools

7. Professional (PRO) [linked EPAs: 1,2,5-9]

As professionals, physicians are committed to the health and well-being of individual patients and society. This is expressed by their ethical practice, high personal standards of behaviour, accountability to the profession and society, as well as physician-led regulation and maintenance of the physician's own health.

They are able to:

- GO 7.1 display integrity, honesty, commitment, empathy and accountability in taking care of patients and communicating with families and colleagues

- GO 7.2 be aware of their own limits, and seek supervision when appropriate
- GO 7.3 respect patients' privacy and confidentiality
- GO 7.4 show awareness of cultural, societal and spiritual/religious issues that impact on the health and delivery of care of individuals and of the community
- GO 7.5 recognize that the patient's wishes and preferences are central for medical decision-making ["shared decision-making"]
- GO 7.6 incorporate and apply the principles of biomedical and clinical ethics in the care of patients; identify the principles and values that affect the available options in situations that pose an ethical dilemma; act according to the recommendations of the Swiss Academy of Medical Sciences; recognize and manage conflicts of interest
- GO 7.7 demonstrate accountability to their profession and society, respect their legal and professional obligations and the codes of regulatory bodies
- GO 7.8 recognize and respond appropriately to unprofessional and unethical behaviour by physicians and other health care professionals
- GO 7.9 allocate personal time and resources effectively in order to balance patient care, learning needs, and private activities outside the workplace, and to sustain their own health; recognize excessive stress; recognize their own substance misuse or personal illness in order to protect patients
- GO 7.10 anticipate career choices and plan their own future training and activity



Entrustable Professional Activities (EPAs)

This chapter has been developed using a concept introduced some years ago, and referred to as Entrustable Professional Activities (EPAs). This concept will be integrated progressively into the curriculum of undergraduate studies in all Swiss medical faculties. The EPAs framework² builds on the orientation of most current undergraduate curricula towards the acquisition of skills and competences, an orientation defined as outcome-based medical education³.

Even though junior residents may still need direct supervision, **there are specific situations they have to deal with and tasks that they must perform at least under distant, on-demand supervision on the first day of their residency.** Entrustable Professional Activities (EPAs) and CanMEDS roles (Chapter 1) are highly interconnected, as explained and illustrated in the introduction and shown in the table below. As a consequence, all of the EPAs in this chapter refer to a varying extent to some of the CanMEDS roles. In this chapter, these roles are marked in blue as cross references to the content of the EPAs.

2 Chen and ten Cate. The Case for Use of Entrustable Professional Activities in Undergraduate Medical Education. *Acad Med*, 2015.

3 Morke et al. Outcome (competency) based education: an exploration of its origins, theoretical basis, and empirical evidence. *Adv Health Sci Educ Theory Pract*, 2013

		EXP	COM	COL	LEA	ADV	SCH	PROF
1	Take a patient's history	XX	XX	X	X	X	X	XX
2	Assess physical & mental status	XX	XX	X	X	X	X	XX
3	Prioritize a differential diagnosis	XX	X	X	X	X	XX	X
4	Order & interpret tests	XX	XX	XX	X	X	XX	X
5	Perform general procedures	XX	XX	XX	XX	X	X	XX
6	Recognize & treat an emergency	XX	XX	XX	XX	X	X	XX
7	Prescribe & develop management plan	XX	XX	XX	XX	X	XX	XX
8	Document and present a clinical encounter	XX	XX	XX	X	XX	X	XX
9	Contribute to a culture of safety	XX	XX	XX	X	XX	XX	XX

The following selection of items has been adapted from the guide developed by the Drafting Panel of the American Association of Medical Colleges (AAMC). We are grateful to the AAMC for allowing us to use their document.

An *Entrustable Professional Activity (EPA)* is a unit of professional practice, defined as a task or responsibility that a trainee is entrusted to perform unsupervised once he/she has attained sufficient competence in the activity. EPAs are context-dependent, which means that EPAs should be taught and applied in common medical situations and conditions [see SSPs chapter] for patients of any age. It is expected that the student will at least be able to perform the described tasks with on-demand supervision.

1. Take a medical history

[linked roles: EXP / COM / PRO]

- EPA 1.1 Obtain a complete and accurate history in an organized fashion, taking into account the patient's expectations, priorities, values, representations and spiritual needs; explore complaints and situations in persons of all ages; adapt to linguistic skills and health literacy; respect confidentiality
- EPA 1.2 Explore patient expectations, values and priorities
- EPA 1.3 Use patient-centred, hypothesis-driven interview skills; be attentive to patient's verbal and nonverbal cues, patient/family culture, concepts of illness; check need for interpreting services; approach patients holistically in an empathetic and non-judgmental manner
- EPA 1.4 Evaluate understanding and decision-making capacity of all patients, especially those of psychiatric patients, cognitively impaired persons or minors
- EPA 1.5 Identify and use alternate sources of information to obtain history when needed, including (but not limited to) family members, primary care physicians, staff of living facility, pharmacy or social/health alliance
- EPA 1.6 Assess gender, social, cultural and other factors that may influence the patient's perception and description of symptoms; demonstrate cultural awareness and humility, and be conscious of the potential for bias in interactions with the patient
- EPA 1.7 In cases of long-term follow-up care, select the most salient issues that must be addressed in terms of treatment, side-effects, compliance, daily impact of the disease and patient's environment
- EPA 1.8 Review the patient's health behaviour and lifestyle as part of a routine check-up, or as far as possible, and assess the patient's opinions, representations and expectations
- EPA 1.9 Explore the patient's use of medicine and treatment, including complementary and alternative medicine
- EPA 1.10 Explore the patient's use of psychoactive substances
- EPA 1.11 Use clinical reasoning in gathering focused information relevant to a patient's care
- EPA 1.12 Identify issues not mentioned spontaneously by the patient (hidden agenda)
- EPA 1.13 Recognize situations involving potential self-harm or victimization, such as interpersonal violence, assault

Specific competencies/skills related to history taking

- EPA 1a Take an age-specific paediatric history (involving mother/father and child or adolescent)
- EPA 1b Perform an age-specific assessment of a child's / adolescent's development and lifestyle
- EPA 1c Take a psychiatric history
- EPA 1d Take an occupational and workplace history, consider ergonomic and hygienic situation
- EPA 1e Take a history of psychoactive substance use, misuse or disorder and other health-compromising behaviour
- EPA 1f Take a history of sexual and reproductive health
- EPA 1g Take a history from severely ill or dying patients



2. Assess the physical and mental status of the patient

[linked roles: EXP / COM / PRO]

- EPA 2.1 Perform an accurate and clinically relevant physical examination in a logical and fluid sequence, with a focus on the purpose and the patient's expectations, complaints and symptoms, in persons of all ages
- EPA 2.2 Assess the cognitive and mental state of the patient including memory, perception, understanding, expression and affect
- EPA 2.3 Perform a physical examination in difficult situations such as obesity, intrusive procedure, non-cooperative patient, reduced consciousness, cognitive impairment and persons who do not speak the local language
- EPA 2.4 Identify, describe, document and interpret abnormal findings of a physical examination. Assess vital signs [temperature, heart and respiratory rate, blood pressure]
- EPA 2.5 Demonstrate patient-centred examination techniques; demonstrate effective use of devices such as a stethoscope, otoscope, ophthalmoscope; respect patient privacy, comfort, and safety
- EPA 2.6 Explain physical examination manoeuvres, obtain consent as appropriate
- EPA 2.7 Recognize the signs of imminent death

Specific skills related to physical examination

Students are expected to perform the tasks below on simulated or real patients. However, in some situations, in italics>, only a demonstration of the technique should be expected

- EPA 2a Assessment of patient's general condition and vital signs
- EPA 2b Assessment of nutritional status
- EPA 2c Assessment of attention, thought, perception, speech, affect and psychomotor skills
- EPA 2d Evaluation of patient's decision-making capacity
- EPA 2e Assessment of the skin, hair and nails, description of lesions
- EPA 2f Palpation of lymph nodes
- EPA 2g Inspection and palpation of the orbit, eyelids and eye [all structures]
- EPA 2h Assessment of visual acuity and visual field, as well as optic disc and retinal vessels with ophthalmoscope
- EPA 2i Assessment of colour vision
- EPA 2j Assessment of eye movements, recognition and description of nystagmus
- EPA 2k Inspection and palpation of auricle and adjacent region as well as external auditory canal and tympanic membrane - hearing tests with whispering, conversational voice and tuning fork
- EPA 2l Inspection of nose, face, mouth, salivary glands and larynx
- EPA 2m Inspection, palpation and auscultation of cervical structures
- EPA 2n Inspection and palpation of thyroid, carotid arteries
- EPA 2o Inspection and palpation of skeleton and joints

