National Authority for Quality Assurance

and Accreditation of Education

National Academic Reference Standards

Pharmacy Education

2nd Edition

April 2017

Foreword

In line with NAQAAE's legal mandate as the authority responsible for quality assurance of education in Egypt, and out of its commitment to be a promoter of quality and an agent for change; NAQAAE has developed the 2nd edition of the National Academic Reference Standards (NARS) -Pharmacy (2017) to replace the previous 1st edition NARS -Pharmacy (2009). These standards represent the minimum academic quality requirements, which NAQAAE and the relevant stakeholders regard as necessary and appropriate to protect the interests of the students and of the community at large.

It has always been NAQAAE's conviction that quality is primarily the responsibility of the institution itself, and that the academic standards adopted by any institution should support the achievement of its mission; therefore, it is crucial to emphasize that the NARS are meant to be used as reference points that provide guidance in the design, delivery and review of academic programs, and are not intended by any means to represent a national curriculum in the subject. Instead, NAQAAE was keen to ensure that the NARS allows for flexibility and innovation in program design and teaching strategies, within a framework agreed by the subject community.

NAQAAE has always supported the autonomy and academic freedom of educational institutions and acknowledged -and assimilated- the diversity of their missions, hence, institutions are invited to consider adopting other reference points that better reflect their mission if they need to, provided that these adopted academic standards are equal to or higher than the NARS.

Finally, it should be noted that the 2nd edition of NARS- Pharmacy will be effective starting the academic year 2018/19.

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Introduction to Pharmacy Education

According to WHO, the pharmacist is defined as“A person prepared to formulate, dispense, and provide clinical information on drugs or medications to health professionals and patients”.As an essential member of the healthcare team, the pharmacist plays an integral role in maintaining the quality of health care and pharmaceutical care. The pharmacist must be expert in medicines and should have enough clinical expertise in addition to formulation, quality control and practical knowledge, to ensure the safe supply and rational use ofmedicines by the public. This requires competency in assuring the quality of pharmaceutical products supplied to patients, taking into consideration the policies and regulation of the government. The pharmacist must be competent enough to counsel patients and community about safe use and misuse of drugs.

Recently, significant development in pharmacy practice extended the scope to patient centered care that includes patient counseling service, drug information service and drug therapy monitoring; in addition to other technical aspects of pharmaceutical services that ensure maintenance of the supply and use of high quality medicines. The WHO has accordingly developed the concept of “Seven-Star Pharmacist” which defines the role of pharmacist in healthcare team as “Caregiver, decision-maker, communicator, manager, life-long learner,teacher, and leader”.

In Egypt, pharmacists are actively engaged as members of the healthcare team.The majority of them work in hospitals and community pharmacies, and they are the main workforce inpharmaceutical industry including planning, production, storage, distribution and marketing of pharmaceuticals.They arealso involved in academic and research institutions. Other professional practices of the pharmacists include forensic services, biomedical laboratories, cosmetic industry, veterinary medicines and military pharmacy services. A large number of Egyptian pharmacists work abroad, mainly in Arab countries. To perform all these functionsand to comply with the international standards, a competency-based educational program is essential in which the graduate attributes are defined based on the recent job descriptions of pharmacist worldwide, and considering the expectations and diversity of jobs in the Egyptian market.

Methodology for Development of NARS- Pharmacy

NAQAAE has invited the faculties of pharmacy nationwide and the Pharmaceutical Sciences Sector of the Supreme Council of Universities, which comprises the deans of faculties of pharmacy, and representatives of pharmaceutical industry and the Syndicate of Pharmacists, to revise the existing National Academic Reference Standards for Pharmacy Education (NARS-Pharmacy, 1st edition, January 2009). The NARS was then developed through the following process:

1. Establishing the committee for development of the NARS for pharmacy education (NARS–Pharmacy, 2nd edition) that constitutes experts representing various specialties of pharmacy education and having expertise in quality assurance of education.
2. Studying the National Qualifications Framework (NQF–Egypt) under development to identify the descriptors of the Bachelor degree level.
3. Reviewing the NARS-Pharmacy (1st Edition) and analyzing the feedback from faculties of pharmacy nationwide on this NARS.
4. Reviewing literature regarding the International Academic Standards and subject benchmarks for pharmacy education.
5. Running brain storming sessions to identify and fill the gaps between the NARS and the recognized international academic standards and the requirements and expectations of pharmacy profession in Egypt.
6. Developing a new competency-based NARS-Pharmacy that corresponds to national and international changes and development in pharmacy profession.
7. Preparing a draft of the new version of NARS–Pharmacy that defines the graduate attributes and competencies.
8. Getting feedback on the developed NARS from different stakeholders and conducting a workshop to present, discuss and get feedback on the developed competency-based NARS.
9. Preparing the final draft of NARS–Pharmacy incorporating the feedback of the revision cycles.
10. Approving the NARS-Pharmacy (2nd Edition) from the board of directors of NAQAAE in April 2017.

