THE AMERICAN SOCIETY OF TROPICAL MEDICINE AND HYGIENE INITIATIVE TO STIMULATE EDUCATIONAL PROGRAMS TO ENHANCE MEDICAL EXPERTISE IN TROPICAL DISEASES

MICHELE BARRY, JAMES H. MAGUIRE, AND PETER F. WELLER

Abstract. More than a decade ago, at a time when current and emerging tropical diseases posed growing threats to the United States, expert panels convened by the Institute of Medicine of the U.S. National Academy of Sciences concluded that medical expertise within the United States competent to address diseases of the tropics had declined. Recognizing a national need to encourage and enhance such, The American Society of Tropical Medicine and Hygiene developed a program to stimulate new postgraduate medical education in diseases of the tropics. The Society formally requested academic institutions within the United States and Canada to propose new postgraduate programs. To assure the quality of these new curricular offerings, the Society developed an outline of key areas of competency and agreed to offer an examination that would grant physicians a Certificate of Knowledge in Clinical Tropical Medicine and Travelers Health. The certifying examination was to be an integral component of a program to stimulate academic institutions to provide instructional programs in tropical diseases and to encourage physicians to become trained, evaluated, and recognized for their knowledge of clinical tropical diseases and travelers’ health. The Society’s initiative to stimulate educational programs in tropical medicine is reviewed.

More than a decade ago, growing concerns were expressed within the United States and Canada over the inadequate numbers of physicians with experience in the numerous bacterial, viral, parasitic, and other infectious diseases of the tropical and subtropical regions of the world. Noting this shortcoming, the National Research Council (NRC) and the Institute of Medicine (IOM) convened an expert committee to conduct a definitive study of the programs and personnel related to tropical infectious diseases. In 1987, the IOM panel issued a report entitled: “US Capacity to Address Tropical Infectious Disease Problems.” This report summarized that there were probably no more than 2,500 tropical disease professionals in the United States; “Most conduct biomedical research; only one-sixth of the respondents said they were engaged in clinical work. The Committee believes the supply of clinical specialists should be increased.” A realistic estimate would be that the United States had fewer than 300 clinical specialists capable of diagnosing, treating, and studying tropical infectious diseases.

Several roles for physicians with expertise in clinical tropical diseases were defined: “Tropical disease professionals considered to be clinical experts are essential for patient care, and for diagnostic, drug, and vaccine trials, in addition to clinical research. Most internists with some training in infectious diseases are capable of diagnosing and treating a wide range of infections. However, they usually contact CDC or a tropical disease specialist known to them personally if the diagnosis and treatment are problematic. In the Committee’s judgment, the supply of U.S. clinical specialists is insufficient to respond to increased demand, and remedial steps are needed.”

In 1992, a second expert Committee convened by the IOM reviewed risks of imported disease in its report entitled “Emerging Infections: Microbial Threats to Health in the United States.” As global travel expands and emerging disease surveillance becomes imperative, re-emphasis was on “shortages . . . of clinical specialists trained in tropical disease diagnosis, prevention, and control.” One of this Committee’s recommendations was that: “Congress consider a program, modeled on the National Health Service Corps, for training in public health and related disciplines, such as epidemiology, infectious diseases, and medical entomology.”

The American Society of Tropical Medicine and Hygiene (ASTMH), the principal organization in the United States with interests in tropical medicine, responded to these committee findings by developing an initiative to stimulate education of physicians in the fields of tropical diseases and traveler’s health. The history of this initiative is reviewed.

HISTORY OF THE ASTMH EDUCATIONAL INITIATIVE

In February 1992, the ASTMH held a retreat, attended by the Officers and Councilors of the Society and 12 others with expertise in fields related to tropical medicine. The retreat focused on programs the Society might undertake to address needs in tropical medicine. A priority was given to encouraging further training of physicians in tropical diseases and travelers’ health. A Committee on Post-Graduate Medical Education in Tropical Medicine, chaired by one of the authors (MB), was appointed to propose programs that might address this need. The consensus of this Committee was that physician training in clinical tropical medicine should involve both didactic education and some experience overseas and that multiple institutions within the United States and Canada should be encouraged to develop curricular offerings for post-graduate education for MDs in tropical diseases. After much discussion, the Committee proposed the following plan to the ASTMH Council.

