

# Evaluation Of Diagnostic Skills Of Interns Electively Rotating At The Dermatology Department Of King Fahad Hospital Of The University In Alkhobar, Saudi Arabia

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## Abstract

**Background:** The dermatology elective enables interns during their internship to acquire useful diagnostic skills in dermatology. The aim of this study is to evaluate the efficacy of a 4-week dermatology elective in promoting diagnostic skills of interns.

**Methods:** During the year 2004, kodachrome slide-based multiple-choice questions were administered to 20 interns at the beginning (pre-test) and completion (post-test) of their elective period.

**Results:** The mean scores of correct answers for the pre- and post-test were 75.85% and 82.50%, respectively.

**Conclusions:** The 4-week dermatology elective rotation significantly improved the diagnostic skills of the interns.

## INTRODUCTION

Recent studies have shown that errors committed by general practitioners (GP) tend to occur most often in the realm of the diagnosis of skin lesions<sup>1,2</sup> which indicate that it is important to explore whether or not the current amount and type of dermatologic training prepares future GPs for management of skin disorders. King Fahad Hospital of the University is a high volume, clinically varied, academic and tertiary referral hospital. On the average, 60–80 patients are seen at the dermatology clinic each day. Interns are encouraged to see selected patients on their own, to write complete notes on the charts of patients that they evaluate and to formulate their thought processes relative to diagnosis. After that those patients are discussed with the consultant in the clinic. Besides, there are at least two didactic sessions per week. All interns spent 5 full days per week in the 4-week rotation. The aim of this study is to evaluate the efficacy of the 4-week dermatology elective during internship period in promoting diagnostic skills in new medical graduates, and to explore their ability to identify common dermatologic diagnoses.

## MATERIAL AND METHODS

A total of 20 interns rotating as elective at the dermatology department of King Fahad Hospital of the University in alkhobar during the year 2004 were included in this study. A 20-item multiple choice questions pre-test was given to each candidate on the first day of joining the dermatology department as a rotating intern. The study period took one year as the number of the intern rotating at a time ranged between 1-3 interns. The test consisted of high-quality kodachrome slides of common dermatologic disorders. Subjects were not given the answers after completion of the pre-test. On the last day of the elective, a multiple choice question post-test consisting of slides identical to those presented at the pre-test was administered. Statistical analysis of the test results was conducted using SPSS version 10. Singlet-tests were used to determine whether the differences between pre-tests and post-tests results were significant ( $P < 0.001$ ).

## RESULTS

The results of the pre-tests and post-tests for students who

took the dermatology elective are given in Table 1. Twenty students completed both pre-tests and post-tests. The mean scores were 75.85% and 82.50% (standard deviation, SD 13.77 and 13.33) respectively. Single t -tests revealed that the difference in scores between the pre-tests and post-tests was highly significant (  $P < 0.001$ ). The performance of the 20 students who took the elective was also analyzed with regard to their ability to recognize specific diagnoses. Table 2 shows the scores by diagnosis at the pre-tests and post-tests. The ability of the interns to recognize the correct diagnosis at the pre-test varied considerably depending on the disorder; however, the diagnostic accuracy improved at the post-test for most diagnoses.

**Figure 1**

Table 1: Results of the pre-test and post-test.

Test	No. of interns	Correct answers ( %)	Standard deviation
Pre-test	20	75.85	13.77
Post-test	20	82.50	13.33

**Figure 2**

Table 2: Percentage of correct answers for recognition of individual diagnoses

Correct answer	% correct on pre-test	% correct on post-test	% improvement
Carbuncle	65	75	+10
Tinea pedis	55	50	-5
Onychomycosis	80	75	+5
Verruca vulgaris	35	60	+25
Acute paronychia	55	60	+5
Herpes simplex	75	75	-
Pityriasis versicolor	75	90	+25
Contact dermatitis	65	75	+10
Erythema multiforme	75	90	+25
psoriasis	85	100	+15
Acne vulgaris	95	80	-15
Lichen planus	95	100	+5
Keloid	90	90	-
Acute urticaria	95	95	-
Alopecia areata	100	100	-
Atopic dermatitis	85	85	-
Ichthyosis	80	85	-
Neurofibromatosis	75	75	-
Malar rash	95	90	-5
Angiofibroma of tuberous sclerosis	60	80	+20

## DISCUSSION

At our institution of King Faisal University Medical college, medical students are required to complete 5–10 h of dermatology didactic lectures and 2 weeks of dermatology clerkship offered in the fifth year of the medical school. From the results of this study, the average score on the pre-test was 75.85% which is higher than the results from other studies.<sup>2,3,4,5,6</sup> This probably indicate that the exposure of our students to dermatology during their undergraduate rotation was substantial and the one month dermatology elective might have influenced the learning interns. However, as the pre-test and post-test slides are the same, repetition itself and the ability to recall images seen previously would be expected to improve recognition and awareness. Besides, some authors had observed that more accurate diagnoses could be achieved from kodachrome slides as compared to live patient diagnosis.<sup>1</sup> The photographs used represent classic presentations of common skin diseases so these trial scores represent basic dermatologic diagnostic competence immediately after completing the maximum training available in dermatology. Specifically, it is the pre-test scores that are more truly representative of the majority of newly graduating medical students. Given all of these factors, one should question whether the current maximal training even represents a sufficient minimum requirement for the type of responsibilities trainees will have in the future if they decide to become a general practioner. The current study clearly demonstrated the benefits of a 4-week dermatology elective for interns in terms of diagnostic skills and retention of knowledge. Besides, the average amount of clinical experience in dermatology before the 4-week elective rotation for all subjects involved was 2 week. Enk et al<sup>7</sup> reported the diagnostic performance of 121 sixth year medical students at the pre- and post-test to be 39.7% and 72.5% respectively. Similarly another study done by Whitaker-Worth et al<sup>8</sup> on 27 fourth year medical students and found that the pre and post-test results were 45.6% and 70.7% respectively which are lower percentages than our results. In contrast, Wagner et al<sup>9</sup> could not demonstrate significant improvement. When stratifying the scores into individual diagnoses (Table 2), we found that disorders such as tinea pedis, verruca vulgaris and acute paronychia were correctly diagnosed by less than 60% of the candidates while onychomycosis, psoriasis, lichen planus, keloid, acute urticaria, alopecia areata, atopic dermatitis and ichthyosis were correctly diagnosed by more than 80% of the interns.

At the post-test, the improvement in diagnostic skills was noticed for diagnoses such as carbuncle, pityriasis versicolor, erythema multiforme and psoriasis. The concordance rate of identifying dermatoses such as herpes simplex, keloid, acute urticaria, atopic dermatitis, ichthyosis and neurofibromatosis remained the same at the pre- and post-test. Alopecia areata was the only condition that was correctly diagnosed by all the interns in the pre and post-test. In contrast, the post-test results of acne vulgaris recognition was less than that of the pre-test which may be attributable to confusing it with other skin disorders mimicking acne especially after the interns had been exposed to various skin diseases. In conclusion, rotating interns in dermatology elective had demonstrated sufficient diagnostic skills when they first joined the elective which further improved significantly at the end of the 4 week period.

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