Evaluation of the Master of Science in Epidemiology (Clinical Epidemiology) Curriculum

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Master of Science in Epidemiology (Clinical Epidemiology) Program Updates

Since the completion of the evaluation in 2002, the department has held four curriculum workshops to address the findings of the study. In 2004, the revised curriculum has been presented and ratified by the University Council and was subsequently approved by the Board of Regents. The major changes are: 1) reduction of core courses, 2) increase in major courses, 3) re-classification of elective courses into major courses, and 4) creation of new elective courses. The new curriculum has been in place for the past 5 years. Presently, we accept 8-11 students a year, many of whom can avail of scholarships from the Philippine Council for Health Research and Development. Future plans to further refine the curriculum and other aspects of the program will be focused towards 1) a stepladder program 2) tracking options for biostatistics, health social science and clinical economics 3) offering the program independent from the program of the College of Public Health 4) and development of learning modules with a goal to offer courses (and eventually the program) on-line.

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ABSTRACT

Objectives. To evaluate the relevance, usefulness, applicability, responsiveness, acceptability, efficiency, overall impact and sustainability of the Master of Science in Epidemiology-Clinical Epidemiology (MSE-CE) curriculum.

Methods. The context, input, process and product evaluation (CIPP) design was used. Of 106 alumni and students, 100 were contacted and 80 participated in a survey. Key informant interviews, direct observation and focus group discussions with faculty members, present and past administrators, selected alumni and students, and review of data were done. The results were analyzed using descriptive statistics and content analysis.

Results. Context evaluation revealed that MSE-CE responded to the need to train physicians to use research evidence in clinical decision-making. Despite some reservations among other UP colleges, the program pushed through due to support from local and international sponsors. Alumni and students appreciated the effectiveness of their teachers and complementing instructional resources. The range of work by its graduates, the networks established, and the expansion of the Department of Clinical Epidemiology (DCE, the UP department offering the MSE-CE program) prove that the MSE-CE is a sustainable post-graduate program.

Conclusion: The MSE-CE institutionalized clinical epidemiology as a distinct discipline among medical colleges in the Philippines.

Keywords: clinical epidemiology, curriculum evaluation, and context, input, process and product (CIPP) evaluation

Introduction

Institutions genuinely interested in effecting change must subject themselves to continuous self-examination. It was with this in mind that the Department of Clinical Epidemiology (DCE) commissioned the National Teacher Training Center for the Health Professions (NTTCHP) in 2002 to evaluate its 10-year-old Master of Science in Epidemiology-Clinical Epidemiology (MSE-CE) curriculum.

As external evaluator, NTTCHP gathers evidence that the DCE can use in planning the future directions of the program. Since the DCE serves as primary stakeholder, it was appropriate to use a management-oriented evaluation design, specifically the context, input, process and product evaluation (CIPP) developed by Stufflebeam in 1969 and 1983.[1,2] Context evaluation helps program managers make planning decisions such as what goals and objectives the curriculum should have. Input evaluation deals with structuring decisions specifically for determining the usefulness and relevance of the curriculum and the various courses offered, choosing which instructional resources must be available and which alternative strategies must be considered, and determining the acceptability of program policies. Process evaluation helps program administrators implement decisions like determining how well the program is being conducted, what might threaten its success and what revisions are needed. Product evaluation deals with recycling decisions like what results the curriculum yielded, how well the needs were reduced and what should be done after the curriculum has run its course.