First, the Committee agreed to develop a curriculum for topics to be covered in diploma courses and to evaluate educational programs that applied for accreditation to qualify their graduates to sit for a planned Certifying Examination in Tropical Medicine and Travelers’ Health. Almost 2 dozen
U.S. and Canadian institutions expressed interest in developing such courses and the Committee decided to approve multiple training programs to provide a range of strong, independent programs with geographic diversity.

**Second**, the Committee proposed to develop and offer a national examination. To qualify for the examination, clinicians would be required to complete a diploma course and to spend some time overseas gaining practical clinical experience. Those physicians passing the examination would be granted a Certificate of Knowledge in Clinical Tropical Diseases and Travelers’ Health. The Certifying Examination would serve two functions: 1) it would provide a mechanism for physicians completing further tropical medicine training to be evaluated and recognized for their knowledge of clinical tropical diseases and travelers’ health and would serve as a stimulus for individual physicians to seek comprehensive training in clinical tropical diseases, and 2) it would provide an incentive for institutions to offer a thorough training program in tropical diseases. Only those programs offering a sufficiently broad and thorough education in tropical diseases would qualify their graduates to sit for the examination. By establishing a national standard for expertise in tropical medicine, the examination might be expected to stimulate physicians and educational institutions to enhance their tropical disease education.

**Development of Diploma Courses in Clinical Tropical Medicine by United States and Canadian Institutions.** The Committee on Post-Graduate Medical Education distributed a Request for Proposals (RFP) outlining the anticipated curricular offering and didactic program to 370 U.S. and Canadian schools of medicine, public health, and military organizations. Initially, 21 institutions submitted proposals, most of which were of extremely high caliber. Already, ASTMH efforts had acted as a catalyst to encourage institutions to offer courses not previously available for physicians.

The Committee then developed a more extensive syllabus outlining important areas of clinical tropical diseases that should be covered in educational offerings. This syllabus continues to be updated and distributed to schools not only in North America applying for accreditation but now on a global basis. Several overseas programs have requested accreditation and been approved.

**Offer a Certifying Examination in Tropical Medicine and Travelers’ Health.** The Committee thoroughly explored the issues and practicalities of developing and administering a new national certification examination in clinical tropical medicine. Testing consultants and Boards of Preventive Medicine and Internal Medicine were approached for advice and guidance. In 1995, ASTMH contracted with Knapp and Associates, a psychometrics testing firm in Princeton, New Jersey, to help develop the examination.

Nine physicians, who were broadly knowledgeable in clinical tropical diseases and who had expertise in one or more specific areas were invited to serve on the examination committee by then ASTMH President, Barney Cline and Secretary Treasurer, Peter Weller (Appendix 1). The Examination Committee then developed a practice survey that was sent to a random sample of members of the clinical group of the ASTMH and who were asked to define areas of knowledge and level of expertise needed by a qualified tropical disease clinician. After this practice survey was analyzed, a master blueprint for the examination was developed. Multiple meetings of the Examination Committee and Knapp and Associates were held for instruction in question writing, development of a bank of questions, and assembly of a pilot examination.

In 1995, a pilot examination (150 questions in 3 hr) was given to volunteers, largely members of the American Committee of Clinical Tropical Medicine and Travelers’ Health (ACCTMTH), the clinical group of the ASTMH, with expertise in clinical topical medicine. Feedback on the appropriateness and quality of each question was obtained from the pilot group (75% of whom passed). Detailed analysis of the group’s performance allowed for evaluation of the validity of the examination.

