Changes in Undergraduate Medical Education, Admissions, and Student Outcomes at LSU School of Medicine: Three Years After Katrina

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KEY INDEXING TERMS: Medical student education; Hurricane Katrina; LSU School of Medicine. **[Am J Med Sci 2008;336(2):147–150.]**

Much has been written about the effects of Hurricane Katrina on the Louisiana State University Health Sciences Center (LSUHSC) School of Medicine in New Orleans[1–4] and the importance of disaster planning for all medical schools. As we approach Katrina's third anniversary, it is useful to reflect on the storm's longer term effects on the school. This brief report summarizes the current status of our admissions process and undergraduate medical education curriculum. Pre-Katrina (July 2005) and immediate post-Katrina (July 2006) measures are used as benchmarks for comparison. The article also examines outcomes for the students most seriously affected by Katrina: the medical school classes of 2006, 2007, 2008, and 2009. Outcomes on the United States Medical Licensing Exams (USMLE) and in the National Resident Match Program (NRMP) remained essentially unchanged. This suggests that we were able to minimize the storm's overall impact on medical student education. Additionally, we believe that new clinical rotations have actually strengthened medical student education as a whole. The school is well positioned to provide quality medical education in New Orleans' changing demographic and health care environment.

Admissions

Table 1 shows pre- and post-Katrina admissions data (number of applicants and mean Medical College Admission Test (MCAT) and undergraduate science grade point average of matriculants). Despite the loss of time and some records in the immediate aftermath of the storm (fall 2005), the number of applications for the entering class of 2006 was higher than in previous years and continues to be greater than our average number of applicants before the storm. It is also apparent that the quality of our applicant pool and matriculating students has not suffered. The mean MCAT score of our matriculating students is slightly, but not significantly, higher than that of matriculating students in previous years. The entering class of 2006 began medical school in the first year after the storm, and these students are now completing their second year. Their performance in preclinical courses has not differed from that of previous classes, and current data suggest that their performance on the USMLE Step 1 will also be on par with previous classes.

In keeping with Association of American Medical Colleges recommendations, our entering class size has increased. Plans for this were made before Katrina, and some of the increase is due to the expansion of our rural track program. Despite the catastrophe to the region, we are confident that we can provide a quality medical education to even greater numbers of students, given the enhancement of clinical rotations outside the City of New Orleans and the increased number of clinical training sites in the city. In fact, with the decreases in the numbers of physicians and staffed hospital beds that resulted from the storm,[5] our increased class size may ultimately help restore the physician workforce within the region to pre-Katrina levels.

Undergraduate Medical Education

The immediate effects of Hurricane Katrina on the educational programs at the LSUHSC School of Medicine in New Orleans have been previously described.[1,2] First- and second-year students resumed their preclinical basic science classes in Baton Rouge 4 weeks after the storm. Preclinical curriculum hours were reduced from 1448 to 1309 during the 2005–2006 academic year, primarily as a result of changes in the laboratory portions of the Gross

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Submitted April 30, 2008; accepted in revised form May 13, 2008.

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Table 1. Admissions Data Pre- and Post-Katrina

	Pre-Katrina[a]	1-Yr Post-Katrina 2006–2007	2-Yr Post-Katrina 2007–2008	3-Yr Post-Katrina 2008–2009[b]
Medical school admissions				
Number of applicants	956	1005	1470	1014
Mean medical college admissions test (MCAT) scores of matriculating students	28.3	28.4	28.3	30
Mean science grade point average of matriculating students	3.65	3.6	3.7	3.7
Entering class size	172	169	179	185

[a] *Pre-Katrina numbers represent a 3-year average for the entering classes of 2003, 2004, and 2005.*

[b] *Numbers for the entering class of 2008 are projected.*

Anatomy course (because of reduced access to cadavers), the Physiology course (again, due to lack of access to animals for the laboratory), and the General Pathology course (although many laboratory sessions were done online using digital images). Clinic and hospital visits in the Science and Practice of Medicine and Introduction to Clinical Medicine courses were also reduced in the year immediately following Katrina.

The school administration returned to New Orleans in July 2006, and with the basic science classes resuming there for academic year 2006–2007, the preclinical curriculum was almost entirely restored. The Gross Anatomy and Pathology laboratories resumed their pre-Katrina format, although the live-animal laboratory in the physiology course have not resumed. Some of the clinic and hospital visits required for first-year students before Katrina have not resumed either, due to the relocation of some clinics and reduced patient populations in others. However, by 2008–2009, preclinical contact hours will actually exceed those before Katrina (see Table 2). New sessions in our clinical skills laboratory have been developed for the Sciences and Practice of Medicine course, additional procedure laboratories using cadavers have been developed in the Gross Anatomy course, and additional physical diagnosis sessions in the hospital have been added to the Introduction to Clinical Medicine course; also several courses have had increases in their lecture content.

The preclinical curriculum has benefited from improvements to our classrooms and laboratories. As every building on our campus sustained major flood damage, many facilities have undergone renovation. Lecture rooms (which were on the first floor and therefore destroyed in the flood) were restored, and the audiovisual equipment was significantly improved. Several teaching laboratories were severely damaged, and these were also renovated. In particular, the digital imaging capabilities for use in the Gross Anatomy, Cell Biology, and Pathology laboratories were markedly enhanced. Our student learning center, located on the first floor before Katrina, contained simulation laboratories and small-group seminar rooms that, along with most of the equipment in them, were destroyed. The simulators and teaching mannequins have since been replaced and are now housed in temporary laboratory facilities (converted from traditional classrooms). A new learning center will reopen on an upper floor within the coming months and be combined with our Center for Advanced Practice on an adjacent floor. This center has simulation facilities for training residents, fellows, and practicing physicians in continuing-education courses. Together, these facilities will be a model simulation center for all stages of medical education.

Although the preclinical curriculum has essentially resumed its pre-Katrina format, there have been some significant changes in the education of third- and fourth-year students. Before the storm, the Charity and University Hospitals were the primary teaching hospitals for the school. Together, these hospitals comprised the Medical Center of

Table 2. Undergraduate Medical Education Pre- and Post-Katrina

	Pre-Katrina 2004–2005	1-Yr Post-Katrina 2006–2007	3-Yr Post-Katrina 2008–2009
Undergraduate medical education			
Preclinical curriculum hours[a]	1448	1428	1500
Third-year students in public hospitals[b]	70%	65%	60%
Third-year students in New Orleans[b]	80%	40%	65%

[a] *Not including examinations.*

[b] *These are approximate numbers. The percentage of students on rotations in New Orleans gradually increased during the academic years 2006–2007 and 2007–2008. There may be slight changes during academic year 2008–2009 as clinical departments continue to return to New Orleans.*