National Academic Reference Standards
(NARS) for Pharmacy Education

Attributes of the Pharmacy Graduates

Pharmacy graduates work in a multi-disciplinary profession to improve the quality of life of individuals and communities. Based on multi-national requirements, the pharmacy graduate must develop competencies of a learner, health caregiver and provider, professional, collaborator, manager, promoter, problem solver, educator and communicator, self-aware, leader, and innovator. Pharmacy graduates must acquire the necessary attributes related to various pharmacy aspects including drug-oriented and patient-oriented pharmacy disciplinesto actively participate in pharmaceutical care. Pharmacy graduates must be able to:

1. Educate and counsel individuals and communities to participate in optimizing therapeutic outcomes and minimizing the incidence of illness of individuals and populations.
2. Practice and perform responsibilities and authorities legally, professionally, and ethically respecting patients' rights.
3. Utilize evidence-based data to deliver contemporary pharmaceutical products and pharmacy services.
4. Assure the quality of pharmaceutical materials and products.
5. Apply integrated evidence-based pharmaceutical and clinical information in assessing the appropriateness, effectiveness, and safety of medications.
6. Contribute effectively in planning and conducting research using appropriate methodologies.
7. Work collaboratively and share therapeutic decision-making as a member of an inter-professional health care team.
8. Demonstrate effective communication, leadership, business administration, and entrepreneurial skills.
9. Work as a life-long learner for continuous professional improvement and demonstrate capabilities of performance appraisal and self-assessment.

Competencies of the Pharmacy Graduates

Four **Competency Domains** are included in these competency-based National Academic Reference Standards for Pharmacy Education. These domains are designed to cover all essentials for practicing pharmacy profession including both drug-oriented and patient-oriented disciplines. Each domain should be achieved through a number of **Competencies** ranging from one to six, with a total of twelve competencies for all domains.These competencies are overall broad statements that cover various areas of the graduate performance. A number of **Key Elements** ranging from two to seven are included in each competency, with a total of forty two key elements for all competencies.These key elements demonstrate how pharmacy graduate will reflect each competency in practice. The competency domains are the followings:

Domain 1: Fundamental Knowledge

Domain 2: Professional and Ethical Practice

Domain 3: Pharmaceutical Care

Domain 4: Personal Practice

DOMAIN 1- FUNDAMENTAL KNOWLEDGE

1-1- COMPETENCY

Integrate knowledge from basic and applied pharmaceutical and clinical sciences to standardize materials, formulate and manufacture products, and deliver population and patient-centered care.

KEY ELEMENTS

1-1-1- Demonstrate understanding of knowledge of pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences.

1-1-2- Utilize the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice.

1-1-3- Integrate knowledge from fundamental sciences to handle, identify, extract, design, prepare, analyze, and assure quality of synthetic/natural pharmaceutical materials/products.

1-1-4- Articulate knowledge from fundamental sciences to explain drugs' actions and evaluate theirappropriateness, effectiveness, and safety in individuals and populations.

1-1-5- Retrieve information from fundamental sciences to solve therapeutic problems.

1-1-6- Utilize scientific literature, and collect and interpret information to enhance professional decision.

1-1-7- Identify and critically analyze newly emerging issues influencing pharmaceutical industry and patient health care.

DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE

2-1- COMPETENCY

Work collaboratively as a member of an inter-professional health care team to improve the quality of life of individuals and communities, and respect patients' rights.

KEY ELEMENTS

2-1-1 Perform responsibilities and authorities in compliance with the legal and professional structure and role of all members of the health care professional team.

2-1-2 Adopt ethics of health care and pharmacy profession respecting patients' rights and valuing people diversity.

2-1-3 Recognize own personal and professional limitations and accept the conditions of referral to or guidance from other members of the health care team.

2-2- COMPETENCY

Standardize pharmaceutical materials, formulate and manufacture pharmaceutical products, and participate in systems for dispensing, storage, and distribution of medicines.

KEY ELEMENTS

2-2-1 Isolate, design, identify, synthesize, purify, analyze, and standardize synthetic/natural pharmaceutical materials.

2-2-2 Apply the basic requirements of quality management system in developing, manufacturing, analyzing, storing, and distributing pharmaceutical materials/ products considering various incompatibilities.

2-2-3 Recognize the principles of various tools and instruments, and select the proper techniques for synthesis and analysis of different materials and production of pharmaceuticals.

2-2-4 Adopt the principles of pharmaceutical calculations, biostatistical analysis, bioinformatics, pharmacokinetics, and bio-pharmaceutics and their applications in new drug delivery systems, dose modification, bioequivalence studies, and pharmacy practice.

2-3- COMPETENCY

Handle and dispose biologicals and synthetic/natural pharmaceutical materials/products effectively and safely with respect to relevant laws and legislations.

KEY ELEMENTS

2-3-1 Handle, identify, and dispose biologicals, synthetic/natural materials, biotechnology-based and radio-labeled products, and other materials/products used in pharmaceutical field.

2-3-2 Recognize and adopt ethical, legal, and safety guidelines for handling and disposal of biologicals, and pharmaceutical materials/products.