In 1996, in preparation for the first formal examination, informational brochures and examination applications were prepared. Dr. Robert Goldsmith coordinated publicity for the examination. A “Board” review course was offered in New Orleans during the annual meeting of the Infectious Diseases Society of America. This educational course was attended by persons who were not all Society members and not all were examination participants, thus expanding the scope of the ASTMH educational initiative in clinical tropical medicine. One hundred twenty persons sat for the first examination held prior to the 1996 ASTMH annual meeting. This examination included 200 questions and lasted 4 hr. A passing rate of 75% was obtained, and expert analyses by Knapp and Associates indicated that the examination was above industry standards in terms of reliability. Subsequent examinations in 1997 and January 1999 (make-up examination following cancellation of 1998 annual meeting) were taken by 78 and 35 individuals respectively, and the passing rate was approximately 70%.

**Establish Standards for Granting the Certificate of Knowledge in Topical Medicine and Travelers’ Health.** While the Examination was intended as a stimulus for developing new educational programs and as a measure of individual physician’s knowledge of tropical medicine, from the outset it was felt that practical experience in tropical diseases in endemic regions was an important component of physicians’ training in clinical tropical medicine. The original working group of the ASTMH educational initiative (Drs. Jay Keystone, Michele Barry, Peter Weller, Dick Guerrant, Leonard Marcus, and Steve Hoffman) grappled with and refined the criteria needed to satisfy the practice related issues, including grandparenting issues, Continuing Medical Education (CME) requirements and overseas requirements, needed to obtain Certification.

All current physician practitioners of clinical tropical medicine and travelers’ health are grandparented until the year 2000 and can sit for the examination without taking a diploma course if they satisfy the following requirements:

1) Minimum of 5 years of substantial, cumulative experience in clinical tropical medicine following completion of residency as defined by at least 10% of professional time spent in:
a) diagnosis or treatment of tropical infectious diseases, or
b) pretravel health advice (< 5% of total time).
2) 30 hours of CME credit in tropical or travelers health
during the past 5 years and
3) A current up to date medical license.

There was extensive debate over whether overseas expe-
rience was necessary for certification. A requirement was
established for clinical experience in a tropical setting. Cur-
cently, any practitioner is eligible to sit for the examination
who documents:

1) Two months of cumulative clinical work in a tropical
setting, at (any time from clinical years in medical
school onward) or
2) Residency in a tropical setting.

Candidates could defer overseas experience until after the
examination, but receipt of a certificate would be postponed
until the overseas practicum was completed.

After the year 2000, all candidates who wish to take the
examination will need to take a course and submit their over-
seas experience. A complete listing of all currently approved
courses is shown in Appendix 2. Because busy practitioners
can often not take 6–8 weeks or 3 months off from their
practices, the Executive Committee for the ASTMH Edu-
cational Initiative voted to permit approved courses to offer
2-week modules over several years.

As the educational initiative moves forward, a permanent
Executive Committee has been formed to maintain a consis-
tency of policy. This Committee includes the Past-President
of the Society, the Presidents and Secretary Treasurer of the
ASTMH and the ACCTMTH, and the Chairpersons of the
Examination, Educational Initiative and Credentialing Com-
mittees.

ASTMH INVESTMENT IN THE EDUCATIONAL INITIATIVE

From the outset, the Council and Officers of the ASTMH
committed the Society to support the costs of this new ed-
ocational initiative. A budget was prepared, estimating the
costs of developing the examination to be about $163,000.
Grant proposals were prepared to support this initiative and
were submitted to a dozen foundations and to more than 70
corporations whose business enterprises involved activities
in tropical regions of the world. From these proposals, un-
restricted educational funding support was obtained, with the
aid of Dr. Robert Shaw, over several years from the Texaco
Medical Foundation. For the years 1994 through 1997, ex-
penses to develop and administer the Certifying Examination
totaled $139,079, well within the budgeted amount. Income
from fees paid by exam takers in 1996 and 1997 amounted
to $96,325. The Texaco Medical Foundation provided
$37,000 of support. As a result the total cost over four years
to the ASTMH was $5,754. In future years, fee income from
examinations will at least offset costs of developing and ad-
ministering further examinations, since all start-up costs will
have been paid. Thus, the success of the Certifying Exam-
ination process as part of the broader effort to stimulate train-
ing of physicians in tropical medicine was achieved with a
very modest expenditure by the Society. In this accounting,
however, note should be made to the many hundreds of
hours of volunteer time provided by Society members, who
worked to develop and administer the examination.

