University Report Card: Global Equity and Biomedical Research

DETAILED METHODOLOGY

This document provides a comprehensive overview of the methodology used in evaluating universities for the second iteration of UAEM's "Report Card" project. In addition to delineating our detailed methodology for data collection and scoring, we also address quality control and data reliability considerations.

PROJECT OVERVIEW

SUMMARY:

UAEM's Report Card project evaluates and ranks 60 top North American universities on their contributions to neglected global health research and access to medicines.

A project of Universities Allied for Essential Medicines (UAEM), the Report Card uses both publicly-available and self-reported information to evaluate academic institutions on three key questions:

1. Are universities investing in innovative medical research that addresses the neglected health needs of low-income communities worldwide?
2. When universities license their medical breakthroughs for commercial development, are they doing so in socially responsible ways that ensure those treatments reach developing world patients at affordable prices?
3. Are universities educating the next generation of global health leaders about the crucial impact that academic institutions can have on global health through their research and licensing activities?

RATIONALE:

Universities are major drivers of medical innovation. Between 1/4 and 1/3 of new medicines originate in academic labs, and universities have contributed to the development of one out of every four HIV/AIDS treatments.

There is huge potential for universities to leverage their investment in biomedical research to advance global health. The size and scope of this impact, however, depends on decisions about where to focus research, how to share new discoveries, and what to teach a rising generation of young global health leaders.

More than 1 billion people worldwide suffer from "neglected diseases" – illnesses rarely researched by the private sector because most of those affected are too poor to provide a market for new drugs[i]. Furthermore, 10 million people die each year simply because they can't get life-saving medicines that already exist – often because those treatments are just too expensive[ii].

Universities can use their unique positions as public-interest, largely publicly-funded research institutions to address both challenges. By prioritizing research on global diseases neglected by for-profit R&D, they can pioneer new treatments that will benefit millions in the developing world. And by sharing their medical breakthroughs under open, non-exclusive licenses or licenses that promote lower prices in developing countries, universities can help poor patients worldwide access new, life-saving treatments.

Some universities are already taking these steps – along with teaching students about the challenges of neglected disease innovation and treatment access. But few have tried to systematically measure universities' contributions in this vital area. UAEM's Report Card fills that gap, and needs to be updated regularly to maintain relevance.

GENERAL NOTES ON METHODOLOGY:

Selection of Universities

For this second iteration of UAEM's Report Card project, we will continue to limit our evaluation to a subset of North American universities that draw the highest levels of funding from the public biomedical research funding agencies in their respective countries. This will enable us to focus on institutions that are likely to be major drivers of academic medical innovation, are more likely to be analogous and therefore yield meaningful comparison on key metrics.

UAEM used publically available figures from the US National Institutes of Health (NIH) (RePORTER) to select the 50 US institutions that received the highest total grant funding dollar amount from the NIH during FY 2010. Similarly, we used figures from the Canadian Institutes for Health Research (CIHR) (Funded Research Information) to select the top 10 Canadian institutions with the highest total grant funding dollar amount during FY 2010.

We considered other data sources as a basis for our sample selection – for example, the National Science Foundation's data on annual biomedical research spending at US academic institutions. However, we ultimately favored NIH and CIHR funding data because they offered the most analogous basis for US and Canadian sample selection, and comparison with other possible data sources did not indicate any significant drawbacks.

Selection of Evaluation Metrics and Comparability of Data Across Institutions

We acknowledge that there is still significant variation across the universities selected for evaluation (e.g. in levels of research funding, student body size, public vs. private institutions). To account for this, UAEM selected evaluation criteria intended to minimize the impact of such variations.

Importantly, all metrics that analyze continuous variables account for variation in school size and funding by normalizing the absolute number to the overall NIH/CIHR funding an institution receives. For example, when evaluating a university's investment in neglected disease research, our metric is calculated by dividing a given institution's overall medical research funding devoted to ND research projects (from the >100 funding sources included in the G-Finder report) by the total NIH/CIHR funding to generate an "ND Innovation Index". This enabled us to adjust for confounding by institutional size and allowed for meaningful comparison performance across institutions.

For categorical metrics, we have developed pre-defined sets of discrete categories by which all universities can be uniformly evaluated, and for which performance is again likely to be independent of variations in university size, funding, capacity or resources.