2-4- COMPETENCY

Actively share professional decisions and proper actions to save patient's life in emergency situations including poisoning with various xenobiotics, and effectively work in forensic fields.

KEY ELEMENTS

2-4-1 Ensure safe handling/use of poisons to avoid their harm to individuals and communities.

2-4-2 Demonstrate understanding of the first aid measures needed to save patient's life.

2-4-3 Take actions to solve any identified medicine-related and pharmaceutical care problems.

2-4-4 Assess toxicity profiles of different xenobiotics and detect poisons in biological specimens.

2-5- COMPETENCY

Contribute in pharmaceutical research studies and clinical trials needed to authorize medicinal products.

KEY ELEMENTS

2-5-1 Fulfill the requirements of the regulatory framework to authorize a medicinal product including quality, safety, and efficacy requirements.

2-5-2 Retrieve, interpret, and critically evaluate evidence-based information needed in pharmacy profession.

2-5-3 Contribute in planning and conducting research studies using appropriate methodologies.

2-6- COMPETENCY

Perform pharmacoeconomic analysis and develop promotion, sales, marketing, and business administration skills.

KEY ELEMENTS

2-6-1 Apply the principles of business administration and management to ensure rational use of financial and human resources.

2-6-2 Utilize the principles of drug promotion, sales, marketing, accounting, and pharmacoeconomic analysis.

DOMAIN 3: PHARMACEUTICAL CARE

3-1- COMPETENCY

Apply the principles of body functions to participate in improving health care services using evidence-based data.

KEY ELEMENTS

3-1-1 Apply the principles of body function and basis of genomics in health and disease states to manage different diseases.

3-1-2 Apply the principles of public health and pharmaceutical microbiology to select and assess proper methods of infection control.

3-1-3 Monitor and control microbial growth and carry out laboratory tests for identification of infections/diseases.

3-1-4 Relate etiology, epidemiology, pathophysiology, laboratory diagnosis, and clinical features of infections/diseases and their pharmacotherapeutic approaches.

3-2- COMPETENCY

Provide counseling and education services to patients and communities about safe and rational use of medicines and medical devices.

KEY ELEMENTS

3-2-1 Integrate the pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra-indications, adverse drug reactions and drug interactions.

3-2-2 Apply the principles of clinical pharmacology and pharmacovigilance for the rational use of medicines and medical devices.

3-2-3 Provide evidence-based information about safe use of complementary medicine including phytotherapy, aromatherapy, and nutraceuticals.

3-2-4 Provide information about toxic profiles of drugs and other xenobiotics including sources, identification, symptoms, and management control.

3-2-5 Educate and counsel patients, other health care professionals, and communities about safe and proper use of medicines including OTC preparations and medical devices.

3-2-6 Maintain public awareness on social health hazards of drug misuse and abuse.

DOMAIN 4: PERSONAL PRACTICE

4-1- COMPETENCY

Express leadership, time management, critical thinking, problem solving, independent and team working, creativity and entrepreneurial skills.

KEY ELEMENTS

4-1-1 Demonstrate responsibility for team performance and peer evaluation of other team members, and express time management skills.

4-1-2 Retrieve and critically analyze information, identify and solve problems, and work autonomously and effectively in a team.

4-1-3 Demonstrate creativity and apply entrepreneurial skills within a simulated entrepreneurial activity.

4-2- COMPETENCY

Effectively communicate verbally, non-verbally and in writing with individuals and communities.

KEY ELEMENTS

4-2-1 Demonstrate effective communication skills verbally, non-verbally, and in writing with professional health care team, patients, and communities.

4-2-2 Use contemporary technologies and media to demonstrate effective presentation skills.

4-3- COMPETENCY

Express self-awareness and be a life-long learner for continuous professional improvement.

KEY ELEMENTS

4-3-1 Perform self-assessment to enhance professional and personal competencies.

4-3-2 Practice independent learning needed for continuous professional development.

Glossary

Competency

An observable ability of a professional, integrating multiple components such as knowledge, skills, values, and attitudes. Since competencies are observable, they can be measured and assessed to ensure their acquisition.

Competency Domain

Broad distinguishable areas of competence that, in the aggregate, constitute a general descriptive framework for a profession.

Graduate Attributes

Characteristics, qualities, attitudes and dispositions that graduates should possess upon completion of a particular program.

Intended Learning Outcomes (ILOs)

Subject-specific knowledge, understanding and skills intended by the institution to be gained by the learners completing a particular educational activity. The ILOs emphasize what is expected that learners will be able to do as a result of a learning activity.

National Academic Reference Standards (NARS)

Reference points defined by NAQAAE to outline/describe the expected minimum competencies to fulfill the requirements of a program of study.

National Qualifications Framework (NQF)

A framework that provides a systematic description of all qualifications within the educational systems of the state and categorizes them according to a set of standards that determine the level of learning outcomes for each qualification gained. The NQF is used as a tool for benchmarking, quality assurance, comparison and coordination between the different qualifications.

The Program

A set of educational courses and activities designed by the institution to determine the systematic learning progress. The program also imparts the intended competencies required for the award of an academic degree.

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