CONCLUSIONS

The ASTMH has responded to a need to enhance the base
of physicians knowledgeable in clinical tropical medicine.
From an effort that involved many hundreds of hours of
volunteer time and only limited financial contributions, the
ASTMH has stimulated the development of new curricular
offerings in clinical tropical medicine in this and other coun-
tries, has helped set the standards for these offerings and has
developed a program to recognize and stimulate physician's
training and experience in clinical topical medicine. As a
result of the Educational Initiative, the ASTMH has helped
contribute to the training of physicians in clinical tropical
diseases, not only with new training programs, but also with
related ancillary educational offerings, such examination re-
view courses.

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ton, MA 02215-5491.

REFERENCES

1. Board on Science and Technology for International Development,
Office of International Affairs, National Research Council and
the Institute of Medicine, National Academy of Sciences,
1987. The US Capacity to Address Tropical Infectious Dis-
2. Board on Science and Technology for International Development,
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the Institute of Medicine, National Academy of Sciences,
1987. The US Capacity to Address Tropical Infectious Dis-
3. Board on Science and Technology for International Development,
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the Institute of Medicine, National Academy of Sciences,
1987. The US Capacity to Address Tropical Infectious Dis-
4. Board on Science and Technology for International Development,
Office of International Affairs, National Research Council and
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5. National Academy of Sciences, Institute of Medicine, 1992
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ed States. Leberberg J, Shope RE, Ochs Jr SC, eds. Wash-
ton, DC: National Academy Press.
6. National Academy of Sciences, Institute of Medicine, 1992
Emerging Infections: Microbial Threats to Health in the Unit-
ed States. Leberberg J, Shope RE, Ochs Jr SC, eds. Wash-
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<table>
<thead>
<tr>
<th>Name</th>
<th>Position and Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leonard Marcus, VMD, MD</strong></td>
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</tr>
<tr>
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</tr>
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<td>Professor of Medicine and International Health, Chief, Division of Geographic Medicine, Case Western Reserve School of Medicine, 2109 Adelbert Road, W137, Cleveland, OH 44106-4983</td>
</tr>
<tr>
<td><strong>Stephanie James, PhD</strong></td>
<td>Chief, Parasitology and International Health, Programs Branch, Division Microbiology and Infectious Disease, National Institute of Allergy and Infectious Diseases/National Institutes of Health, Solar Building, Room 3A-10, Bethesda, MD 20892</td>
</tr>
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</table>

Clinical Tropical Diseases
## APPENDIX 2
### Courses

American Society of Tropical Medicine and Hygiene–approved pre-requisite courses certificate of knowledge examination in clinical tropical medicine and travelers’ health