Overall Data Quality and Reliability Considerations

A critical aspect of our Methodology, that we believe helps to maintain substantial rigor, is that UAEM's Report Card evaluations have been generated through collection and analysis of data using two broad categories of data extraction:

1. Data obtained by accessing publicly available sources, such as university websites, online grant databases, and search engines; these data were collected by UAEM members, staff, and interns
2. Data obtained by self-report of officials in response to survey instruments designed and provided by UAEM

For CATEGORY 1, we address data quality and consistency as follows:

- We prospectively developed standardized operating procedures (SOPs) and standardized data entry forms, including uniform search terms to which all investigators were required to adhere
- We performed quality control tests to ensure that investigators were obtaining the same results from the collection procedures
- Where possible, multiple individual investigators independently and concurrently performed the same data collection and search processes to ensure consistency of data

For CATEGORY 2, we address data quality and consistency, including concerns about questionnaire non-response, as follows:

- We provided the same questionnaires to all institutions

- We developed a standardized process for identifying and verifying contacts to receive questionnaires at each institution
- We identified the specific administrators at each university who we felt were most likely to have the data readily available for each of our respective three survey instruments; this included directors of technology licensing offices, deans of individual schools, and vice presidents for research
- We used standardized scripts and communication strategies to deliver the survey instruments to all institutions and conduct consistent follow up via e-mail and phone; institutions were given at least 2 months to respond to all survey instruments, and each administrator was contacted a minimum of two times to encourage response
- Prior to public release of the Report Card, we carried out a pre-release to university presidents at all non-reporting institutions, in a final attempt to augment the response rate
- Where possible, we asked questions in a manner such that the variable under question was either dichotomous or categorical, rather than continuous; this was in an effort to maximize the likelihood of response from institutions
- We applied standardized scoring of responses across all institutions
- We measured and reported response rates both for the entire questionnaire and for individual questions

SCORING OVERVIEW

For each question, the institution will be assigned a *raw score* from 0 to 5, based on the data that is gathered. Each question will also be associated with a *weighting multiplier* from 1 to 5, based on the relative importance of each question as determined by UAEM's report card team. The *weighted score* for a given question will be the product of the *raw score* and the *weighting multiplier*. **In an effort to minimize bias due to non-response to CATEGORY 2 (self-reported) questions, we have designed the Report Card such that each section is a mix of CATEGORY 1 (public data) and CATEGORY 2 questions. Additionally, CATEGORY 1 and combined CATEGORY 1+2 questions have been assigned larger *weighting multipliers*; therefore, a university's non-response does not preclude it from receiving a competitive score if it scores competitively on other metrics. The final grading rubric was designed such that a university could still receive a Section grade of at least B- even with non-response to all CATEGORY 2 questions from that Section.**

DETAILED METHODOLOGY – BY SPECIFIC SECTION AND QUESTION

NOTE: Please let us know if you would like to be provided links to or copies of any of the forms, documents, SOPs, or other materials referenced below.

SECTION 1: INNOVATION

General Note: For the purposes of this project, "neglected diseases" (NDs) are defined as a set of diseases that primarily affect individuals living in low- and middle-income countries (LMICs) and receive limited research investment; for each disease, our definition may also include a restriction on the scope of research subject matter or application that will be considered (for example, research on therapies tailored to high-income markets or veterinary applications will be excluded). Our list of diseases, categories, and limitations is based on the criteria set by the G-FINDER 2011[iii]survey on global neglected disease innovation funding. A summary can be found here. The information specific to our definition of NDs can be found on p.14 and in Annexe 5.

Notably, this definition of ND includes HIV, tuberculosis, malaria, diarrheal diseases, meningitis, and pneumonia; however, for several of diseases there are substantial restrictions to the scope of research that is included in our tabulations.

I-Q1: What is the university's total funding received from a.) Fogarty International Center grants, b.) USAID health-related grants, or c.) Gates Foundation grants for global health research, training and collaborations?

CONTINUOUS

Possible choices (raw score):
- TBD based on data collected

Data Collection: CATEGORY 1 AND 2. Public Datasets will be collected from NIH RePorter database (narrowed to Fogarty International Center grants), USAID budget reporting (narrowed to health-related grants to evaluated institutions), and Gates Foundation online grant data (narrowed to public/global health funding area). Data will be aggregated by university. If possible, an overall budget number will be used to normalize data across institutions; if such a number is difficult to determine, however, this metric may be evaluated based on absolute amounts.

