

# Study on our Project to set up Learning Objectives and Pedagogical Activities for the Training of Urology B Residents in Terms of Management of Urological Emergencies

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## Abstract...

The training of residents in urological surgery is short: 5 years. It is well known that theoretical teaching alone is insufficient. It is therefore imperative to complement it with practice. The hospital supervision of residents in the surgical services encounters numerous difficulties related to the specificity of surgical specialties, part of whose care activity takes place in operating rooms. Establishing precise and relevant educational objectives that are realistic and achievable is crucial.

The Urology-B department of the Ibn Sina Hospital in Rabat is one of the three urology departments of the University Hospital. In addition to learning at the patient's bed, the organization of staffs, and daily educational activities, it seemed essential to us through our project to propose a set of learning objectives and educational activities for the training of residents in Urology B in terms of management of urological emergencies.

We were inspired by the methodical planning of training activities as proposed by Pierre Jean in seven steps. Our work consisted of pursuing steps 3, 4, 5, 6 and 7, namely analyzing needs, formulating learning objectives and means, and evaluating them with the training activity. To analyze the needs, we followed the FSP (frequency, severity, problem) analysis framework. The formulation of the learning objectives was based on the needs analysis. These objectives were divided into three areas of knowledge: knowledge, know-how and interpersonal skills according to the simplified taxonomy of Bloom, Krathwohl and Simpson. Following Pierre Jean's approach, we proposed the

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evaluation methods for this learning. A 14-item questionnaire was proposed for the evaluation of emergency management in urology.

Resident training is crucial, and the duration is very short. Efficient and appropriate strategies must be adopted to meet training needs. Thus, supporting educational objectives. In addition to the classical pedagogical activities, the introduction of new activities allows the improvement of the training in a playful way. This innovative project that we are carrying with enthusiasm will allow us to put science and new technologies at the service of the training of our tomorrow's surgeons.

**Keywords:** Pedagogy; Learning objectives; Training; Surgery.

### Introduction

The Moroccan population continues to grow and so does the need for health professionals. Indeed, the new development model is part of the dynamics created by His Majesty King Mohamed VI calling for the reduction of social disparities and the reform of the social protection system. This generalization of social protection will require medical human resources for its realization. It is no coincidence that the Kingdom, which faces a shortage of practitioners, has decided to open its health sector to foreign expertise.

The training of residents in urological surgery is short: 5 years. It is well known that theoretical teaching alone is insufficient. It is therefore imperative to complement it with practice. The success of the internship depends on the organization and definition of the expected tasks and skills and on clearly defined and controlled objectives [1]. The acquisition of gestures and attitudes essential to good medical practice within the department requires rigorous supervision of the residents during their training. In fact, the hospital supervision of residents in surgical departments encounters numerous difficulties related to the specificity of surgical specialties, part of whose care activity takes place in operating rooms [2,3]. Precise and relevant, realistic and achievable educational objectives are crucial [4,5].

The Urology-B department of the Ibn Sina Hospital in Rabat is one of the three urology departments of the University Hospital. In addition to learning at the patient's bed, the organization of staffs, and daily educational activities, it seemed necessary to us through our project to propose a set of learning objectives and educational activities for the training of residents in Urology B in terms of management of urological emergencies.

### Methodology for the implementation of the project

We were inspired by the methodical planning of training activities as proposed by Pierre Jean in 7 steps [6]. Stages 1 and 2 were already defined and fixed by Mohammed V University and the Faculty of Medicine and Pharmacy of Rabat. Our work consisted in pursuing steps 3, 4, 5, 6 and 7, namely training needs, objectives, means and evaluation of learning, and finally evaluating the training activity.

For the training needs, we followed the analysis framework of the FSP grid (frequency, severity, problem).

First of all, we collected the themes considered important by the urological practitioners during an interview "Individual Improvement Interview Report. For the learning objectives of the residents was made on the basis of the needs analysis. Focusing

on the management of urology emergencies.

A first list of objectives was developed by ourselves, taking into account the urology learning objectives as described by the urology department. We then supplemented them by reading the objectives of other countries through a review of the literature [7,8]. These objectives were contextualized by taking into account the length of training of the residents and the current urological pathologies and emergencies of the department.

We proceeded to the construction of the pedagogical project with the elaboration of a corpus of pedagogical objectives and potential pedagogical activities that could be developed in our department for the learning of urology residents.

Once the outlines of our project are drawn, they will be submitted to the analysis and criticism of the professors involved in the supervision of the students and to the head of the urology department B.

The learning objectives were also divided according to the 3 domains of knowledge: knowledge (cognitive), know-how (sensory-motor) and know-how (attitudes, psycho-affective) according to the simplified taxonomy of Bloom, Krathwohl and Simpson [9].