Objectives

The MSE-CE curriculum was evaluated in terms of the following: (1) relevance of the program to health research and clinical practice, (2) usefulness and applicability of each course offered in relation to research and clinical decision making, (3) responsiveness of program management to students' academic and psychosocial needs and faculty requirements, (4) relevance and acceptability of the policies and guidelines related to admissions, graduation, student retention, thesis and other administrative matters, (5)

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teaching competencies and efficiency including adequacy of academic materials, teaching aids and other resources, (6) overall impact of the program on the students in terms of: (a) adequacy of skills in qualitative and quantitative research designs and critical appraisal, (b) attitudes and utilization of evidence-based clinical practice, (c) number and type of clinical or public health research involved in, (d) number of research consultancies and other related extension services, (e) number of publications, (f) number of teaching/training programs in clinical epidemiology involved in as trainer and (7) sustainability in terms of (a) the needs of research and educational institutions, teaching hospitals, and industry for training in clinical epidemiology, (b) needs for clinical epidemiology training in Southeast Asia, and (c) donor interest in the program.

Methods

The study involved two population groups, namely, the faculty and students–both alumni and those currently enrolled. The 24 faculty members came from DCE, University of the Philippines College of Medicine (UPCM) and the Department of Epidemiology and Biostatisics of the UP College of Public Health (UPCPH), and included program administrators as well. Two were on leave reducing the faculty population to 22. As of the first semester of 2002-2003, DCE had admitted a total of 106 students, six (6) of whom did not have any recorded forwarding addresses, thereby reducing the accessible population to 100, of whom 80 agreed to participate.

Data collection included the use of a survey questionnaire (for alumni and students) on perceptions on the program's policies, courses, teaching-learning activities, resources used, assessment scheme to determine achievement, and management. A series of key informant interviews (KIIs), direct observation of classes, focus group discussions (FGDs) and review of documents were used to triangulate the quantitative data. There were six FGDs and 24 KIIs completed with selected alumni, students, faculty, administrators and leaders of partner agencies. The actual study took place from June to December 2002. The names of the respondents were coded for confidentiality.

Data were analyzed using descriptive statistics and content analysis. Patterns of response, frequency of occurrence and intensity of statements were considered in the content analysis. Table 1 presents the summary of the evaluation plan according to the objectives and CIPP design of the study.

Table 1. Evaluation matrix

Evaluation Objects	CIPP Domain	Data needed	Data collection procedure
1. Relevance of the program	Context	• Records and health statistics • Perceptions of faculty, alumni and students	• Review of records • Key informant interview • FGD
2. Usefulness and applicability of each course offering	Input	• Perceptions of faculty, alumni and students of the usefulness and applicability of the program	• Review of the written curriculum of the MSE-CE • Survey
3. Responsiveness of program management to students' academic and psychosocial needs and faculty requirements 4. Relevance and acceptability of the policies and guidelines related to admissions, graduation, student retention, thesis and other administrative matters		• Perceptions of faculty, alumni & students of the relevance and acceptability of policies	• Review of policies on admission, retention and graduation of students • Review of policies on recruitment and promotion of faculty • Review of library collections and other instructional resources used • Survey
5. Teaching competencies and efficiency including adequacy of academic materials, teaching aids and other resources	Process	• Performance ratings of students and faculty • Perceptions of students and alumni of their experiences in the program • Actual teaching strategies used in class	• Review of performance ratings of faculty • Key informant interview • FGD • Direct observation • Survey
6. Overall impact 7. Sustainability	Product	• Perceptions of faculty, alumni, partner agencies, sponsors & students on the impact & sustainability	• Review of graduation rate • Analysis of performance ratings of students & faculty • KII

Results

Context evaluation

The roots of MSE-CE curriculum were traced from the introduction of clinical epidemiology as a separate discipline distinct from epidemiology, medicine and public health. In the late 1960s, the Rockefeller Foundation (RF) concluded that despite several initiatives from various institutions, the world health situation had not significantly improved.[3] The RF concluded that there was a need for physicians to directly focus on studying the course of diseases, the background of their patients and the various factors contributing to the occurrence of diseases and use these for clinical decision making. These areas served as the distinguishing features of clinical epidemiology. In July 1979, RF created the International Clinical Epidemiology Network (INCLEN), the body that would carry out the task of developing clinical epidemiology as a science.