Quality Maximization Strategy: This metric aims to establish a broad benchmark for investment in university global health initiatives by the largest U.S. funders that provide comprehensive public grants data. Publicly-available and standardized data sources will be used for evaluation, drawing directly from reputable U.S. government databases and foundation websites. To ensure accuracy of data compilation, multiple investigators will independently perform the same collection and analysis process, with results compared for deviations / errors.

I-Q2: What percentage of the university's total medical research funding is devoted to projects focused on neglected diseases?

CONTINUOUS (index score)

Possible choices (raw score):
- TBD based on distribution of data

Data Collection: CATEGORY 1. For each institution, we will calculate an index score based on total grant funding received for research on neglected diseases in FY2010-2012, as reported in G-FINDER reports for those years (numerator), and the total biomedical research budget reported by the National Science Foundation (NSF) for those years (denominator). The G-FINDER report is considered the most comprehensive and authoritative database of neglected disease grants, and includes funding for NDs from >100 sources, including government, industry, and philanthropic foundations. The total biomedical funding figures for each university in FY2010-12 will be obtained from public National Science Foundation reporting. (Note that this dataset is not a record of funding received only from the NSF, but rather an aggregation of all funding received by a university from any source in a given research sector.)

Quality Maximization Strategy: The G-FINDER report is recognized as an authoritative study that draws on expertise from investigators with a variety of backgrounds, including academia, industry, and the non-profit sector. In order to effectively compare investment in ND research across institutions with varying total research funding, we will calculate ND investment as an index variable, rather than comparing absolute dollar amounts. The use of the total biomedical research funding as the denominator in this calculation serves as a normalization standard that will prevent larger institutions from having exaggeratedly high levels of funding and smaller institutions from having exaggeratedly low levels of funding for the purposes of this evaluation.

I-Q3: What percentage of the university's total medical PubMed publications is focused on global health?

CONTINUOUS

Possible Choices
TBD

Data Collection: For each institution, the total number of citations specific to global health and/or affiliated with a university's department of global health will be tabulated as reported through PubMed. A comprehensive search query will be created to acquire a broad perspective on scientific and non-scientific research pertaining to global health within a university starting with January, 2010 to present. The number of publications associated with each university is delineated through PubMed's filter option, and an aggregate number of global health research publications will be obtained for each university. To normalize across universities, this number will be divided by a total number of publications for each institution.

Quality Maximization Strategy: Key terms associated with global health are utilized in the search – likely including "global health," "international health," and "social determinants of health." The search query will be constructed to encompass as many publications associated with global health as possible in order to capture a university's broad research efforts in this arena. Total number of publications will be obtained solely from PubMed as it contains citations for both scientific and non-scientific research. PubMed is a widely used and holistic source for research publications, and a single search engine is used to avoid repeats of publications and thus over-reporting the number of publications for universities. Multiple investigators will independently collect and compile same data to ensure accuracy.

I-Q4: What percentage of the university's total medical PubMed publications is focused on neglected diseases, neglected aspects of HIV, TB, malaria, and/or access to medicines in the developing world?

CONTINUOUS (percentage)

Possible Choices
   TBD

Data Collection: For each institution, the total number of citations specific to neglected diseases will be tabulated as reported through PubMed. A comprehensive search query will be created to encompass these diseases and their associated areas of research starting with January, 2010 to present. The number of publications associated with each university is delineated through PubMed's filter option, and an aggregate number of neglected disease specific research publications will be obtained for each university. To normalize across universities, this number will be divided by a total number of publications for each institution.

Quality Maximization Strategy: Our list of diseases includes those from the criteria set by the G-FINDER 2011 (p. 14 of Annex 5) and the World Health Organization's list of neglected diseases. The G-FINDER report is recognized as an authoritative study that draws on expertise from investigators with a variety of backgrounds, including academia, industry, and the non-profit sector. The search query is constructed to encompass as many publications associated with the listed diseases by 1) including all permutations of common and scientific names for the diseases and 2) additionally pairing each disease identifier with an associated area of research (e.g. vaccines, diagnostics, etc.). Total number of publications are obtained solely from PubMed as it contains more than 23 million citations for biomedical and life science literature. PubMed is a widely used and holistic source for scientific research publications, and a single search engine is used to avoid repeats of publications and thus over-reporting the number of publications for universities. Multiple investigators will independently collect and compile same data to ensure accuracy.

