The Step 2 Clinical Skills Exam

TO THE EDITOR: We agree with the Perspective article by Lehman and Guercio (March 7 issue)[1] that national clinical exams are expensive. We also agree with First et al.[2] that such exams positively shape the educational and assessment programs of medical schools, promote standardization of accreditation criteria, and provide an essential service to the public by filtering out candidates in need of remediation of deficient skills. We feel, however, that a crucial aspect has been ignored so far: the effect of the exam on all students taking it. The role of summative assessment in shaping student learning is being defined in a growing body of literature.[3-5] We may ignore to our peril the implied warning that without a mandatory high-stakes clinical skills exam, too many new graduates may lack the clinical skills deemed critical to effective health care. Considering its positive effects, a national clinical skills exam seems an excellent value proposition indeed.

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TO THE EDITOR: Lehman and Guercio conclude that the U.S. Medical Licensing Examination (USMLE) Step 2 Clinical Skills (CS) exam produces a poor return on investment. Their computation is based on the explicit costs of the exam to students. They evaluate the benefits only in terms of screening out unqualified applicants. Lehman and Guercio do not consider that requiring passage of Step 2 CS has also compelled medical schools to bolster clinical-skills education in their curricula.

Every exam should correspond to educational activities in which students learn the knowledge and skills needed to pass that exam.[1] Delivering a preparatory curriculum for licensure exams is an ethical obligation for medical schools. A substantial benefit of Step 2 CS stems from curricular innovations that medical schools have made to prepare students for the exam. Contemporary curricula include instruction in fundamental clinical skills and inculcation of the importance of those skills.

An investment cannot be measured exclusively by its cost, but rather, the cost must be balanced against the benefit realized from the expenditure. In this case, Lehman and Guercio discounted the value of the curriculum innovations that occurred in response to the imposition of Step 2 CS.

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THE AUTHORS REPLY: Huwendiek et al. argue that the USMLE Step 2 CS exam "filter[s] out candidates in need of remediation." As shown, because of the high pass rates, the exam annually filters out only 32 candidates who fail the exam twice. Since candidates may take the exam six times,[1] Step 2 CS only delays — but does not filter out — the practice of medicine by any future physician. Furthermore, we question the notion that "without a mandatory high-stakes clinical skills exam, too many new graduates may lack the clinical skills deemed critical to effective health care." This statement incorrectly implies that passing a high-stakes clinical exam ensures a sufficient level of clinical skills. This belief is as

erroneous as the contrapositive of the argument, that physicians who have not passed a clinical skills exam lack a sufficient clinical skill set. The test was instituted in 2004, so this logic raises the question of whether hundreds of thousands of otherwise-licensed physicians are truly clinically competent, given that they graduated without taking Step 2 CS.

We agree with Stoddard that there may be benefits stemming from curriculum innovations designed "in response to the imposition of Step 2 CS." But this statement is telling: medical schools are teaching (and thus students are learning) for a test. The argument prompts the question of whether a costly, daylong exam — as opposed to Liaison Committee on Medical Education guidelines or regulations — is truly the best mechanism for ensuring the clinical skills that all physicians must have on graduating from medical school.

Our Perspective article did not claim to be an exhaustive cost–benefit analysis. It did, however, highlight a major cost borne directly by physicians and question a nebulous benefit that neither the National Board of Medical Examiners nor the Federation of State Medical Boards has definitively quantified. Step 2 CS serves as little more than an expensive rubber stamp on top of a student's medical education. We believe it should be eliminated, unless its benefits — like those of any other medical intervention — are conclusively shown.

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Since publication of their article, the authors report no further potential conflict of interest.

1. 2013 Bulletin of information. Philadelphia: United States Medical Licensing Examination (http://www.fsmb.org/pdf/USMLEStep3_bulletin.pdf).

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JC Viremia in Natalizumab-Treated Patients with Multiple Sclerosis

TO THE EDITOR: We analyzed plasma samples for the presence of JC virus antibodies and viral DNA. The samples were obtained from separate cohorts of patients with multiple sclerosis who received monthly infusions of natalizumab. Blood samples were obtained from 26 patients immediately before the first infusion (the baseline) and for several months during the first year of treatment. Blood samples also were obtained from 23 patients once after more than 24 months of treatment. Antibody titers and viral DNA[1] were measured by means of an enzyme-linked immunosorbent assay with the use of JC viruslike particles (the Biogen Stratify assay uses similar viruslike particles).[2] We also used an ultrasensitive quantitative polymerase-chain-reaction (PCR) assay specific for JC virus DNA.[1] Our procedures were certified in accordance with the Clinical Laboratory Improvement Amendment. The Laboratory of Molecular Medicine and Neuroscience has provided quantitative PCR results that have confirmed the diagnosis of progressive multifocal leukoencephalopathy (PML) in approximately half the 370 cases of PML in natalizumab-treated patients with multiple sclerosis.

Overall, 17 of the 49 patients (35%) had viremia at some time. Ten of 26 patients in whom treatment was initiated had viremia; 4 were seronegative (antibody titer, <2560) and 6 were seropositive (antibody titer, ≥2560).[1] Of these patients, 4 had viremia at baseline and 3 were seropositive. Seven of 23 patients who received more than 24 infusions had viremia and 2 were seronegative. One blood sample was obtained from each of the 18 healthy volunteers; 6 were seronegative, 12 were seropositive, and none had detectable viral DNA.

Fisher's exact test was used to determine a statistical difference between the treated patients who had viremia and healthy volunteers ($P=0.003$) (Table 1). We observed a range in viral titers from 13 to 510 copies of JC virus DNA per milliliter (mean, 43 copies per milliliter) in patients in the initial year of treatment and from 21 to 126 copies (mean, 40 copies per milliliter) in those who received more than 24 infusions. Of the 17 persons with viremia, 11 were seropositive (65%) and 6 were seronegative (35%).

Although viremia by itself is not a predictor of the risk of PML, the observation that viremia