Then, by virtue of a board resolution drafted by the RF in 1982, INCLEN created and established partner agencies, namely, the Clinical Epidemiology Resource and Training Centers (CERTCs) in developed countries with strong clinical epidemiology (CE) programs, and a network of Clinical Epidemiology Units (CEUs) in developing countries. INCLEN organized the CERTCs and CEUs following the assumption "that the establishment of CEUs in schools of medicine will have a favorable impact on the provision of effective and efficient systems of health care which are appropriate for the health status of the population served by those medical schools by:

1. Educating within a clinical setting, physicians to use interventions proven to be efficacious,
2. Educating within a clinical setting, physicians to establish arrangements for providing effective care efficiently and

3. Encouraging (as a result of 1 & 2) a more rational approach to the allocation of resources for medical care in relation to the health status of the population."[3]

INCLEN established the Clinical Epidemiology Unit of the University of the Philippines College of Medicine (UPCM) in 1984. One respondent recalled the process as follows:

"In the beginning, Rockefeller wanted the unit (referring to CEU) to work with clinicians—people who practice medicine, those who really see patients … because they are the ones who should be given this expertise so that they can effect the change they want. Then initially, there were 26 units all over the world in all major continents. These 26 units are CEUs. The long-term plan was to let them evolve into CERTCs so that they can propagate it (referring to CE) themselves and they would be responsible to train the next generation of clinical epidemiologists. All of these happened, actually."

CEU in UPCM evolved as a unit under the Office of the Dean of UPCM from 1984 to 1989. The RF transformed it into a CERTC in 1991. With the offering of the MSE-CE in 1992, the new CERTC based in UPCM became a degree-granting unit of the University. Then in 1998, the UP Board of Regents approved the change of its name to the Department of Clinical Epidemiology.

As the RF and CEU in UPCM had to strongly justify with the external environment and the international academic community the need for a separate discipline to the point of labeling it as a "schism" from public health epidemiology, the MSE-CE as expected went through some form of testing. The program was perceived as a redundancy of the Master of Science in Public Health Major in Epidemiology (MSPH-Epi) which was a curricular offering of the Department of Epidemiology and Biostatistics (DEBS) of UPCPH. But cognizant that the offering of MSE-CE had the full endorsement of the Chancellor, CPH gave way.

When the Board of Regents approved the MSE-CE, CPH's MSPH-Epi program was abolished and the college was tasked to reorganize it into the MSE-Public Health Epidemiology (MSE-PHE) track. To ensure that the new MSE-CE would not be a redundancy of the MSE-PHE, the then CEU, in collaboration with other CERTCs in Southeast Asia, met for a workshop in 1993 and agreed that MSE-CE graduates will play the professional roles and competencies listed in Table 2.[4,5]

During the same 1993 conference, these terminal competencies were broken down into the following general course objectives:[3]

1. Demonstrate skills in the application of epidemiologic concepts and principles to the resolution of clinical and public health problems;
2. Identify, plan, undertake, analyze and interpret clinical or public health research projects;
3. Deliver technical services to clinicians or public health workers on how to:
   a. Properly identify factors in disease causation;
   b. Evaluate the reliability and validity of instruments;
   c. Determine the efficacy and effectiveness of interventions;
   d. Plan strategies for disease control/prevention;
   e. Devise methods for evaluating health technology/programs and;
   f. Provide guidelines for research activities whose results could be the basis for health policy formulation
4. Develop a critical attitude in evaluating scientific literature and information in the management of health problems and

Table 2. Professional roles and minimum terminal competencies of MSE-CE graduates