I-Q5: Does the university have a research center or institute dedicated specifically to neglected diseases?

   DICHOTOMOUS

Possible choices (raw score):
   - No response (0 points)
   - Responded "No", or responded "Yes" but failed verification (1 point)
   - Yes (5 points)

Data Collection: CATEGORY 1 AND 2. Research administrators at each institution will be systematically contacted requesting response to an online survey instrument. Those who do not respond will receive a standardized course of follow-up emails and calls. For institutions who never responded to our requests, multiple investigators will perform a manual web search for a standardized set of search terms, such as "<UNIVERSITY NAME> neglected disease tropical disease." The top 10 returned results will be screened for evidence of possible research centers focusing primarily on neglected diseases at these institutions. Additionally, a verification

process will be applied for all institutions that report the presence of a specific neglected disease-focused research center. **In order to be verified as "Yes" for this question, the research center must have a specific focus on at least one of the neglected diseases included in the G-FINDER definition.** After following the links provided by the respondent, if it is ascertained that the center mentioned is not in fact specifically focused on at least one neglected disease (e.g. a general infectious diseases or global health department), then the respondent will not receive full credit.

Quality Maximization Strategy: Respondents will be given at least 3 opportunities to respond to the survey. Measures will be taken to include information on institutions that failed to respond but may still have centers focused on neglected diseases (to avoid false negatives). Additionally, verification will be performed to rectify erroneous reporting on the part of universities (to avoid false positives).

SECTION 2: ACCESS

A-Q1:

Part 1: Has the university officially and publicly committed to licensing its medical discoveries in ways that promote access and affordability in developing countries?

CATEGORICAL

Possible choices (raw score):
- The university has taken no official action and has no plans to do so (1 point)
- The university plans to make such an endorsement within the coming year (2 points)
- The university has publicly committed to the general principle of global access licensing, but has not endorsed or disclosed specific strategies for promoting access through licensing (3 points); Example: Stanford Nine Points
- The university has publicly committed to detailed, specific access licensing strategies, but those strategies DO NOT emphasize enabling generic production of university-researched medicines for developing countries (4 points); Example: Statement of Principles for the Equitable Dissemination of Medical Technologies
- The university has publicly committed to detailed, specific access licensing strategies that DO prioritize generic production of university-researched medicines for developing countries (5 points); Example: University of California Licensing Guidelines

Data Collection: CATEGORY 1 AND 2. Publicly available information will initially be reviewed by multiple investigators, working independently and in parallel. First, investigators will obtain information from lists of university signatories to collective global access statements such as the "Statement of Principles and Strategies for the Equitable Dissemination of Medical Technologies" or the "Stanford Nine Points". Next, investigators will use a standardized online survey instrument to systematically collect data. This will be supplemented by a survey questionnaire emailed to university technology transfer officers (TTOs) requesting corrections/additions to publicly obtained data, as well as an opportunity to disclose future plans to adopt access principles. In the previous year's Report Card, this questionnaire received a response rate of 25%.

Quality Assurance Strategy: Only written statements that are publicly available or disclosed in full will be accepted as commitments or enumerations of strategy. Investigators will verify TTO responses using the links they provide. For each institution, two evaluators will conduct independent reviews of public data using the same standardized search locations and terms. Their findings will be aggregated, compared, and reviewed for accuracy using the recorded links. Because all access licensing commitments must be publicly disclosed, online links for all statements will be catalogued and available once the Report Card is released.

Part 2: Does the website of the university's technology transfer office (TTO) make an effort to disclose, explain and promote access licensing commitments and practices?

CATEGORICAL

Possible choices (raw score):
- The website makes no reference to promoting global access through socially responsible licensing (1 point)
- The website offers brief, limited, and non-specific statements on access licensing (2 points)
- The website references the university's endorsement, adoption or use of a specfic, detailed access licensing policy, but does not post or link to the policy (3 points)
- The website provides or links to the full text of a detailed, specific access licensing document for the university OR offers in-depth explanations, case studies, license examples, press releases or other content focused on access licensing, but NOT both (4 points)
- The website provides or links to BOTH the text of a specific, detailed access licensing document AND additional in-depth content related to access licensing (5 points)

Data Collection: CATEGORY 1. Website of university TTOs will be reviewed by multiple investigators using a standardized data collection tool.