EPA 2p	Functional testing of joint mobility: shoulders, elbows, wrists, fingers, hips, knees and ankles
EPA 2q	Inspection, palpation, percussion and mobility of the spine
EPA 2r	Inspection and palpation of chest, percussion and auscultation of lungs
EPA 2s	Palpation [apex beat/fremitus] and auscultation of heart; description of normal/abnormal heartbeat and murmurs
EPA 2t	Palpation of pulse, testing for arterial insufficiency or bruits
EPA 2u	Demonstrate ability to perform simple ultrasound investigations [suspected pleural effusion, abdominal mass, ascites]
EPA 2v	Assessment of venous system
EPA 2w	Palpation, percussion and auscultation of abdomen, description of findings
EPA 2x	Inspection and palpation of groin/hernial orifices
EPA 2y	<i>Examination of male genitals</i>
EPA 2z	<i>Rectal examination in male [anus, rectum, prostate gland, sacrum] and female</i>
EPA 2aa	<i>Speculum examination: inspection of vagina and cervix</i>
EPA 2bb	<i>Bimanual examination: vagina, cervix, uterine corpus, ovaries</i>
EPA 2cc	Palpation of breast
EPA 2dd	Neurological examination: testing cranial nerves, reflexes, passive muscle stretch, inspection of muscle bulk, tone and strength, as well as involuntary movements, gait and balance, coordination, superficial and deep sensation, aphasia, orientation, memory
EPA 2ee	Assessment of coma [scale]
EPA 2ff	<i>Examination of new-borns [Apgar score, dysmorphism, malformation]</i>
EPA 2gg	Assessment of age-specific anthropometric characteristics of infants/children/adolescents
EPA 2hh	<i>Assessment of pubertal growth [pubertal stages]</i>
EPA 2ii	Age-specific assessment of the child: neurological and cognitive development
EPA 2jj	Assessment of basic and instrumental activities of daily living
EPA 2kk	<i>Forensic examination of persons under the influence of alcohol and/or drugs</i>
EPA 2ll	<i>Documentation of physical/sexual violence</i>
EPA 2mm	<i>Clinical diagnosis of death, estimation of time of death</i>



3. Prioritize a differential diagnosis following a clinical encounter

[linked roles: EXP / SCH]

EPA 3.1	Synthesize essential data from previous records, integrate the information derived from history, meaningful physical and mental symptoms and physical exam; provide initial diagnostic evaluations; take into account the age, gender and psychosocial context of the patient as well as social determinants of health
EPA 3.2	Assess the degree of urgency of any complaint, symptom or situation
EPA 3.3	Demonstrate awareness of multimorbidity and atypical presentation of disease, especially in elderly patients

- EPA 3.4** Integrate the scientific foundations of basic medical sciences as well as epidemiological information [probability of diseases] into clinical reasoning, in order to develop a differential diagnosis and a working diagnosis, organized in a meaningful hierarchical way
- EPA 3.5** Engage with supervisors and team members for endorsement and confirmation of the working diagnosis; explain and document the clinical reasoning that led to the working diagnosis; demonstrate critical thinking with regard to differential diagnosis
- EPA 3.6** Manage ambiguity in a differential diagnosis for oneself and the patient; respond openly to questions from patients and members of the healthcare team; continuously update differential diagnosis

4. Recommend and interpret diagnostic and screening tests in common situations

[linked roles: EXP / COM / COL / SCH]

- EPA 4.1** Recommend first-line, cost-effective diagnostic evaluation for a patient with an acute or chronic disorder or as part of routine health maintenance
- EPA 4.2** Justify an informed, evidence-based rationale for ordering tests [when appropriate, based on integration of basic medical disciplines as they relate to the clinical condition]; take into account cost-effectiveness of ordering
- EPA 4.3** Obtain informed consent: discuss with the patient and the family or proxy, and ensure that they understand the indications, risks, benefits, alternatives, and potential complications; seek an agreement/shared decision and document it in the file
- EPA 4.4** Demonstrate awareness of differences in values and thresholds regarding sex and age in the interpretation of biological test results: use reference values
- EPA 4.5** Interpret test results and integrate them into the differential diagnosis; understand the implications and urgency of an abnormal result and seek assistance with interpretation if needed
- EPA 4.6** As part of a routine check-up, advise patients and order screening tests or procedures to identify asymptomatic diseases or risk factors, weighing up their risks, benefits and predictive value; apply valid epidemiological data in selecting tests and procedures
- EPA 4.7** Provide an informed rationale for ordering imaging examinations; interpret first-line, common X-rays; integrate diagnostic imaging into the clinical workup
- EPA 4.8** Order required tests and investigations in situations with medicolegal implications: substances in the blood, X-rays and genetic tests

5. Perform general procedures

[linked roles: EXP / COM / COL / LEA / PRO]

- EPA 5.1 Understand and explain the anatomy and physiology, indications and contraindications, risks and benefits, alternatives and potential complications of the procedure
- EPA 5.2 Obtain informed consent: communicate the information to the patient and the family or proxy, seek an agreed/shared decision and document it in the file
- EPA 5.3 Demonstrate the technical [motor] skills required for the procedure
- EPA 5.4 Observe principles of asepsis and maximize patient safety during procedure
- EPA 5.5 Manage common post-procedure complications



Specific procedures that must be mastered by the student by the end of the curriculum

Students are expected to perform the procedures below with real patients, except for some specific procedures that should be learnt and performed *as simulations*

- EPA 5a Measuring and interpreting body temperature
- EPA 5b Intravenous injection and cannulation, subcutaneous and intramuscular injection
- EPA 5c Insertion of a peripheral intravenous line, planning and managing parenteral administration of drugs
- EPA 5d Pre-operative preparation of surgical field for minor surgery; asepsis and anti-sepsis
- EPA 5e Local skin anaesthesia
- EPA 5f Wound cleaning, application and removal of sutures
- EPA 5g Application of bandages and dressings
- EPA 5h Simple spirometry, measurement of peak expiratory flow
- EPA 5i Arterial puncture for blood gas analysis
- EPA 5j Instruction of the patient in the use of metered dose inhalers, spacers and nebulizers
- EPA 5k Taking a throat swab and performing a rapid streptococcal test
- EPA 5l Ear irrigation
- EPA 5m Removal of a foreign body from the cornea
- EPA 5n *Urethral catheterization*
- EPA 5o Performance and interpretation of a urine stick test
- EPA 5p Preparation and examination of urinary sediment
- EPA 5q Performance and interpretation of an ECG
- EPA 5r Performance and interpretation of a pregnancy test
- EPA 5s *Assisting in the delivery of a baby*
- EPA 5t *Clamping of umbilical cord / separating placenta from child*
- EPA 5u *Nasogastric intubation*
- EPA 5v *Lumbar puncture*

6. Recognize a patient requiring urgent / emergency care, initiate evaluation and management

[linked roles: EXP / COM / COL / LEA / PRO]

- EPA 6.1 Recognize abnormal vital signs
- EPA 6.2 Interpret the clinical situation using pathophysiological principles
- EPA 6.3 Assess the severity of a patient's situation / illness and indications for escalating care
- EPA 6.4 Identify possible underlying aetiologies of the patient's deteriorating condition
- EPA 6.5 Initiate a care plan for the decompensating patient; apply basic and advanced life support as needed
- EPA 6.6 Take into account a "do-not-resuscitate" request
- EPA 6.7 As a team member, share vital and relevant information with other members, using structured communication techniques as well as briefings and debriefings for continuing decision-making and follow-up of the patient
- EPA 6.8 Identify the need for rapid transfer of patient to another facility
- EPA 6.9 Update the patient/family and ensure that they understand the indications, risks and benefits, alternatives and potential complications. If possible, ask for the patient's informed consent or advance directives

Emergency situations that any resident can autonomously and trustworthily manage within the first 30 minutes, i.e. assess the patient's state, order and interpret tests, initiate procedures and treatment