Professional role	Minimum terminal competencies
1. Clinician	Deliver the best health care and relate to individual patients
2. Researcher	Show competence in research proposal writing, grant application, project implementation and presentation in written (technical report, journal article, report), or verbal forms (speaker in conferences)
3. Consultant	Make critical review of research proposal for grants application and technical committees; implements project and trials for drug companies and other agencies; serves as judge in research contests, journal editor or reviewer; advocate in health reforms within the levels of affiliations with a hospital, specialty society or department
4. Administrator / Manager / Coordinator	Serve as administrator, manager or coordinator of any private or public bureaucracy
5. Educator	Serve as teacher in clinical epidemiology and any medical specialty in both the undergraduate and graduate levels of medical education; adviser in educational reform or curriculum development projects
6. Learner	Assume responsibility for own continuing education
7. Leader / initiator	Advocate for the promotion of clinical epidemiology as distinct field of study

5. Appreciate the roles of both economics and social sciences in making health interventions more efficient and acceptable.

The relevance of the MSE-CE at DCE was strengthened when full-time scholarships were pledged by the Rockefeller Foundation through INCLEN and the Philippine Council for Health Research and Development (PCHRD) since the beginning of the program.

Input Evaluation

The MSE-CE Curriculum. This program is a 32-unit curriculum composed of 11 units of core courses, nine (9) units of major, six (6) units of electives and six (6) units of thesis. CPH handles nine (9) out of the 11 units of core because, as explained by five CPH faculty members "these are all CPH courses." DCE handles only one core course: CE 201: Fundamentals of Health Economics, Health Social Science and Research Ethics. Students can take the six (6) units of electives from CPH, School of Economics or the Statistical Center in UP Diliman Campus.

In 1997, the National Graduate School for the Health Sciences (NGSHS) was established and facilitated the application procedure to the program, the documentation of the progress of students and the completion of requirements for graduation. In 2002, MSE-CE was being handled by the department led by a program director. The faculty is composed of one full-time faculty member and 24 part-time faculty members from UP Manila's Colleges of Medicine and Arts and Sciences, the National Institutes of Health, and the Philippine General Hospital; and a consultant from the Philippine Health Insurance Corporation. Out of the 24, five had original appointments with the department; the rest were cross-appointees. There were no official recruitment policies for faculty members. Support personnel included one full-time secretary and one messenger.

Policies. Students and graduates were asked to rate the policies of the program in terms of their perceived degree of

acceptability considering their current professional positions and clinical responsibilities in their respective institutions. A rating scale from 1 (not acceptable) to 4 (most acceptable) was used. Table 3 presents the ratings. The figures showed that the policies on student admission, retention, thesis and graduation were all highly acceptable. The high level of acceptability of the policies for admission and retention showed that students and alumni already appreciated the unique place of physicians engaging in clinical epidemiology work. On the other hand, the policy on maximum residence rule (MRR) was rated 2.82. All master's degree students in UP Manila are allowed a maximum of five school years to complete their programs. Those who reach their fifth year without finishing all the requirements for graduation are labeled as "on MRR". These students are required to apply for an extension of their MRR and take a three-unit refresher course.

Instructional facilities and resources. Facilities for instruction were supplied by the UPCM and generous grants from the RF and INCLEN. As of 2002, DCE library had a rich collection of local and international materials on clinical epidemiology, statistics and health social science. The library subscribed to 16 international journals and updated their collections from the World Health Organization (WHO). All the instructional facilities like overhead projectors, slide projectors and tape recorders were supplied by INCLEN. There were nine computers provided by UPCM, INCLEN and other donors.

Students were asked to name the most and least useful subjects. The responses are summarized in Table 4.

Relevance to students' needs. Courses were evaluated by students according to the degree to which students agreed with given statements (1 for strongly disagree to 5 for strongly agree). Most courses were rated favorably by the students. In all of these, the highest rating was consistently awarded to the relevance of the subject matter to the students' needs. This is especially true with CE 211: Fundamentals of Clinical Epidemiology, where the mean rating for relevance was 5.0.