Quality Assurance Strategy: For each institution, multiple evaluators will conduct independent reviews of public data using the same standardized process. Their findings will be aggregated, compared, and reviewed for accuracy using the links they record.

A-Q2: What percentage of the university's total medical sciences publication output is published in open-access publications?

CATEGORICAL (Percent Range)

Possible choices (raw score):
    TBD

Data Collection: CATEGORY 1.
To determine the total medical sciences publications output (denominator) for a given university in the time period 2010-present, a search of the PubMed database (http://www.ncbi.nlm.nih.gov/pubmed/) will be performed using search terms encompassing all the institutes conducting biomedical research affiliated with the university (including hospitals and independent research institutes, as well as the main campus).

To estimate the total medical sciences output published with open access provisions (numerator) in the time period 2010-present, a search of PubMedCentral (a free full-text archive of

biomedical and life sciences journal literature at the U.S. National Institutes of Health's National Library of Medicine; http://www.ncbi.nlm.nih.gov/pmc/) will be performed as above.

The number of open-access publications for each university will then be divided by the number of total publications to determine a percentage for each institution.

Quality Assurance Strategy: A comprehensive list of all institutions conducting biomedical research affiliated with a university will be generated for all universities surveyed. For each institution, two evaluators will conduct independent reviews of public data using the same standardized search terms.

A-Q3 (Non-Exclusive Licensing)

Part A: In the past year, what percentage of the university's total research licenses was non-exclusive?

CATEGORICAL (Percent Range)

Possible choices (raw score):
- No response (0 points)
- 0% (0 points)
- 1-10% (1 point)
- 11-30% (2 points)
- 31-50% (3 points)
- 51-70% (4 points)
- 71% or above (5 points)

Data Collection: CATEGORY 1. Continuous data on the number of non-exclusive licenses as a percent of total licenses will be obtained from Statistics Access for Tech Transfer (STATT) database maintained by the Association of University Technology Managers (AUTM).

Quality Assurance Strategy: These data will be collected from AUTM, the preeminent organization of university technology managers, using an annual survey their membership.

Part B: In the past year, what percentage of the university's health technology licenses was non-exclusive?

CATEGORICAL (Percent Range)

Possible choices (raw score):
- No response (0 points)
- 0-10% (1 point)
- 11-30% (2 points)
- 31-50% (3 points)
- 51-70% (4 points)

- 71% or above (5 points)

Data Collection: CATEGORY 2: An online survey instrument will be emailed to TTOs at institutions of interest. For non-responding institutions, at least one follow-up request will be sent via e-mail. Phone calls will be made to outstanding non-responding institutions. The response rate to these questions in the inaugural Report Card survey was 25%.

Quality Assurance Strategy (pertains also to Q4, Q5, and Q6): As licensing data are typically not publicly disclosed, it is necessary to rely on the good-faith reporting of TTOs. However, this question evaluates percentages rather than absolute numbers to compensate for variations in institutional size and licensing volume. Percentage values have been further categorized into decile ranges, so that all institutions within a given range receive an equal score.

A-Q4: In the past year, for what percentage of all health technologies did the university seek patents in developing countries where they may restrict access?

Part A: for Upper Middle Income Countries (including Brazil, Russia, India, China, and South Africa)

CATEGORICAL (Percent Range)

Possible choices (raw score):
- No response (0 points)
- 81-100% (1 point)
- 61-80% (2 points)
- 41-60% (3 points)
- 21-40% (4 points)
- 0-20% (5 points)

Part B: Low and Lower-Middle Income Countries

CATEGORICAL (Percent Range)

Possible choices (raw score):
- No response (0 points)
- 81-100% (1 point)
- 61-80% (2 points)
- 41-60% (3 points)
- 21-40% (4 points)
- 0-20% (5 points)

A-Q5: Access Provisions in Exclusive Licenses

Part A: In the past year, what percentage of the university's exclusive licenses of health technologies included provisions to promote access to those technologies in developing countries?

CATEGORICAL (Percent Range)

Possible choices (raw score):
- No response (0 points)
- 0-20% (1 point)
- 21-40% (2 points)
- 41-60% (3 points)
- 61-80% (4 points)
- 81-100% (5 points)

Part B: What percentage of those access provisions included the biggest developing-world economies (Brazil, Russia, India, China or South Africa) in their scope?

