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Round Table: The Instruction of Pharmacology Announcement: Raising the Social Awareness - Clinical Interconnection of Knowledge - Strategic Use of Medicine: 3 Basic Directions of Instruction in Pharmacology

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INTRODUCTORY THOUGHTS

The instruction of Pharmacology is, internationally, difficult: large number of substances, large number of properties and parameters for every substance, absence of clinical concepts (3rd year of instruction), abstract instruction to a large extent, the existence of wide knowledge being a prerequisite (physiology, anatomy, etc). The student is called to comprehend therapeutic approaches without having yet come in contact with a patient. The vagueness of the term "effectiveness of therapy" and the inability of Medical Science to define promptly and reliably the useful and safe substances constitute two great additional difficulties.

BASIC POSITIONS OF THE SPEAKER

The instruction is based (or should be so) on the philosophy of the instructor. This announcement centres around the following positions:

- *Medicine is an empirical science and art.*
- *The knowledge transferred should be drastically limited (the selection would be difficult).*
- *Instruction of medicine selection should be offered to the student.*
- *Therapy is always an experiment.*
- *The adverse effects are the most important element of each substance.*
- *The medicine is one therapeutic measure - often not the most basic one.*
- *The pharmaceutical treatment for the most widespread ailments are not greatly effective.*

DIFFICULTIES IN GREECE

- There is not any concept of School and, consequently, there are no mature, settled opinions on instruction (no teaching philosophy).
- Great number of students (at least in Athens).
- There are no courses set as prerequisites.
- There is great loss of teaching hours and absenteeism on the part of the students.
- To a great extent, the instructors do not use the medicines they teach about in class.

1. Raising the Social Awareness

Today, the bad pharmaceutical treatment (medicine without indication of effects, provision of ineffective medicine, lack of continuous observation of the patient, lack of medical file and clinical examination, disregard of adverse effects and undesirable side-effects) has as its underlying cause on the one hand the mentality of the doctors and on the other the criminal policy of the pharmaceutical companies offering bonuses and trips to reward sales percentages. The development of solidarity and social participation for the students could inhibit this trend and push towards a better pharmaceutical treatment. Thus, the students are assisted in developing activities that are not always based on a pharmacological infrastructure, at least not directly: occupation / collaboration with persons with special needs, structuring of medical phrases (e.g., for the medical file, etc) in various languages of immigrants, search for medicine dangerous during driving, verification of the effectiveness of the therapy in the Centre of Therapy of Addicted Persons, surveying the condition of operation rooms and behaviour in these of doctors and personnel (infection means consumption of antibiotics), discovery of unused medicine in houses, demonstration of the lack of morality and professional behaviour of the pharmaceutical industry (e.g., not reporting

adverse effects in the enclosed instructions for use and in the prospectuses), search for hospital waste (residuals of antibiotics, antineoplastic agents, syringes, etc.) and, finally, awakening and reinforcement of the students' professional identity.

2. Clinical Interconnection of Knowledge - Reality and Questioning of Principles

According to the principles of education, originally of clinical doctors, and the principles of Medicine as an empirical science, the application is of crucial importance for the patient. Therefore, knowledge without repercussion should be severely limited. Furthermore, the student a) connects tighter to memory any knowledge that has clinical consequence and importance and b) gains a greater interest in the knowledge of Pharmacology. It is known that a lot of theoretical knowledge, without maturity and clinical interconnection, rather inhibit the efficiency of the doctor, especially in cases of quick decision-making and measure-taking.

$T_{1/2}$ takes on greater importance when it is connected to medicine of low safety coefficient and to the additive effect. Even more, if it is taken into account along with the biological diffusion and the great breadth of $T_{1/2}$ of some medicine (consequently, the latter are dangerous) or if it is connected to the selection of NSAD in sharp and chronic pain. The many adverse effects of the Central Nervous System (CNS) due to indomethacine become even more significant if they are connected to the reduction of driving ability or the ability of heavy machinery manipulation or other heavy tasks.

In our opinion, it is preferable for someone to report the clinical repercussion of the effects of morphine (e.g. pain relief, stress-relieving effect, euphoria, etc.) than to refer the mechanisms and their topography (morphine acts at μ receptors in lamina I and II of the substantia gelatinosa of the spinal cord and decreases the release of substance P, which modulates pain perception in the spinal cord).

Especially in the chapter of the antimicrobial substances, a radical redistribution and limitation of substances should be conducted. The number of these substances reflects more the desires of the pharmaceutical industry than the clinical needs (The University Clinics of Hanover have a list of only 10 antibiotics for the clinical use and only 8 for the outpatients!). Today, nobody is in a position to supervise all the antibiotics, their doses, their adverse effects and all their characteristics. The acknowledgement of the limitation of human capacity relieves and encourages.

The transfer of questioning of statements to the students is also significant, as, for example, for the ineffective medicines (difference between experimental and clinical needs), for the disproportionate ratio of adverse effects over the expected therapeutic benefit, for the reduced compliance of patients, etc.

3. Instruction of Strategy of Medicine Use

The knowledge of a strategy of medicine use can contribute much more to the effectiveness of a therapy than the dry knowledge of substances and properties. A classic example is the case of antimicrobial medicines in a hospital, where the restriction of substances, the range of alternative solutions, the committee for the approval of certain substances, the consumption control, the limited bioprogramme and the basic rules of selection lead to much more effective treatments and the strengthening of the effectiveness of substances (reduction of resistance).

The strategy also plays an important role in the chronic administration of medicines in diseases where the pharmaceutical treatment constitutes an accompanying measure (such as high blood pressure and diabetes) coupled with frequent and serious adverse effects.

IN PLACE OF EPILOGUE

Besides the methodology of instruction, which is adapted to a large extent to the abilities and philosophy of the professor (I do not know if this is good or harmful), a significant role is played by his/her willingness to make students creative and to transfer the maturity of knowledge that he/she possesses, their choice (most important) and the (not very common) updating of the professor's knowledge. The most basic measure yet today should be the social awareness of the students, because a weak social perspective neutralises totally any knowledge and leads to Medicine of low quality and effectiveness, beyond the needs of the population.