<table>
<thead>
<tr>
<th>Course name</th>
<th>Contact person</th>
<th>Curriculum</th>
<th>Duration</th>
<th>Available annually?</th>
<th>Tuition</th>
<th>Approximate living expenses per month</th>
<th>Additional academic degrees offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diploma Course in Clinical Tropical Medicine and Travelers’ Health</td>
<td>Richard A. Oberhelman</td>
<td>James Kazura, MD</td>
<td>15 weeks</td>
<td>Yes</td>
<td>$5,000</td>
<td>$1,000 for room and board</td>
<td>Master of Public Health and Tropical Medicine (MPH&amp;TM); Doctor of Sci. in Trop. Med (ScD)</td>
</tr>
<tr>
<td>Program in Geographic Medicine and Infectious Diseases</td>
<td>David Bobak and Barbara Mann</td>
<td>Center for International Health</td>
<td>3 years</td>
<td>No</td>
<td>$5,000</td>
<td>$1,200</td>
<td>Possible masters degree in epidemiology</td>
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<tr>
<td>Tulane University</td>
<td>University of Virginia</td>
<td>Case Western Reserve University</td>
<td>Uniformed Services University of the Health Sciences</td>
<td>Johns Hopkins University</td>
<td>West Virginia University</td>
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</tr>
<tr>
<td>Case in Tropical Medicine and Travelers’ Health</td>
<td>Llewellyn J. Legters, MD, MPH and CAPT Larry Laughlin, MC, USN</td>
<td>Department of Preventive Medicine</td>
<td>12 or 16 weeks, not including overseas experience</td>
<td>Angelissa Johnson</td>
<td>School of Public Health</td>
<td>Clinical Tropical Medicine and Parasitology</td>
<td></td>
</tr>
<tr>
<td>Program in Geographic Medicine and Infectious Diseases</td>
<td>February 22–May 21, 1999</td>
<td>8 weeks (four 2-week modules beginning June 15, 1999); participants are allowed to take 1–4 modules per year</td>
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<tr>
<td>Part of a 3-year I.D. fellowship that begins every July 1</td>
<td>Early July through late August</td>
<td>June 15, 1999</td>
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<tr>
<td>Late August through mid-December</td>
<td>8 weeks</td>
<td>$5,200 for non-credit</td>
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<tr>
<td>4 months</td>
<td>$5,400 for credit</td>
<td>$750</td>
<td></td>
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<tr>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>$5,000</td>
<td>Part of fellowship in infectious diseases and geographic medicine</td>
<td>Graduate credit—13 hours at $650/credit hour; CME credit (Units 1 and 2): Unit 1—$2,000; Unit 2—$1,500</td>
<td>Yes</td>
<td>Federal per diem rates in Washington, DC are $114 (lodging) and $38 (meals); extended stay accommodations are available at a cost of $1,600–1,800 per month</td>
<td>$5,200 for non-credit</td>
<td>$5,400 for credit</td>
<td>$1,000/8-week course lodging plus meals</td>
</tr>
<tr>
<td>$1,000 for room and board</td>
<td>$1,200</td>
<td>$750</td>
<td></td>
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<tr>
<td>MS in epidemiology</td>
<td>CME credit available</td>
<td>CME credit Certificate Graduate credit hours</td>
<td>CME credits Certificate of Completion Graduate credit hours</td>
<td></td>
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</tbody>
</table>
### Course description
This course builds on our tradition of training programs in tropical medicine and provides expanded course offerings for clinicians. In addition to courses that focus on clinical management and control of diseases prevalent in the tropics, the program includes classes and lab experiences in basic parasitology and microbiology, with emphasis on practical applications for diagnostic purposes. Students rotate through clinics at Tulane Medical Center and Charity Hospital to provide practical experience.

### Overseas component available?
<table>
<thead>
<tr>
<th>Tulane University</th>
<th>University of Virginia</th>
<th>Case Western Reserve University</th>
<th>Uniformed Services University of the Health Sciences</th>
<th>Johns Hopkins University</th>
<th>West Virginia University</th>
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<tr>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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</table>

### Overseas sites for clinical training
- El Salvador, Nicaragua, Peru, Egypt, Cameroon, Mali
- Fortaleza, Brazil
- Egypt, Indonesia, Belize, Dominican Republic
- Bangladsh, Bolivia, Peru, Zimbabwe, Tanzania
- Zimbabwe, Pakistan, China

### Course name
- **Gorgas Course in Clinical Tropical Medicine**
- **Diploma in Tropical Medicine and Hygiene**
- **Course in Tropical Medicine and Parasitology**
- **Diploma of Tropical Medicine and Hygiene**