CATEGORICAL (Percent Range)

Possible choices (raw score):
- No response (0 points)
- 0-20% (1 point)
- 21-40% (2 points)
- 41-60% (3 points)
- 61-80% (4 points)
- 81-100% (5 points)

A-Q6: Has the university shared its best practices for promoting access to medicines through licensing?

- **Contributed sample clauses to the AUTM Global Health Toolkit**
- **Published an article on access licensing practices**
- **Formally presented on access licensing practices at an academic or professional event, or at another university**
- **Informally shared or discussed access licensing practices with administrators at other universities**
- **Other**

CATEGORICAL (Percent Range)

Possible choices (raw score):

- No response (0 points)
- Responded but no sharing options provided (1 point)
- 1 sharing option checked (2 points)
- 2 sharing options checked (3 points)
- 3 sharing options checked (4 points)
- 4+ sharing options checked (5 points)

SECTION 3: EMPOWERMENT

E-Q1: Does the university offer its students access to global health engagement and/or education?

PART A: As indicated by the existence of a university center/institute, department, and/or non-degree program in global health.

> **CATEGORICAL**

Possible choices (raw score):

- No - no global health center/institute, department, or non-degree program (0 points)
- Yes - global health center/institute (+2 point)
- Yes - global health department (+1 point)
- Yes - global health non-degree program (+1 point)
- Yes - the university offers students across multiple schools access to global health initiatives (+1 point)

For each type of global health initiative at the university, the university receives points out of a possible 4 total points, and if the university provides access to any of these initiatives for students across multiple schools then they receive an additional 1 point.

PART B: As indicated by the existence of a university graduate degree, major/concentration, focus/specialization, certificate, and/or other academic track in global health.

> **CATEGORICAL**

Possible choices (raw score):

- No - no global health graduate academic tracks (+0 points)
- Yes - global health degree (+2 point)
- Yes - global health major/concentration (+1 point)
- Yes - global health focus/specialization (+0.5 points)
- Yes - global health certificate (+0.5 points)
- Yes - the university offers students across multiple schools access to global health academic tracks (+1 point)

For each type of global health graduate academic track at the university, the university receives points relevant to the track's breadth, out of a possible 4 total points, and if the

university provides access to any of these academic tracks for students across multiple schools then they receive an additional 1 point.

Data Collection: CATEGORY 1 AND 2. Initial data will be collected through a survey questionnaire that will be emailed to appropriate deans or other administrators within the schools of medicine, public health, and/or law. We will make at least one e-mail and one phone attempt to follow up with universities that do not respond. After this initial round of data collection, 2 to 3 investigators, working independently and in parallel, will perform a review of university global health centers/institutes, departments, and programs using standardized web search protocol to identify qualifying institutions and determine whether or not they earn a point for accessibility.

Quality Maximization Strategy: Initial data will be collected directly from universities using a standardized questionnaire. Additionally, these data will be both verified and supplemented by a review of the data from the Consortium of Universities for Global Health (CUGH), a >100-member organization of research universities, specifically their Global Health Programs Database, as well as a standardized web search performed by multiple investigators.

E-Q2: Does the university's (a) medical school/residency program, (b) public health school, and/or (c) law school offer graduate courses that address the policy and legal context of biomedical R&D, and more specifically the impact of intellectual property policies, on research priorities and global access to medical innovations?

    CATEGORICAL

Possible choices (raw score):

- No - no courses offered (0 points)
- Yes – one course (1 points)
- Yes – one course focused specifically on IP and access to medicines (2)
- Yes - two to five courses (2 points)
- Yes – two to five courses with at least one on IP and access to medicines (3)
- Yes - more than five courses (4 points)
- Yes – more than five courses with at least one on IP and access to medicines (5)

For the university's medical school/residency program, public health school, and/or law school repeat above evaluation and then average all school-specific raw scores for the university's final raw score.

Data Collection: CATEGORY 1 AND 2. Initial data will be collected through a survey questionnaire that will be emailed to appropriate deans or other administrators within the schools of medicine, public health, and/or law. We will make at least one e-mail and one phone attempt to follow up with universities that do not respond. After this initial round of data collection, 2 to

3 investigators, working independently and in parallel, will perform a web search of university course catalogues using a standardized online survey instrument, in order to verify the self-reported university responses, as well as to identify relevant course offerings at non-responding institutions.

Quality Maximization Strategy: Initial data will be collected directly from universities using a standardized questionnaire. Additionally, these data will be both verified and supplemented by a review of the data from a standardized web search performed by multiple investigators.