- EPA 6a Transient loss of consciousness, syncope, coma, seizures
- EPA 6b Shock, severe hypotension
- EPA 6c Acute chest pain
- EPA 6d Acute severe headache, meningism
- EPA 6e Acute abdominal pain
- EPA 6f Sudden deterioration of mental state, e.g. confusion / delusion / [auto-]aggressive behaviour
- EPA 6g Shortness of breath
- EPA 6h Severe hypertension
- EPA 6i Uncomplicated trauma such as fall, minor traffic injury
- EPA 6j Acute neurological deficits
- EPA 6k Severe acute blood loss
- EPA 6l Intoxication / poisoning
- EPA 6m Burns

7. Develop a management plan, discuss orders and prescriptions in common situations

[linked roles: EXP / COM / COL / LEA / SCH / PRO]

- EPA 7.1** Establish a management plan that integrates information gathered from the history, the physical examination, laboratory tests and imaging as well as the patient's preference; incorporate the prescription of medications, physiotherapy and physical rehabilitation, dietetic and lifestyles advice, psychological support, social and environmental measures into the management plan
- EPA 7.2** Use clinical scores and clinical decision rules/protocols to support decision [Bayesian approach] when appropriate.
- EPA 7.3** Adopt a shared-decision making approach in establishing the management plan, take into account patients' preferences in making orders; take into account an indication or request for complementary medicine; deal with treatment refusal; demonstrate an understanding of the patient's and family's current situation, beliefs and wishes, and consider any physical dependence or cognitive disorders; react appropriately when the patient lacks autonomous decision-making capacity.
- EPA 7.4** Take into account the patient's specific profile and situation, such as gender, age, culture, religion, beliefs and health literacy; take into account the vulnerability of specific groups such as immigrants, patients with low socioeconomic status, adolescents
- EPA 7.5** Ensure patient's and family's understanding of the indications, risks and benefits, alternatives and potential complications of treatment
- EPA 7.6** Understand and apply the concept and basic elements of advance care planning
- EPA 7.7** Demonstrate an insight into emotional factors that can interfere with patient-doctor communication and their management
- EPA 7.8** Provide effective treatment [medicinal and technological] of all types of pain
- EPA 7.9** Prescribe antibiotics only with clear indications and awareness of the issue of antibiotic resistance
- EPA 7.10** Avoid unnecessary/futile diagnostic measures and treatment
- EPA 7.11** Determine prescription and treatment according to the patient's condition, and adjust for weight, allergies, pharmacokinetics, pharmacogenetics ("precision medicine"), potential interactions with other medication and substances, pregnancy status or co-morbid conditions, legal/illegal psychoactive substances, potential for self-harm
- EPA 7.12** In patients with multimorbidity, prioritize measures and medication; compose orders efficiently and effectively, whether in oral, written or electronic format
- EPA 7.13** During follow-up, support self-management by the patient; evaluate and discuss adherence; discuss the potential impact of non-adherence if needed, especially with patients who are cognitively impaired or unable to make decisions; use motivational approaches if appropriate
- EPA 7.14** Ensure continuity and interprofessional collaboration in caring for chronic and multimorbid patients



- EPA 7.15 Counsel patient and family proactively on decision-making at the end of life, taking into account the patient's preferences and acceptable outcomes; involve chaplain if needed and/or consult with ethicist in difficult situations
- EPA 7.16 Prescribe measures for treatment of pain, palliative and end-of-life care, taking into account any advance directives or a "do not resuscitate" request

8. Document and present patient's clinical encounter; perform handover

[linked roles: EXP / COM / COL / ADV / PRO]

- EPA 8.1 Document and record the patient's chart; filter, organize, prioritize and synthesize information; comply with requirements and regulations
- EPA 8.2 Document and record the patient's autonomous decision-making capacity
- EPA 8.3 Document the rationale for the clinical decision and for involving the patient in making the decision; provide and incorporate discharge document
- EPA 8.4 Document the discussion and the informed consent appropriately in the health record, taking into account the importance of privacy, confidentiality and data protection, especially in the use of electronic communication and records
- EPA 8.5 Provide an accurate, concise, relevant, and well-organized oral presentation of a patient encounter and situation, adjusting it to the profile and role of the recipient; elicit feedback about the handover, especially when assuming responsibility for the patients; ask for clarification if needed
- EPA 8.6 Organize transfer of a patient from one setting to another, involving the patient and family/caregivers; at discharge from hospital, identify the needs for (sustainable) assistance by psychosocial network
- EPA 8.7 Consider forced hospitalization for acute psychiatric breakdown

9. Contribute to a culture of safety and improvement

[linked roles: EXP / COM / COL / ADV / SCH / PRO]

- EPA 9.1 Identify actual and potential ("near miss") errors in care; speak up in case of real or potential errors, and use error reporting systems if available
- EPA 9.2 Empower team members to "stop the line" if they discover a significant safety breach
- EPA 9.3 Admit and disclose one's own errors, reflect on one's contribution and develop an improvement strategy
- EPA 9.4 Address situations in which a patient could have been the victim of a medical error
- EPA 9.5 Understand existing safety/quality procedures, their vulnerabilities and the concept of accountability

- EPA 9.6** Participate in evidence-based quality improvement and patient safety, using safety alerts, minimizing nosocomial infections (e.g. hand hygiene), resistance to antibiotics and unnecessary investigations and treatment
- EPA 9.7** Contribute to the literacy of patients and oneself regarding environmental and ecological safety
- EPA 9.8** Assess age-specific environmental risks and propose safety measures
- EPA 9.9** Avoid or identify errors by using safety alerts when available. Maximize therapeutic benefit and safety for patients and the population



Situations as Starting Points (SSPs)

This chapter provides a set of generic situations which cover the common circumstances, symptoms, complaints and findings that the physician should be able to manage on day one of his residency. In other words, she or he should be able to assess a patient presenting with any of these situations in a well-structured way, establish a differential diagnosis and propose diagnostic, therapeutic, social and preventive/counselling measures. The list encompasses most of the typical situations a young resident may face. The situations are listed under several subtitles to make their use easier, but in some instances the classification is arbitrary. Items listed as “symptoms” may also be defined as “findings”, and vice-versa. A set of pre-defined criteria was used to design the list. The situations were selected:

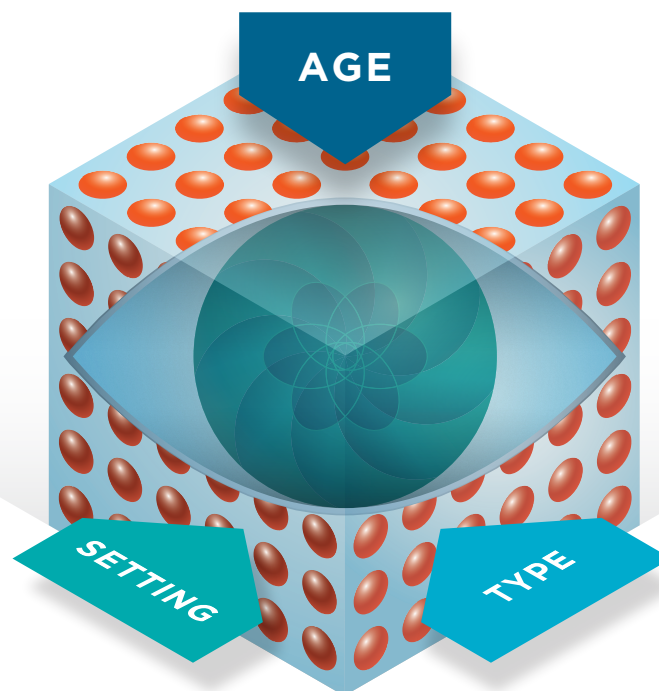
- if they occur frequently
- if rapid and appropriate intervention may be crucial or even life-saving
- if they are a cause of excessive emotional distress for the patient

These situations will allow the students and the trainers to contextualise and put into practice the objectives of the prior two chapters. As shown in the graphic below they are presented in a very generic way, which means that they can be used and applied to all gender identities and ages (children, adults, and the elderly) unless otherwise specified. They cover different types of conditions (acute, subacute and chronic) and various settings (ambulatory practice, hospital, nursing home for elderly people etc.).

This generic list increases the range of potential pathologies and fosters an interdisciplinary, integrated approach to clinical issues. For instance, the situation “jaundice” may be a starting point for numerous situations such as neonatal jaundice, hepatitis, pancreatic cancer or cirrhosis.

As entry points, the situations mostly constitute a broad range of diagnostic pathways involving different disciplines. For instance, a situation such as “chest pain” can be a starting point for discussion of several pathologies such as cardiac, pleural and parietal problems, disorders of the spine, stress and anxiety and so on. As mentioned above, the situation will have different implications according to the sex, gender and age of the patient and whether the problem is acute or chronic. The use of these situations should assist students to develop their skills in clinical reasoning, to increase their ability to integrate various options into their differential diagnosis, and to maintain an interdisciplinary perspective.