### Contact person
- **David O. Freedman, MD**
  - 203 Bevill Biomedical Research Building
  - 845 S. 19th St.
  - Birmingham, AL 35294-2170
  - 205/934-1630
  - FAX 205/933-5671
  - E-Mail: gorgas@geomed.Dom.uab.edu
  - WWW: http://medinfo.com.uab.edu/gorgas/course.html

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  - 50 Bedford Square
  - London W1B 3DP
  - United Kingdom
  - 44/171/299/4654
  - FAX 44/171/323/0638
  - E-Mail:(shortcourses@1shm.ac.uk
  - WWW: http://www.lshtm.ac.uk

- **PD Dr. med. G.D. Burchard**
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  - FAX 44/151/708/8733
### APPENDIX 2
**Continued**

<table>
<thead>
<tr>
<th>Gorgas Memorial Institute of Tropical and Preventive Medicine</th>
<th>London School of Hygiene and Tropical Medicine</th>
<th>Bernhard Nocht Institute</th>
<th>Liverpool School of Tropical Medicine</th>
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</thead>
<tbody>
<tr>
<td><strong>Annual dates</strong></td>
<td>January 3 months</td>
<td>Beginning of April until end of June 3 months</td>
<td>February and September 13 weeks</td>
</tr>
<tr>
<td>Duration</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes; two times per year</td>
</tr>
<tr>
<td>Available annually?</td>
<td>Yes</td>
<td>DEM 2,700</td>
<td>2,958 pounds (lower subsidised fees for EEC residents)</td>
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<tr>
<td>Tuition</td>
<td>$4,495</td>
<td>DEM 1,500</td>
<td>700 pounds</td>
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<tr>
<td>Approximate living expenses per month</td>
<td>$800</td>
<td>DEM 2,700</td>
<td>Master of Tropical Medicine, Master of Community Health, Master of Tropical Pediatrics, Master of Science in Parasitology</td>
</tr>
<tr>
<td>Additional academic degrees offered</td>
<td>Diploma, CME credit</td>
<td>Diploma</td>
<td></td>
</tr>
<tr>
<td><strong>Course description</strong></td>
<td>The course provides physicians without tropical experience with the training necessary to practice medicine in developing countries. It serves as a refresher course for those who have worked in the tropics. It offers an overview of diseases and travel medicine for infectious disease physicians in developed countries. The course aims to teach doctors the practical skills required to diagnose, treat and prevent diseases that are especially prevalent in tropical and developing countries where resources may be strictly limited. The course has a strong epidemiologic base. The scientific basis of infectious diseases is also given high priority because the application of modern medical science and state-of-the-art technology to medical problems in the tropics is leading to advances in their management and prevention.</td>
<td>The course starts out with introductions reaching from the technique of microscopy to fundamental immunology and to basic epidemiology. In the following weeks systematic infections are dealt with which are ordered according to relevance, clinical similarities and taxonomy aspects. They are followed by intestinal infections and skin diseases, which often share the hallmark of eosinophilia and primarily affect the intestine of the skin. Then tropical peculiarities of the established medical discipline are presented such as those in neurology, surgery and gynecology, in addition then specific problems in epidemiology, public health and developmental cooperation are being discussed. Travel medicine including lessons on high altitude medicine, diving medicine, etc. are made further topics of the course. The last weeks contain summaries of clinical entities and exercises.</td>
<td>This well-established course gives a good grounding in tropical medicine and public health for the tropics. Practical teaching of diagnostic parasitology and vector biology is strong and all teaching is by faculty with extensive tropical experience. Students come from a wide variety of international backgrounds and their expertise is shared in a friendly atmosphere. A major travel health clinic is situated in the school.</td>
</tr>
<tr>
<td><strong>Overseas component available?</strong></td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>Overseas sites for clinical training</strong></td>
<td>Optional “add-on” course to The Gambia</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Instituto de Medicina Tropical, Universidad Peruana Cayetano Heredia, Lima, Peru</td>
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