Table 3. Perceptions of alumni and students of the acceptability of MSE-CE policies (n=80)

Policies	Perceived degree of acceptability		
	Mean	(SD)	Minimum-Maximum ratings
1. Qualification for admission	3.51	(0.57)	2-4
2. Requirements for admission	3.50	(0.60)	2-4
3. Criteria for selection of students	3.58	(0.55)	2-4
4. Grade requirements	3.39	(0.68)	1-4
5. Coursework of 35 units	3.43	(0.71)	1-4
6. Thesis as a requirement for graduation	3.17	(0.87)	1-4
7. Option for diploma	3.35	(0.77)	1-4
8. MRR students to take additional units	2.82	(0.95)	1-4

On the other hand, generally low ratings (Mean=3.76) were given to CE 201, which was composed of Health Economics, Health Social Science and Research Ethics. The faculty has difficulty handling this particular course as each part is only briefly covered. The students felt that CE 216: Medical Informatics, which received the lowest rating (Mean=3.86), was relevant but did not meet the objectives. The students' assessment of their courses was lower during the first years of the program. In general, they rated their courses in 2001-2002 favorably.

Process evaluation

Program management. With the guidance of and in coordination with the NGSHS, the department followed a fixed schedule of activities for accepting application forms and screening applicants, including administering the qualifying examination, conducting the panel interview and notifying applicants of admission on a given school year. Students and alumni were asked their perceptions on the MSE-CE program management. A scale of 1 (least favorable) to 5 (most favorable) was used. Table 5 presents these perceptions. The lowest rating was given to responsiveness to students' psychosocial needs. Graduates explained in the FGD that the schedule of classes was rigid and the MRR requirements added more burden and pressures on them.

Table 4. Courses identified by students and alumni to be most and least helpful

Area	Helped Most	Helped least
Research undertaking	CE 211: Fundamentals of Clinical Epidemiology CE 212: Basic Research Methodology Biostat 201: Fundamentals of Biostatistics I Epi 204: Study Designs in Epidemiology	Pharma 250: Introduction to Pharmacoepidemiology Epi 201:Fundamentals of Epidemiology
Clinical decision making	CE 213 : Critical Appraisal of Medical Literature CE 211: Fundamentals of Clinical Epidemiology CE 201 : Fundamentals of Health Economics, Health Social Science and Research Ethics Evidence based Medicine	Pharma 250: Introduction to Pharmacoepidemiology Biostat 202: Fundamentals of Biostatistics II
Teaching/training activities	CE 213: Critical Appraisal of Medical Literature CE 212: Basic Research Methodology CE 211: Fundamentals of Clinical Epidemiology	Pharma 250: Introduction to Pharmacoepidemiology

Students. Since 1992, a total of 106 students have been admitted to the program. At the time of admission, their ages ranged from 26 to 68 years old (mean = 41.56), which places them at the mid-career and mid-adulthood stages. Thirty-five (43.8%) are male and 45 (56.3%) are female. All graduates have a medical degree except one student who is a BS Nursing degree holder. Thirty-seven percent (37%) financed their own education; the rest were financed by PCHRD, INCLEN, and other agencies. With the withdrawal of support from INCLEN/SEACLEN in 1998, most students started to finance their own education. Although the lack of funding for their tuition was not a problem, lack of budget for their thesis work was cited by some alumni as one difficulty they faced.

Actual delivery of the curriculum. Direct observation revealed that classes in CEU involved less than ten students of the MSE-CE program and the format was still 75 to 100 percent lecture. These followed the outlines provided by the syllabus.

In some classes, students were also asked to work on cases and discussion followed. Student output would be presented before the class and the other students would give their critique. Every lecturer passed around the attendance sheet and asked the students regarding their interests in research. This suggests that teachers who happened to be the senior ones were not familiar with the students, probably since they met the class only for specific topics and not regularly for the entire quarter, unlike preceptors.