The situations are intended to be used by faculties and teachers to illustrate lectures, to engage in problem-based learning sessions and to facilitate bedside teaching rounds. They will also be used as a basis for the development of the Federal Licensing Examination.



Situations as starting points encompass not only health problems and symptoms but also normal or current health issues, e.g. the birth of a baby, contraception, densitometry or injury prevention among elderly people.

1. General complaints and symptoms

SSP 1	abnormal perspiration
SSP 2	enlarged lymph nodes (lymphadenopathy)
SSP 3	excessive thirst, excessive fluid intake (polydipsia)
SSP 4	fatigue, tiredness
SSP 5	feeling of illness
SSP 6	fever, chills, hyperthermia
SSP 7	flushing
SSP 8	hypothermia
SSP 9	itching
SSP 10	pain of all types
SSP 11	sleep problems
SSP 12	swelling, oedema (diffuse or local)
SSP 13	unnatural death
SSP 14	unexpected or sudden death
SSP 15	weight gain, obesity
SSP 16	weight loss, malnutrition, loss of appetite

2. Specific complaints and symptoms

2.1 Head and neck

SSP 17	abnormal eye movements
SSP 18	acute and gradual loss of vision (acute, slow, temporary, partial)
SSP 19	alteration of voice (hoarseness, aphonia, dysphonia)
SSP 20	asymmetric face, deformation
SSP 21	bleeding nose
SSP 22	blepharospasm
SSP 23	difficulty in swallowing, choking
SSP 24	discharge from ear
SSP 25	dryness, pain, mass in mouth or throat, oral lesions
SSP 26	earache
SSP 27	facial, jaw or tooth pain, trismus
SSP 28	hearing impairment: hyper- and hypoacusis, deafness, whistling, tinnitus
SSP 29	micro- and macrocephaly
SSP 30	nasal discharge
SSP 31	nasal obstruction
SSP 32	neck stiffness and pain
SSP 33	painful, red, itchy eyes; eye discharge
SSP 34	snoring
SSP 35	sore throat

- SSP 36 squint (strabismus)
- SSP 37 swelling of face, lips, neck; goitre
- SSP 38 swelling of the eyelid
- SSP 39 visual disturbances, photophobia, light flashes, floating objects, diplopia, colour blindness, blurred vision



2.2 Chest

- SSP 40 apnoea, apnoea with arousal
- SSP 41 change of respiratory pattern
- SSP 42 changes of breast size, breast lump, breast discharge
- SSP 43 chest discomfort
- SSP 44 chest pain
- SSP 45 cough, expectoration, haemoptysis
- SSP 46 dyspnoea
- SSP 47 heartburn (pyrosis)
- SSP 48 impaired or painful passage of food, dysphagia, regurgitation
- SSP 49 painful respiration, wheezing, stridor
- SSP 50 palpitations
- SSP 51 parietal chest pain



2.3 Abdomen

- SSP 52 abdominal, epigastric pain
- SSP 53 abdominal distension
- SSP 54 abdominal mass
- SSP 55 altered defaecation pattern, incontinence, pain
- SSP 56 anal itching, anal pain, anal protrusion
- SSP 57 anal bleeding
- SSP 58 constipation
- SSP 59 diarrhoea
- SSP 60 melena, fresh blood, mucus, pus in faeces
- SSP 61 nausea, vomiting

2.4 Pelvis, urogenital system

- SSP 62 atypical sexual development
- SSP 63 anuria, pollakiuria, oliguria, polyuria
- SSP 64 dysuria, pyuria, haematuria
- SSP 65 issues related to conception, e.g. infertility and sterilisation
- SSP 66 menstrual symptoms: disorders of menstruation, painful menstruation, premenstrual symptoms
- SSP 67 pelvic mass
- SSP 68 pelvic pain
- SSP 69 request for contraception, emergency contraception
- SSP 70 request for genetic counselling
- SSP 71 scrotal pain, swelling, mass
- SSP 72 sexual complaints and dysfunction
- SSP 73 swelling, pain in groin
- SSP 74 symptoms related to menopause
- SSP 75 urethral discharge

- SSP 76 urinary incontinence and enuresis
- SSP 77 urinary retention
- SSP 78 uterine prolapse, pelvic relaxation
- SSP 79 vaginal bleeding
- SSP 80 vaginal discharge

2.5 Back and extremities

- SSP 81 abnormal posture and back deformities
- SSP 82 back pain
- SSP 83 deformities of skeleton and joints
- SSP 84 myalgia
- SSP 85 pain, burning, cramp, numbness in the extremities
- SSP 86 swollen or painful joints, morning stiffness, reduction of joint motility

2.6 Skin

- SSP 87 changes in oral, genital or perianal mucosa
- SSP 88 ecchymosis, haematoma, purpura
- SSP 89 hyper- or hypopigmentation
- SSP 90 infected wound, delayed wound healing, skin ulcers
- SSP 91 jaundice [icterus]
- SSP 92 lack or loss of hair, excess hair
- SSP 93 macules, papules, pustules, blisters, ulcers and abscess, bullae, thickening, necrosis, tumours
- SSP 94 nail complaints
- SSP 95 redness of the skin [localized or diffuse] and/or mucosa

2.7 Nervous system

- SSP 96 abnormal sense of balance, falls
- SSP 97 abnormal gait
- SSP 98 abnormal involuntary movements, tremor, tic, lack of coordination
- SSP 99 disorders of speech or language
- SSP 100 dizziness, vertigo
- SSP 101 headache
- SSP 102 memory disturbance, cognitive impairment
- SSP 103 paresis, paralysis
- SSP 104 sensory loss, changes in various forms of sensation
- SSP 105 twitches, convulsion, seizure

2.8 Injuries and trauma

- SSP 106 abdominal injuries
- SSP 107 burn, cold injury
- SSP 108 contusion, soft tissue bruising
- SSP 109 dislocation of joint
- SSP 110 drowning or near drowning
- SSP 111 foreign body
- SSP 112 head and brain injuries and trauma
- SSP 113 injuries of the extremities
- SSP 114 laceration, closed or open wound

- SSP 115 spine injuries
- SSP 116 thoracic injuries
- SSP 117 vascular injuries

2.9 Emotional and behavioural symptoms

- SSP 118 anxiety and panic
- SSP 119 attention deficit
- SSP 120 change in behaviour
- SSP 121 change in eating behaviour
- SSP 122 change in mood
- SSP 123 hyperactivity
- SSP 124 irrational fear, fear of illness
- SSP 125 irritability, aggressive and violent behaviour
- SSP 126 mental confusion, delirium
- SSP 127 obsessive and/or compulsive behaviour
- SSP 128 reactions to major stressful events
- SSP 129 self-harm, including suicide
- SSP 130 non-medical substance use [“misuse”], addiction e.g. tobacco, alcohol, illegal substances [“controlled medicines”], gambling and gaming



3. Findings

3.1 Findings upon physical examination

- SSP 131 abnormal blood pressure
- SSP 132 abnormal external genitalia [female, male]
- SSP 133 abnormal findings upon auscultation
- SSP 134 abnormal findings upon inspection
- SSP 135 abnormal findings upon palpation
- SSP 136 abnormal findings upon percussion
- SSP 137 bradycardia, tachycardia, irregular pulse
- SSP 138 cachexia and malnutrition
- SSP 139 cognitive impairment
- SSP 140 cyanosis
- SSP 141 disorganised speech
- SSP 142 exophthalmos [proptosis]
- SSP 143 halitosis [fetor oris]
- SSP 144 gangrene
- SSP 145 impairment or loss of consciousness, coma
- SSP 146 oedema
- SSP 147 pallor
- SSP 148 pulseless patient
- SSP 149 transient loss of consciousness, syncope