E-Q3: Does the university's (a) medical school/residency program, (b) public health school, and/or (c) law school offer graduate courses that address the prevalence of and/or lack of research on neglected diseases, including neglected aspects of HIV, TB, and/or malaria?

   CATEGORICAL

Possible choices (raw score):

- No - no courses offered (0 points)
- Yes – one course (1 points)
- Yes – one course focused specifically on recognized neglected diseases (2)
- Yes - two to five courses (2 points)
- Yes – two to five courses with at least one on recognized NDs (3)
- Yes - more than five courses (4 points)
- Yes – more than five courses with at least one on recognized NDs (5)

For the university's medical school/residency program, public health school, and/or law school repeat above evaluation and then average all school-specific raw scores for the university's final raw score.

Data Collection: CATEGORY 1 AND 2. Same as for E-Q2.

Quality Maximization Strategy: Same as for E-Q2.

E-Q4: Has the university recently hosted a major conference, symposium or campus-wide event on

   A. **the policy and legal context of biomedical R&D, specifically the impact of intellectual property rights on research priorities and global access to medical innovations?**
   B. **neglected diseases, including neglected aspects of HIV, TB, and/or malaria, and health needs of developing countries?**

CATEGORICAL

Possible choices (raw score):

- No - no events (0 points)
- Yes - has hosted one event on either A or B (1 points)
- Yes - has hosted two events both on A or both on B (2 points)
- Yes - has hosted more than two events, all on just A or just B (3 points)
- Yes - has hosted two events, one on A and one on B (4 points)
- Yes - has hosted more than two events, with events on both A and B (5 points)

Data Collection: CATEGORY 2. Data will be collected through a survey questionnaire that will be emailed to appropriate deans or other administrators within the schools of medicine, public health, and/or law. We will make at least one e-mail and one phone attempt to follow up with universities that do not respond.

Quality Maximization Strategy: To ensure comparability of self-reported events, the survey questionnaire will instruct respondents to report only those events that meet the following criteria:

1. Must be partially or fully funded by the university/school/faculty or hosted on the facility of the school/faculty
2. Must discuss neglected diseases, access to medicines, and/or IP
3. Must discuss perspectives from low and/or middle income countries
4. Must have more than 30 people participating in attendance

Respondents that report hosting an event will be asked to report the name of the event and a link to information verifying the event. This information will be reviewed for accuracy by investigators, and only included if the above four verification standards are met.

E-Q5: Does the university offer any of its students accessible opportunities to study, work, or complete research abroad in global health?

CATEGORICAL

Possible choices (raw score):

- No - no opportunities (0 points)

- Yes - one or more courses/seminars abroad (+1 point)
- Yes - one or more fellowships/grants (+1 point)
- Yes - one or more sustainable clinic sites abroad (+1 point)
- Yes - one or more international university partnerships that provide(s) students opportunities abroad (+1 points)
- Yes - the university offers students across multiple schools access to global health opportunities abroad (+1 point)

For each type of global health opportunity abroad that they offer, the university receives one point out of a possible 5 total points, and if the university provides access to any of these opportunities for students across multiple schools then they receive an additional 1 point.

Data Collection: CATEGORY 1 AND 2. Initial data will be collected through a survey questionnaire that will be emailed to appropriate deans or other administrators within the schools of medicine, public health, and/or law. We will make at least one e-mail and one phone attempt to follow up with universities that do not respond. After this initial round of data collection, 2 to 3 investigators, working independently and in parallel, will perform a review of university global health opportunities abroad using standardized web search protocol to identify opportunities and to determine whether or not the university has earned a point for accessibility.

Quality Maximization Strategy: Initial data will be collected directly from universities using a standardized questionnaire. Additionally, these data will be both verified and supplemented by a standardized web search performed by multiple investigators.

---

[i] Hotez PJ, Molyneux DH, Fenwick A, Kumaresan J, Sachs SE, Sachs JD, et al. Control of neglected tropical diseases. N Engl J Med. 2007; **357**(10): 1018-27.

[ii] World Health Organization. Equitable access to medicines: a framework for collective action. Policy Perspectives on Medicines, 8: 1-6. WHO, Geneva, Switzerland.

[iii] Moran M, Guzman J, Abela-Oversteegen L, et al. Neglected disease research and development: Is innovation under threat?: Policy Cures; 2011.