As for the courses taken in the College of Public Health, MSE-CE students joined the students of Public Health; hence,

Table 5. Means and SDs of perception of MSE-CE Program Management (n=80)

Items on program management	Mean	(SD)
1. Responsiveness to students' academic needs	4.03	(0.75)
2. Responsiveness to students' psychosocial needs	3.80	(0.89)
3. Execution of basic procedures, e.g., admission, etc.	4.01	(0.77)
4. Administrative staff easy to deal with	4.58	(0.66)
5. Program director easy to deal with	4.55	(0.62)

there were more than fifty students in each class. Lectures were held in the College of Public Health Auditorium. Again, these were traditional lectures during which any student could ask questions. Laboratory exercises were answered in separate rooms where they grouped themselves in 20s and solved problems individually. Answers to exercises were discussed later.

According to alumni, prior to the start of classes, a pretest was given to students to determine their level of competence in statistics. Those who were deemed in need of closer guidance were grouped as "intensive care unit" and tutorials were regularly held for these students outside of class hours. This was a welcome thing for these students since they were aware that they needed help. Due to the discrepancy in the competence of students, some of them found lessons boring because the teachers were adjusting to the slower students.

The students also found the teaching resources and activities appropriate to the objectives. Computer work, lectures and small group discussion were the most extensively used strategies. Exercises, workshops, small group discussions and computer work were the most useful to them. They, however, suggested more hands-on experience in browsing the net, use of handheld or portable computers and constructing a database could improve the course. This was echoed by alumni and even faculty members who felt students lacked exercises with software especially in nonparametric statistics. Students were not looking for a lighter or an easier time as they went through the program. They were in fact asking for more exercises to hone their skills in protocol writing, statistical analysis, presenting a paper and teaching research.

One problem identified was the wide gaps in the schedule of classes. During the interviews, respondents expressed the seeming lack of coordination between the content and handling of the course in CPH and DCE.

Teachers. Students rated their teachers' characteristics and performance from 1 to 5, the latter being the highest rating. Respondents perceived their teachers to possess the competence necessary to teach their respective courses in epidemiology (mean = 4.46, SD = 0.68). Lower ratings were given for availability for consult (mean = 3.75, SD = 0.87), punctuality (mean = 4.07, SD = 0.73), attendance (mean = 4.09, SD = 0.77) and being inspiring (mean = 4.04, SD = 0.87). The numerous other responsibilities of teachers might explain why they were not always around for their students. The student ratings of faculty for academic year 2001-2002 also reflected these findings. During the FGDs, respondents complimented the CPH faculty members as experts since they were chronologically more senior and described DCE faculty members as novices in an equally new program.

Instructional resources. Alumni and students currently enrolled were asked to rate the instructional resources using two constructs, namely, perceived degrees of adequacy and accessibility. The rating scale used ranged from 0 (not applicable), 1 (not adequate/not accessible) to 5 (adequate/accessible). The mean ratings, range of scores, and standard deviations (SD) are presented in Table 6.

Figures show that students and alumni have generally favorable perceptions of the adequacy and accessibility of basic instructional facilities in DCE. Modules and handouts are rated highest because as respondents described: "they are already provided for in separate folders per subject for specific prices." This also explains why the books had relatively lower ratings. Respondents explained: "journals are adequate but only a few are accessible because most of them are not in the UPCM library; what are available are only the abstracts," and "computers were lacking." They explained further that during small group activities, "after the grouping, those from PH [Public Health] go back to PH and use CPH computers," and "those of us from CE go back to CEU."

Product evaluation

Overall impact. As of the end of 2002, 37 students had graduated and 69 students were still enrolled. Out of the 106, 5.66% graduated within four years; the rest of the alumni finished in five to six years. Alumni and students currently enrolled were asked to assess their own levels of competence in terms of 23 research skills. The response format was a four-point Likert-type rating scale ranging from 1 (needs improvement) to 4 (outstanding). Table 7 lists those areas where respondents reported mean ratings of ≥3.0 indicating average competence.