Following Pierre Jean's approach, we have proposed the evaluation methods, based on the interrogation and clinical examination of a patient in front of a jury. As well as a written test on a (essay question) and an assessment of behavior. A 14-item questionnaire was proposed for the evaluation of emergency management in urology.

The identification and proposal of potential educational activities met the educational objectives, trying each time to propose for an operational objective, the least ambiguous possible, with an observable behavior and a precise level of requirement based on evaluation criteria indicated beforehand.

### Needs analysis: Formulation of learning objectives

#### (a) Methods:

For this we followed the analysis framework of the FGP grid. First, we collected the topics considered important by the urological practitioners during an "Individual Improvement Interview Form".

The training needs in question were selected and filled in on a grid according to the FSP model).

### Frequency (F)

Rated at 0, 1 or 2 according to the assessment of each individual in his/her professional practice.

- 0: rare;
- 1: moderately frequent;
- 2: very frequent

### Severity (G)

In the same way, it is rated at 0, 1 or 2 according to the assessment that each person makes of it in his or her professional practice.

- 0: benign;
- 1: moderately serious;
- 2: very serious

### Problems (P)

The rating process is the same as above but here the problems are rated 0, 2, 4. This rating allows us to highlight the problems and therefore the need for continuing medical education, in relation to the concepts of frequency and severity.

The problems may be related to knowledge, manual skills or interpersonal skills.

- 0: no problem,
- 2: average problems,
- 4: many problems.

### (b) Results:

Nineteen urology residents were interviewed. We classified the residents into 2 distinct groups based on their level:

- Group 1: 1st, 2nd and 3rd year
- Group 2: 4th and 5th year

Urologists in training expressed the need for training within the department by the urological surgery faculty, but also suggested the participation of faculty from other specialties (nephrology, visceral surgery and emergency medicine). Residents have the possibility to benefit from training in other urological services both in Morocco and abroad. These exchanges of experience can only be beneficial. Nevertheless, training needs remain and they concern acute urine retention, obstructive anuria, testicular torsion, penile fracture and Fournier's gangrene.

### Formulation of learning objectives

Following the methodological approach used for the needs, 5 learning objectives were identified and broken down into 25 operational objectives, divided into the three areas of knowledge according to the simplified taxonomy of Bloom, Krathwohl and Simpson, i.e. the knowledge objectives, the expected competencies (know-how or technical skills) and the behaviors to be acquired (soft skills).

Table I provides a summary of these learning objectives as well as proposals for relevant and appropriate pedagogical activities that can be developed to achieve them. These learning objectives concern the cross-cutting aspects of hospital training in urological emergencies. These objectives are as follows:

Topics		Group 1	Group 2	Significance
Acute urinary retention	Frequency	2	2	-
	Severity	0,5	0,6	-
	Knowledge problem	1	0,9	-
	Know-how problem	1,5	1,4	-
	How to behave problem	2,1	1,9	-
Obstructive anuria	Frequency	1,4	1,2	-
	Severity	1,6	1,6	-
	Knowledge problem	3,1	1,7	+ p<0,05
	Know-how problem	3,2	1,9	+ p<0,05
	How to behave problem	2,2	2,3	-
Testicular torsion	Frequency	0,7	0,7	-
	Severity	1,7	1,7	-
	Knowledge problem	1,8	1,6	-
	Know-how problem	2,9	2,1	-
	How to behave problem	3,3	1,4	+ p<0,05
Fracture of the penis	Frequency	0,5	0,6	-
	Severity	1,5	1,4	-
	Knowledge problem	2,1	1,9	-
	Know-how problem	3	1,7	+ p<0,05
	How to behave problem	3,5	2,1	+ p<0,05
Fournier's gangrene	Frequency	0,7	0,7	-
	Severity	1,9	1,8	-
	Knowledge problem	2,4	2,1	-
	Know-how problem	3,1	1,9	+ p<0,05
	How to behave problem	2,1	2	-

### Clinical knowledge objectives

- Conduct the clinical examination of a urology patient
- Interpret the various diagnostic imaging tests commonly performed on uroscanner and the various biological tests
- Recognize a urological emergency
- Diagnose acute retention of urine (ARU), hematuria and urinary tract infection.
- Manage in the emergency room a renal colic, ARU, obstructive anuria, testicular torsion, penis fracture and gangrene of the Fournier
- Prepare and give a presentation on one of the urological emergencies
- Presentation on one of the urological emergencies

### Technical skills

- Perform under supervision the technical procedures, the placement of a suprapubic catheter of a percutaneous nephrostomy as well as an ultrasound of the urinary tree and the genital tract
- Assist, help and perform procedures in the operating room

### Behaviors to be learned

- Have a sense of responsibility

- Communicate adequate information to colleagues
- Have good quality professional relationships
- Demonstrate empathy, tact and respect in dealing with the patient and/or family.
- Convince the patient of the merits of the therapeutic strategy decided upon