3.2 Findings upon additional examination

- SSP 150 abnormal blood gas values
- SSP 151 abnormal cardiac enzymes

SSP 152	abnormal coagulation profile
SSP 153	abnormal X-rays of abdomen, chest and skeleton
SSP 154	abnormal leukocyte count
SSP 155	abnormal ECG
SSP 156	abnormal electrolytes
SSP 157	abnormal faecal analyses, occult blood, parasites
SSP 158	abnormal glycaemia and markers of glycaemia homeostasis
SSP 159	abnormal histology, cytology and molecular genetic test
SSP 160	abnormal liver enzymes
SSP 161	abnormal markers of kidney function
SSP 162	abnormal serum lipids
SSP 163	abnormal thyroid hormones
SSP 164	abnormal urine sediment
SSP 165	anaemia
SSP 166	blood group incompatibility
SSP 167	effusion detected by ultrasound [abdomen, pleura]
SSP 168	elevated biomarkers of inflammation
SSP 169	low bone density
SSP 170	nutritional deficiencies
SSP 171	polycythaemia
SSP 172	proteinemia, albuminemia
SSP 173	proteinuria
SSP 174	thrombopenia, thrombocytosis

4. Other situations

4.1. Situations related to pregnancy and motherhood

SSP 175	abnormal birth weight and prematurity
SSP 176	basic care in normal delivery and childbed
SSP 177	basic pre- and post-conception screening for genetic disease and malformation
SSP 178	maternal problems during pregnancy, fever, oedema, hypertension, premature labour
SSP 179	problems related to delivery
SSP 180	problems related to lactation
SSP 181	process and basic care of pregnancy
SSP 182	request for abortion
SSP 183	suspicion of pregnancy, unplanned pregnancy

4.2. Situations related to childhood

SSP 184	abnormal growth and puberty (slowing or acceleration), failure to thrive
SSP 185	behavioural issues in childhood and adolescence
SSP 186	child abuse and neglect
SSP 187	child immunisation
SSP 188	developmental delay
SSP 189	feeding and eating issues during infancy, childhood and adolescence
SSP 190	fetal problems during pregnancy
SSP 191	infant death

- SSP 192 irritable, crying infant
- SSP 193 learning and school problems in childhood and adolescence
- SSP 194 low muscle tone and hypotonia
- SSP 195 well-baby and well-child visit

4.3 Situations related to old age

- SSP 196 elder abuse and neglect
- SSP 197 functional impairment [cognition, sensory and motor]
- SSP 198 malnutrition and sarcopenia
- SSP 199 polymorbid, polymedicated patient
- SSP 200 pressure ulcers
- SSP 201 progressively dependent patient
- SSP 202 urinary and faecal incontinence

4.4 Emergency symptoms, findings and situations

- SSP 203 acute abdominal, epigastric pain
- SSP 204 acute chest; epigastric, arm, jaw, tooth pain
- SSP 205 acute neurological deficits
- SSP 206 acute severe dyspnoea
- SSP 207 acute severe headache, meningism
- SSP 208 burn
- SSP 209 colic
- SSP 210 haematemesis
- SSP 211 intoxication, poisoning
- SSP 212 mydriasis, miosis
- SSP 213 self-harm and suicide attempt
- SSP 214 severe hypertension, severe hypotension
- SSP 215 severe acute blood loss
- SSP 216 sudden changes of mental status such as confusion, delusion, [auto-]aggressive behaviour
- SSP 217 syncope, loss of consciousness
- SSP 218 cardiorespiratory disturbances and arrest
- SSP 219 seizures
- SSP 220 uncomplicated common trauma

4.5 Issues linked with prevention and health promotion

- SSP 221 consultation before engaging in sports activities
- SSP 222 immunization plan
- SSP 223 promotion of healthy life style
- SSP 224 request for check-up, health examination, radiologic and laboratory procedures
- SSP 225 screening for asymptomatic conditions
- SSP 226 shared assessment of risks and benefits of screening and treating asymptomatic conditions
- SSP 227 shared assessment of risks and protective factors for frequent life-compromising diseases, such as cardiovascular, metabolic and oncologic diseases

4.6 Palliative care

- SSP 228 caregivers' fatigue, loss of energy



- SSP 229 change in treatment goals and end-of-life decisions
- SSP 230 holistic care of the dying patient
- SSP 231 management of refractory symptoms (pain, nausea)
- SSP 232 need for psychosocial and spiritual support of all involved individuals

4.7 Psychosocial issues

- SSP 233 absenteeism (school, work)
- SSP 234 concern about appearance, body image
- SSP 235 domestic violence, sexual abuse, rape
- SSP 236 harassing, bullying, mobbing
- SSP 237 issues regarding sexual orientation
- SSP 238 issues related to family life such as divorce, single parent and reconstructed family
- SSP 239 loss, death, grieving process, illness of someone close
- SSP 240 mental or spiritual suffering
- SSP 241 problems related to work conditions, burnout, unemployment, financial problems

4.8 Various health care issues

- SSP 242 consultation before or after trip to foreign (tropical) country
- SSP 243 determination of work or school incapacity
- SSP 244 dietary counselling
- SSP 245 environmental and psychosocial aspects of chronic condition
- SSP 246 errors or misconduct of a co-worker or other healthcare professional
- SSP 247 immunocompromised patient
- SSP 248 issues linked with food tolerance
- SSP 249 medically unexplained symptoms
- SSP 250 nosocomial infection
- SSP 251 obtain informed consent for a procedure
- SSP 252 patient refusing treatment
- SSP 253 patient with sexually transmitted infection
- SSP 254 patient with other cultural background, migration
- SSP 255 physical and psychosocial inpatient and outpatient rehabilitation
- SSP 256 poor adherence to treatment
- SSP 257 pre-intervention and pre-operative assessment
- SSP 258 request for certificate, attestation or expertise by patients and insurers
- SSP 259 request for unnecessary investigations and treatment
- SSP 260 request for information about gene therapy
- SSP 261 request for information related to organ donation, transplantation
- SSP 262 benefits and risks of complementary medicine
- SSP 263 suspicion of drug intolerance or interaction (including complementary medicine)
- SSP 264 suspicion of rare disease
- SSP 265 vulnerable patient

Annex: goal, concept and production of Profiles



Mission

Undergraduate medical education in Switzerland is guided by the nationally agreed framework of learning objectives published by the Joint Commission of the Swiss Medical Schools [SMIFK/CIMS]. This Commission decided in 2000 to establish a Swiss Catalogue of Learning Objectives for Undergraduate Medical Training [SCLO], which was based on the Dutch Blueprint and published in 2002 [1]. The SCLO had, and still has, two main regulatory purposes in Switzerland: first of all, it is an essential prerequisite for the accreditation of the curricula of the Swiss medical faculties by the Swiss Agency of Accreditation and Quality [AAQ];¹ secondly, the SCLO defines the contents of the Federal Licensing Examination [FLE] that takes place at the end of the training curricula of the medical faculties of Switzerland [Ordinance on the Federal Examinations for University Medical Professions].² It thus guarantees that the contents of the medical curricula in all medical faculties are aligned with the requirements stated in the Federal Act on Medical Professions [MedBG].³ In 2004, it was decided to proceed with a revision of the SCLO, which led to a second version, approved by the SMIFK/CIMS in 2008 [2]. Given the rapid evolution of the practice of medicine and medical education, the Commission decided to embark on a thorough, second reform of the SCLO, which has led to the development of the present Profiles document.

1 <http://aaq.ch/>

2 <https://www.admin.ch/opc/fr/classified-compilation/20072413/index.html>

3 <https://www.admin.ch/opc/de/classified-compilation/20040265/index.html>

In summary, the aim of Profiles is to outline what is expected of the holder of a federal licence on the first day of his or her residency. Its main target audiences are the individuals in charge of the design and implementation of the curriculum in each faculty, the teachers and those designing the FLE, as well as the students themselves. This annex provides information on the conceptual framework that was used to develop the Profiles document.

A new era for the practice of medicine and a challenge for medical faculties

Over the last decades, the sectors of health and medicine have changed dramatically and will continue to do so. This evolution is on one hand linked to the transformation of medical practice, and on the other hand to demographic changes that are occurring in the population itself and within the medical profession. Both should influence the way in which medical students and doctors must be trained [3-8]. Indeed, physicians nowadays find themselves in an environment that is becoming increasingly technical and which involves imaging techniques or genetic and biological tests, which are becoming more and more sophisticated and available even to lay people. In high income countries in particular, patients are increasingly literate in the area of health [9], and this is radically transforming the nature of the patient-doctor relationship; the concept of shared decision-making is a good example [10, 11]. Moreover, many countries increasingly emphasize the issue of professionalism, including issues such as patient safety, adequate reactions to potential errors [12] and attention to cost-ef-

4 See: <https://www.e-health-suisse.ch>

fectiveness in prescribing tests, medication and treatment. In addition, the whole area of e-health,⁴ e.g. the use of information and communication technologies (ICTs) by physicians [13], will impact the way in which they care for their patients, conduct research, educate the health workforce, track diseases and monitor public health initiatives; this will even be the case in low and middle income countries [14, 15]. Finally, the era of big data and the development of the “omics” will allow for the merging of many medical and non-medical personal parameters. These will impact on both lifestyles and treatments, since they will modify the way in which patients and doctors look at their health and their diseases, leading to a more “personalized” medicine [16]. It will therefore be important to equip medical students with an excellent capacity to follow the scientific literature and develop sound competences in the critical appraisal of basic (and especially evidence-based) clinical research [17].

Besides the evolution of medicine itself, demographic issues affect the delivery of health care. As mentioned in a recent report by the federal government [18], Switzerland is faced with several challenges, such as the escalating cost of the health care system and a severe shortage of doctors in some disciplines, including primary care. Furthermore, there is an increasing incidence of chronic noncommunicable diseases (NCDs) and multimorbidity due to an ageing population. These emerging tendencies call for a high level of interprofessional collaboration and a capacity for doctors to integrate a great deal of bio-psychosocial information [19, 20]. Physicians need to learn to work in teams, and respect the roles of each member of any group of professionals working together in specific situations, be it in an operating theatre, an ambulance or within a primary care setting [21–25]. Future doctors will need to reflect on and adapt to new models of care that allow for better integration of the many facets of a multimorbid patient, such as multi-professional consultations [24, 26–28]. All these impressive transformations raise issues in the fields of ethics and medical humanities, and have important implications for the role of professionalism and accountability in the undergraduate and postgraduate training of doctors [29–32]. The preceding comments underline some of the challenges that medical faculties face with regard to the medical education of future doctors, and why it was felt necessary to significantly modify the training objectives of medical students. In other words, besides acquiring knowledge of basic medical sciences and an excellent insight into discipline-related pathologies as well as their diagnosis and treatment, medical students need to develop a high capacity for integration and adaptation. They should also be able to perceive how societal changes influence the practice of medicine and how to adapt to these changes [3, 5, 29]. Taking into account the vision of the Swiss Federal Council and the Federal Office of Public Health [18], students will need to understand the importance of integration and accountability in their profession and should be able to address issues such as the persistence of inequities in healthcare, new infectious diseases, increasing environmental and behavioural risks and rapid demographic and epidemiological transitions as a result of migration.

Responding to the above-mentioned trends: new educational approaches to prepare doctors for their future career

As it is difficult to predict how doctors will work in ten or twenty years’ time, faculties of medicine around the world are faced with two important questions, i.e. what changes are needed in undergraduate medical education, and how faculties should ensure the

continuing expertise of physicians 20 to 30 years into practice [3, 5, 33-35]. A major evolution in medical education has been the concept of outcome-based education, built on the idea that teaching formats should be aligned with learning outcomes [36-40]. In a similar way, a core aspect of the training curriculum of doctors is the acquisition by students of competencies [6], defined as “an observable ability of a health professional, integrating multiple components such as knowledge, skills, values, and attitudes” [4, 5, 41-44]. More recently, it has been argued that acquisition of single competences does not necessarily guarantee that young doctors entering residency will adequately perform professional tasks, which usually call for an integration of several competences. This concern has led to the creation of a new concept, namely that of Entrustable Professional Activities EPA [45-50].



An EPA can be defined as a “unit of professional practice or task that an individual can be trusted to perform unsupervised in a given health care context, once sufficient ability has been demonstrated” [50-53]. Ideally, an EPA is executable independently within a time frame, observable and measurable in process and outcome, and suitable for entrustment decisions, provided that a given individual is really able to perform the task or the professional activity in a partially or totally autonomous way [51, 54]. It is clear that this “entrustability” is acquired progressively and that the instructor has to assess the trainee’s performance over time before he can be convinced that the student or resident is totally entrustable. Indeed, ten Cate suggests five levels of supervision, from one [no permission to act] to five [permission to provide training to juniors] [54]. It is obvious that, as EPAs represent tasks, they cannot encompass all the facets of medical activities, such as professionalism, ethics or life-long learning.

As an example, a generic EPA states that the learner [a medical student] is able to “obtain a complete and accurate history in an organized fashion, taking into account the patient’s expectation, complaints and situation”. This requires a series of skills which should be integrated in performing this task, such as good communication skills, a capacity to adapt to the mental health status and cognitive skills of the patient, as well as a clear appraisal of what the symptoms and complaints suggest in terms of the most important questions to ask.

The concept of EPAs was first introduced at the level of postgraduate training, e.g. inserting a catheter, performing an appendectomy, a delivery or a hip replacement, with a gradual increase in complexity as residents become more and more experienced; it is currently used in many disciplines and countries [55]. Recently, it was suggested that the EPA framework should also be applied to undergraduate training [50, 53], with the objective of providing an integrative step-by-step vision of the practice of medicine, a vision that involves several disciplines, which is increasingly common in cases such as systemic diseases or cancer, or among older people who suffer from multiple diseases. Students could thus be invited to register their progress in a *portfolio*, which could be used later at the postgraduate level [54, 56].

In summary, the introduction of EPAs in the Profiles document potentially introduces a *paradigm shift* in modifying the behaviour of both students and mentors: “entrustability” must be assessed longitudinally, the evaluation being based on a repeated set of observations registered over time by the mentor[s] and by other members of the team *in real patient situations*. It implies the active participation of the learner, who must develop his sense of responsibility, his competences and an awareness of his limitations, e.g. under which circumstances he can perform a task without jeopardizing the health of the patient, or when he needs to ask for supervision or advice. Trust is linked with the *autonomy* of the student and his ability to evaluate his capacity to deal with any situation and his ability to grasp the responsibilities of a physician in various situations.

One could say that in stressing the importance of trust, EPAs focus less on *what has been acquired in the past* by the learner than on *what he will be able to do in the future* as a responsible, autonomous professional.

Clearly, although the Federal Licensing Examination will address the student’s expertise in specific clinical situations through OSCEs, it will not allow for a true assessment of autonomy and entrustability, this being the task of the faculties at the master level, during clinical clerkships and bedside teaching and monitoring. Some Swiss faculties, like some faculties in other parts of the world, have already foreseen the use of a portfolio that will allow students to monitor their progress in the acquisition of skills and EPAs over time [57].

Process: a new document to define the objectives, structure and content of the medical curriculum in Switzerland

The SMIFK/CIMS mandated a work group (WG) of experts, listed at the end of this annex, to develop the new document. The WG included younger and older spokespersons from each faculty and from the main medical disciplines, as well as representatives of the Federal Office of Public Health, the Swiss Medical Students’ Association (SWIMSA) and the Swiss Association of Residents and Chief Residents (VSAO/ASMAC). The WG has worked on defining the needs of future doctors, what is expected from them and accordingly what should be expected from the document, reflecting, as others have done before [35, 58, 59], on how the vision, the structure and the content of the new document could meet the challenges that the medical profession will face in the future. The group has regularly reviewed and monitored the progress of the Profiles document. The reflections of the WG have been enriched by several other procedures. Over the years 2013-2015, the President of the WG has met on two occasions with representatives of the five Swiss faculties involved in medical education to discuss their expectations. Moreover, on five occasions, the vice deans of the medical faculties have met the President of the WG for in-depth exchanges about the structure, content and progress of the document. The content of Profiles is also influenced by several formal and informal exchanges with colleagues and experts from faculties within and outside Switzerland.

Moreover, the format and content of Profiles is inspired by a review of recent publications tackling the area of medical education, in particular documents such as the UK’s

“Tomorrow’s doctors” document [35], the E.U. Tuning Project [60] and the new Dutch framework [61]. The Royal College of Physicians and Surgeons of Canada agreed that the description of the main roles of physicians, the well-known CanMEDS document [62] could be used as a basis for drafting the first chapter of Profiles. The Association of American Medical Colleges also agreed that their document “Core Entrustable Professional Activities for Entering Residency” be used to develop the content of Chapter 2 [EPAs].