#### **Proposal of educational activities**

After an analysis of the needs, we determined the learning objectives which were themselves broken down into specific objectives. These are:

- Teaching at the patient's bed
- Presentation of clinical records during weekly staff meetings
- Organization of complementary lectures
- Outpatient consultation
- Participation in operating room procedures,
- On-call duty
- Didactic videos
- Teaching on anatomical model (mannequin)
- Participation in contextualized teaching sessions: ARC, APP

#### **Evaluation of learning**

The evaluation of learning will be of a written test sanctioning the success of the first year of residency. The exam takes place in 4 hours and covers basic sciences as well as an essay question concerning emergency care. The year is validated when the resident obtains an average of 10/20.

Regarding the final exam in the 5th year of residency:

Each final exam is held in a single session.

The final examination includes eligibility and admission tests.

The eligibility tests include:

- a test of titles and works (coefficient 1)
- the mark of the continuous control of knowledge and training courses (coefficient 1)
- two written tests (each noted of coefficient 1).

The admission tests include:

- a test of the specialty (coefficient 1)
- a clinical or practical test (coefficient 1)

Each test is marked from 0 to 20. Any mark below 5/20 is eliminatory.

#### **Evaluation of the organization and progress of the residency**

The evaluation of resident training will aim to assess the different stages of the organization of the residency according to the Mc Guire principle by looking at all the stages [10]. The aim will be to assess the relevance of the learning objectives as well as the pedagogical activities and their internal coherence. For this purpose, we have opted for the two modes of evaluation:

Self-evaluation and an evaluation by the residents.

#### **Discussion**

In order to improve the training of residents in Urology B, we used Jean's method of methodical planning of training [6]. First, we established the training needs, then we formulated a number of educational objectives related to the needs felt and highlighted by the first exercise and finally we outlined a number of activities that could be initiated or developed to better achieve these objectives.

In formulating these objectives, we came up against a selection bias due to a certain subjectivity. In fact, to overcome this bias, the use of a validated methodology such as the DELPHI method could have been more appropriate in formulating these objectives with less subjectivity and greater relevance if "experts" had been involved through the nominal group technique [11].

The DELPHI method of organizing a consultation of experts, subjected to successive waves of questioning on a specific subject to highlight convergences of opinion and consensus, would have been more appropriate [12].

A total of 80 operational objectives were identified. They are divided into the three domains of knowledge according to the taxonomy of Bloom, Krathwohl and Simpson. We were careful to formulate goals that were specific and relevant, realistic and achievable as defined by Tyler, Mager and Hameline [4]. Nonetheless, some goals were difficult to categorize because they fell into multiple domains at once. The proposal of such a list of learning objectives is still open to criticism. Indeed, the objectives-based approach has the disadvantage of fragmenting learning, which appears to be non-integrated. This objective-based approach is still highly criticized, particularly by Harden and Mc Avoy [14,15]. The competency-based approach seems to be more in line with the realities of our hospital structure [16]. These objectives are not exhaustive, but we consider them essential in view of our emergencies.

The learning activities during the consultation and during the interventions in the operating room are based on companionship and tutoring. The training (university diploma in medical pedagogy) that we have received has enabled us to better transmit information and to better play the role of tutor.

According to Cottin, the use of theoretical teaching, in the form of courses, is not incompatible with the practical nature of the internship, provided that the "integrated" courses are focused on themes specific to the department's specialty, and potentially encountered at the patient's bedside [17]. An improvement in the educational quality of hospital internships implies the organization and planning of teaching sessions, which are essential complements to daily clinical practice at the patient's bed [18].

Bidault, emphasizes the role of the consultation in learning [13].

In addition, the introduction of new teaching activities such as the laparotrainer and the simulators of anatomical models in virtual reality allowing initiation to endoscopic and laparoscopic gestures. Thus, the first time will never be on the patient and we could then avoid many iatrogenic accidents. These new technologies allow for a faster learning curve and better dexterity.

Finally, the elaboration of a portfolio, serving as a support and follow-up of the learning objectives, emerges as a prerequisite to be realized in the short term for a better training of the residents.

### Conclusion

The shortage of doctors in Morocco is a real challenge. To remedy it, many faculties have been created. Nevertheless, quality should not be sacrificed on the altar of quantity. The training of residents is crucial, and the duration is very short. Efficient and appropriate strategies must be adopted to meet training needs. Thus, supporting specific and relevant, realistic and achievable educational objectives is the responsibility of the faculty. In addition to the classic pedagogical activities, the introduction of new activities allows the improvement of the training in a playful way. This innovative project, which we are enthusiastic about, will allow us to put science and new technologies at the service of the training of our future doctors.

### Declarations

**Conflicts of interest:** The authors declare that they have no competing interests.

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