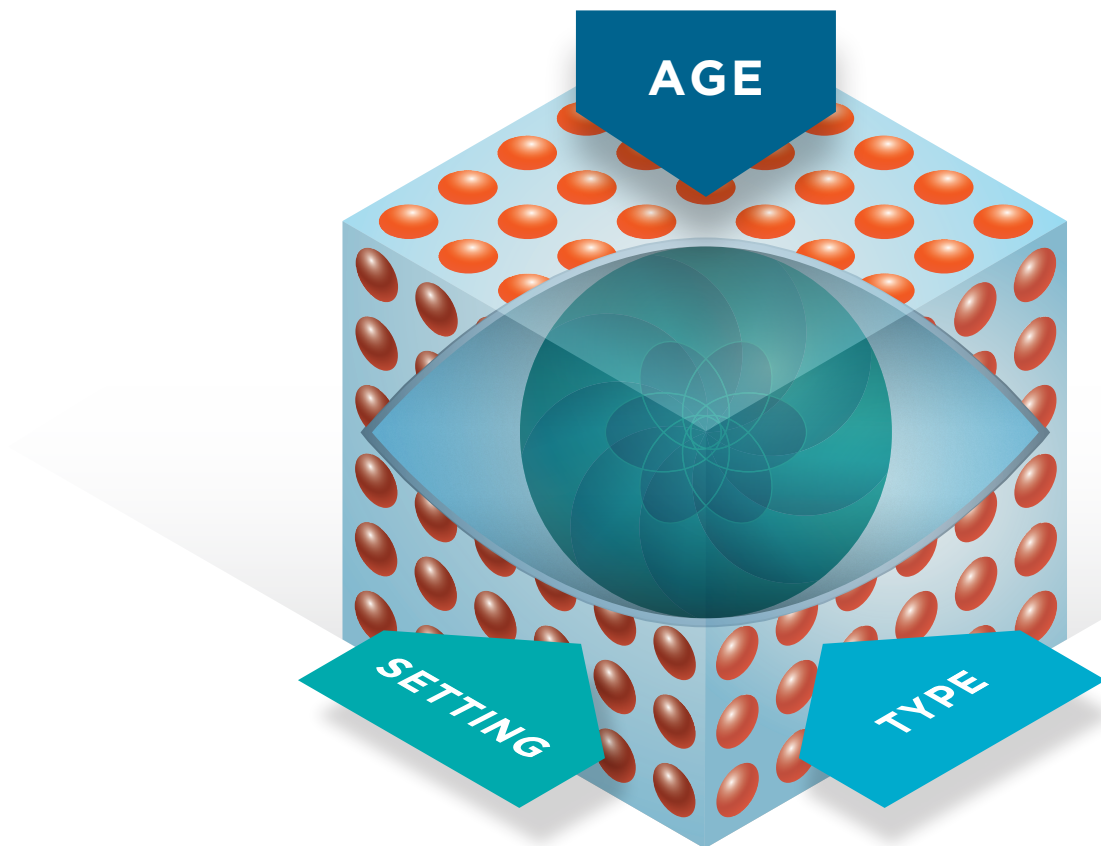
Profiles aims to reflect these numerous exchanges and to address the changes that the medical field and professions face now and in the future. Notably, the Profiles WG has been requested by the Federal Office of Public Health to implement new items as mentioned by the Federal Act on Medical Professions or identified as crucial issues for the future in the “Health 2020” document [18], such as complementary medicine, nosocomial infections, palliative care, shared decision-making, patient safety, equity in medicine and e-health, to name but a few.



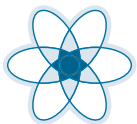
The broad goal of this final version of Profiles is to outline what is expected of the holder of a federal license on the first day of his residency. Its main target audiences are the individuals responsible for the design and implementation of the curriculum in each faculty, the teaching faculties as well as the federal board of examiners (“Prüfungskommission” / PK) in charge of designing the structure and content of the Federal Licensing Examination. In addition, Profiles should assist students in preparing themselves for their career and integrating their future roles as doctors. The document is concise and much shorter than the preceding ones, and written with a friendly, integrative and prioritizing approach. Profiles stresses issues such as evidence-based clinical reasoning, communication skills, an interdisciplinary approach to solving medical symptoms and situations, together with professionalism and accountability. It leaves the faculties free to choose how they wish to cover the fields of medicine and health.

The **Profiles** acronym that has been adopted by the group of experts to denominate the new document summarizes these intentions: **Principal Relevant Objectives and Framework for Integrative Learning and Education in Switzerland**. In other words, this new version is no longer just a “catalogue” but rather a set of **Principal Relevant Objectives** for the training of medical students; it provides a conceptual **Framework** with clinical, public health and ethical situations that bridge disciplines, and includes a series of **Integrated** competences and skills in the form of **Entrustable Professional Activities**, which foster new **Learning** methods and, more globally, a higher level of medical **Education**. This does not mean that basic sciences and specific discipline-related objectives will not be taught any more, but rather that they should be learned by the student in the context of an integrated approach that corresponds to the reality of medical practice.

As illustrated by the graphic below, all the objectives and situations apply to any age group, to any set of circumstances (e.g. acute care / chronic care) and to any type of setting. Also, the general objectives of Chapter 1, the entrustable professional activities (EPAs) described in Chapter 2 and the situations listed in Chapter 3 as starting points are closely interconnected. To achieve the expected level of expertise, the student must master the corresponding discipline-related knowledge and skills, and must also adopt the attitude appropriate to the circumstances.



Profiles displays three interdependent chapters of equal importance :



A first chapter listing a series of learning objectives related to the different roles of doctors, inspired by the CanMEDs Roles used worldwide



A second chapter presenting a set of entrustable professional activities (EPAs) reflecting the main medical tasks that a physician must be able to perform autonomously on the first day of his residency



A third chapter listing around 265 common clinical situations that a doctor is expected to deal with after passing the Swiss Federal Licensing Examination

References

1. Bürgi H, Bader C, Bloch R, Bosman F, Horn B, Im Hof V, et al. Swiss Catalogue of Learning Objectives for Undergraduate Medical Training. Bern: Joint Commission of the Swiss Medical Schools; 2002.
2. Bürgi H, Rindlisbacher B, Bader C, Bloch R, Bosman F, al. Swiss Catalogue of Learning Objectives for Undergraduate Medical Training. Bern: Joint Commission of the Swiss Medical Schools; 2008.
3. Bhutta ZA, Chen L, Cohen J, Crisp N, Evans T, Fineberg H, et al. Education of health professionals for the 21st century: a global independent Commission. *Lancet*. 2010;375(9721):1137-8.
4. Frank JR, Snell LS, ten Cate O, Holmboe ES, Carraccio C, Swing SR, et al. Competency-based medical education: theory to practice. *Med Teach*. 2010;32(8):638-45.
5. Frenk J, Chen L, Bhutta ZA, Cohen J, Crisp N, Evans T, et al. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. *Lancet*. 2010;376(9756):1923-58.
6. Hawkins R, Welcher C, Holmboe E, Kirk L, Norcini J, Simons KB, et al. Implementation of competency-based medical education: are we addressing the concerns and challenges? *Med Educ*. 2015;49:1086-102.
7. Neville AJ, Norman GR. PBL in the undergraduate MD program at McMaster University: three iterations in three decades. *Acad Med*. 2007;82(4):370-4.
8. Skochelak S, Stack S. Creating the Medical Schools of the Future. *Acad Med*. 2017;92:16-9.
9. Kickbusch I, Pelikan J, Tsouros A. Health Literacy, the solid facts. Geneva: World Health Organization; 2013.
10. Lillie SE, Partin MR, Rice K, Fabbri AE, Greer NL, Patel SS, et al. The Effects of Shared Decision Making on Cancer Screening - A Systematic Review. Washington [DC]: US Department of Veterans Affairs; 2014.
11. McNutt RA. Shared medical decision making: problems, process, progress. *JAMA*. 2004;292(20):2516-8.
12. Schwappach D, Gehring K. Quand le silence est dangereux. *Bull Med Suisses*. 2015;96(38):1351-4.
13. Bollinger R, Chang L, Jafari R, O'Callaghan T, Ngatia P, Settle D, et al. Leveraging information technology to bridge the health workforce gap. *Bull World Health Organ*. 2013;91(11):890-2.
14. Dumiak M. E-health's future frontiers. *Bull World Health Organ*. 2012;90(5):328-9.
15. Piette JD, Lun KC, Moura LA, Jr., Fraser HS, Mechael PN, Powell J, et al. Impacts of e-health on the outcomes of care in low- and middle-income countries: where do we go from here? *Bull World Health Organ*. 2012;90(5):365-72.
16. Panahiazar M, Taslimitehrani V, Jadhav A, Pathak J. Empowering Personalized Medicine with Big Data and Semantic Web Technology: Promises, Challenges, and Use Cases. *Proc IEEE Int Conf Big Data*. 2014;2014:790-5.
17. Crabtree EA, Brennan E, Davis A, Squires JE. Connecting Education to Quality: Engaging Medical Students in the Development of Evidence-Based Clinical Decision Support Tools. *Acad Med*. 2017;92(1):83-6.
18. Federal Office of Public Health. Health 2020 : global strategy. Bern; 2013.



19. Haibach JP, Beehler GP, Dollar KM, Finnell DS. Moving toward integrated behavioral intervention for treating multimorbidity among chronic pain, depression, and substance-use disorders in primary care. *Med Care*. 2014;52[4]:322-7.
20. Smith SM, Soubhi H, Fortin M, Hudon C, O'Dowd T. Interventions for improving outcomes in patients with multimorbidity in primary care and community settings. *Cochrane Database Syst Rev*. 2012[4]:CD006560.
21. Gallant S, Clerc M, Gachoud D, Morin D. Apprendre ensemble pour travailler ensemble : l'éducation interprofessionnelle, un mythe ou une réalité ? *Rech Soins Infirm*. 2011[106]:40-6.
22. Michaud PA, Luthi FT, Clerc M, Gachoud D, Chapuis J, Allin AC, et al. L'éducation interprofessionnelle pour tous... Une expérience de sensibilisation pour des étudiants vaudois en formation prégraduée. *Rev Med Suisse*. 2011;7[319]:2363-5.
23. Olson R, Bialocerkowski A. Interprofessional education in allied health: a systematic review. *Med Educ*. 2014;48:236-46.
24. Thomas L, Galla C. Building a culture of safety through team training and engagement. *BMJ Qual Saf*. 2013;22[5]:425-34.
25. Smith SM, Soubhi H, Fortin M, Hudon C, O'Dowd T. Managing patients with multimorbidity: systematic review of interventions in primary care and community settings. *BMJ*. 2012;345:e5205.
26. Hawkes N. New models of healthcare will replace nearly three quarters of NHS by 2024, report says. *BMJ*. 2014;348:g4088.
27. Wright ES. Biomedical models and healthcare systems: new model will be useful if it alters allocation of resources. *BMJ*. 2005;330[7488]:419.
28. Corrigan P, Parish M. Going with change: Allowing new models of healthcare to be provided for NHS patients. London: Reform; 2014.
29. Li ST, Srinivasan M, Der-Martirosian C, Kravitz RL, Wilkes MS. Developing personal values: trainees' attitudes toward strikes by health care providers. *Acad Med*. 2011;86[5]:580-5.
30. Doukas DJ, Kirch DG, Brigham TP, Barzansky BM, Wear S, Carrese JA, et al. Transforming educational accountability in medical ethics and humanities education toward professionalism. *Acad Med*. 2015;90[6]:738-43.
31. Eikelboom JI, ten Cate OT, Jaarsma D, Raat JA, Schuwirth L, van Delden JJ. A framework for the ethics review of education research. *Med Educ*. 2012;46[8]:731-3.
32. Wynia MK, Papadakis MA, Sullivan WM, Hafferty FW. More than a list of values and desired behaviors: a foundational understanding of medical professionalism. *Acad Med*. 2014;89[5]:712-4.
33. Asch DA, Weinstein DF. Innovation in medical education. *N Engl J Med*. 2014;371[9]:794-5.
34. Epstein RM, Hundert EM. Defining and assessing professional competence. *JAMA*. 2002;287[2]:226-35.
35. General Medical Council. Tomorrow's Doctors. Outcomes and standards for undergraduate medical education. Manchester; 2009.
36. Biggs J. Enhancing teaching through constructive alignment. *High Educ*. 1996;32[3]:347-64.
37. Reeves S, Fox A, Hodges BD. The competency movement in the health professions: ensuring consistent standards or reproducing conventional domains of practice? *Adv Health Sci Educ Theory Pract*. 2009;14[4]:451-3.

38. Schuwirth L, Cantillon P. The need for outcome measures in medical education. *BMJ*. 2005;331[7523]:977-8.
39. Shumway JM, Harden RM, Association for Medical Education in Europe. AMEE Guide No. 25: The assessment of learning outcomes for the competent and reflective physician. *Med Teach*. 2003;25[6]:569-84.
40. Hautz SC, Hautz WE, Feufel MA, Spies CD. What makes a doctor a scholar: a systematic review and content analysis of outcome frameworks. *BMC Med Educ*. 2016;16:119.
41. Frank JE. The CanMEDS 2005 physician competency framework. Better standards. Better physicians. Better care. Ottawa: Office of Education, the Royal College of Physicians and Surgeons of Canada; 2005.
42. Hurtubise L, Roman B. Competency-based curricular design to encourage significant learning. *Curr Probl Pediatr Adolesc Health Care*. 2014;44[6]:164-9.
43. ten Cate O, Billett S. Competency-based medical education: origins, perspectives and potentialities. *Med Educ*. 2014;48[3]:325-32.
44. Tekian A, Hodges BD, Roberts TE, Schuwirt L, Norcini J. Assessing competencies using milestones along the way. *Med Teach*. 2015;37:399-402.
45. Association of American Medical Colleges. Core Entrustable Professional Activities for Entering Residency. Washington DC: Association of American Medical Colleges; 2014.
46. Hauer KE, Soni K, Cornett P, Kohlwes J, Hollander H, Ranji SR, et al. Developing entrustable professional activities as the basis for assessment of competence in an internal medicine residency: a feasibility study. *J Gen Intern Med*. 2013;28[8]:1110-4.
47. ten Cate O, Chen HC, Hoff RG, Peters H, Bok H, van der Schaaf M. Curriculum development for the workplace using Entrustable Professional Activities [EPAs]: AMEE Guide No. 99. *Med Teach*. 2015;37[11]:983-1002.
48. Carraccio C, Englander R, Holmboe ES, Kogan JR. Driving Care Quality: Aligning Trainee Assessment and Supervision Through Practical Application of Entrustable Professional Activities, Competencies, and Milestones. *Acad Med*. 2016;91[2]:199-203.
49. El-Haddad C, Damodaran A, McNeil HP, Hu W. The ABCs of entrustable professional activities: an overview of 'entrustable professional activities' in medical education. *Intern Med J*. 2016;46[9]:1006-10.
50. Chen HC, McNamara M, Teherani A, Cate OT, O'Sullivan P. Developing Entrustable Professional Activities for Entry Into Clerkship. *Acad Med*. 2016;91[2]:247-55.
51. ten Cate O. AM last page: what entrustable professional activities add to a competency-based curriculum. *Acad Med*. 2014;89[4]:691.
52. ten Cate O, Scheele F. Competency-based postgraduate training: can we bridge the gap between theory and clinical practice? *Acad Med*. 2007;82[6]:542-7.
53. Chen HC, van den Broek WE, ten Cate O. The case for use of entrustable professional activities in undergraduate medical education. *Acad Med*. 2015;90[4]:431-6.
54. ten Cate O. Nuts and bolts of entrustable professional activities. *J Grad Med Educ*. 2013;5[1]:157-8.
55. Englander R, Carraccio C. From theory to practice: making entrustable professional activities come to life in the context of milestones. *Acad Med*. 2014;89[10]:1321-3.



56. ten Cate O, Young JQ. The patient handover as an entrustable professional activity: adding meaning in teaching and practice. *BMJ Qual Saf.* 2012;21 Suppl 1:i9-12.
57. Hall P, Byszewski A, Sutherland S, Stodel EJ. Developing a sustainable electronic portfolio (ePortfolio) program that fosters reflective practice and incorporates CanMEDS competencies into the undergraduate medical curriculum. *Acad Med.* 2012;87(6):744-51.
58. Pearson DJ, McKinley RK. Why tomorrow's doctors need primary care today. *J R Soc Med.* 2010;103(1):9-13.
59. ten Cate O. What Is a 21st-Century Doctor? Rethinking the Significance of the Medical Degree. *Acad Med.* 2014;89:966-9.
60. Cumming A, Ross M. *The Tuning Project : Outcomes/ Competences for Undergraduate Medical Education in Europe.* Edinburgh: European Community; 2008.
61. van Herwaarden CLA, Laan RFJM, Leunissen RRM. *The 2009 Framework for Undergraduate Medical Education in the Netherlands.* Utrecht: Dutch Federation of University Medical Centres; 2009.
62. Frank J, Snell L, Sherbino J. *CanMEDS 2015: Physician Competency Framework.* Ottawa: Royal College of Physicians and Surgeons of Canada; 2015.