Items 2, 3, 6, 8, 10 and 13 in Table 7 compose the construct on research conceptualization and design. The overall mean rating is 3.26. Items 1, 5, 9 and 12 compose the second construct on data analysis and interpretation with an overall mean rating of 3.28. Items 4, 7 and 11 for research management and ethics yielded the lowest rating of all average competencies with a mean of 3.21.

More than half of all the respondents were attached to a medical school as faculty members. In particular, alumni from the University of Santo Tomas, the De La Salle Health Sciences Institute and the Cebu Institute of Medicine became the pioneer members of their respective institutions' CEUs.

Table 8 presents contrasting results. Alumni and students reported the areas where they thought they needed improvement.

Sustainability. From 35 accomplished curriculum vitae, a total of 71 research papers completed by students and alumni were recorded. Respondents also played various roles in each of these researches, namely: being chair or member of their institution's or specialty society's research committees; editor or member of the editorial staff of research-oriented publications; director, assistant director or member of their school's CEU; resident research coordinator; technical consultant of the PCHRD; clinical research coordinator or faculty members of research or clinical epidemiology. However, a DCE faculty and a DCE student also admitted that a great number of students and alumni remained users

Table 6. Perceptions of graduates and students on the adequacy and accessibility of instructional resources in the MSE-CE program (n=80)

	Adequacy		Accessibility	
	Mean	(SD)	Mean	(SD)
Books	3.50	(1.09)	3.87	(1.08)
Journals	3.21	(1.18)	3.36	(1.17)
Classrooms	4.10	(1.07)	4.34	(0.80)
Audio-visual facilities	3.83	(1.13)	4.07	(1.03)
Handouts	4.34	(0.81)	4.53	(0.71)
Modules	4.22	(0.85)	4.40	(0.76)
Computers	3.22	(1.19)	3.41	(1.13)

rather than doers of research. DCE students, during the FGD admitted that "We don't have time to concentrate in research … we are primarily physicians and our immediate preoccupation is taking care of our patients."

Alumni and students were asked to rate the MSE-CE curriculum in terms of overall relevance. On a scale of 1 to 5 (least to most favorable score), the MSE-CE was found to be relevant to the health needs of the country (mean = 4.68, SD = 0.57), to health practice (mean = 4.83, SD = 0.41), useful in making sound clinical decisions (mean = 4.83, SD = 0.41) and useful in the conduct of health research (mean = 4.88, SD = 0.40).

Stakeholders and partner agencies were asked about the sustainability of the MSE-CE program. The Department of Health (DOH) confirmed that the said curriculum "is a much needed one." Over the last 10 years that the MSE-CE program was being offered, DCE has been coordinating with the following institutions: The PCHRD in both national and local levels, the National Research Council of the Philippines, DOH, research committees and CEUs in three different sites, the Philippine, Asian and regional CEUs and CERTCs and most of the students' and alumni's research committees and societies.

Table 7. Research skills with average competence by self-assessment (n=80)

Research skills	Mean	(SD)
1. Proper identification of factors in disease causation	3.66	(0.66)
2. Identification of the research problem	3.53	(0.66)
3. Knowledge and synthesis of related literature	3.45	(0.57)
4. Advocate health policies	3.42	(0.85)
5. Determine the efficacy and effectiveness of interventions	3.35	(0.72)
6. Doing a research proposal	3.33	(0.63)
7. Knowledge of ethical issues in research and clinical practice	3.26	(0.63)
8. Knowledge of appropriate research design	3.25	(0.54)
9. Critically evaluate research information	3.20	(0.08)
10. Developing a conceptual framework	3.11	(0.69)
11. Research management	2.95	(0.83)
12. Evaluation of the reliability and validity of measurements	2.93	(0.76)
13. Knowledge of sampling procedures	2.90	(0.64)

All these organizations expressed their unconditional support to the MSE-CE program. A case in point is the case of PCHRD that introduced the "twinning project." This schema matches a center of excellence (the older twin) with a region-based satellite institution (younger twin) so that the former may help the latter devote its research expertise.[a] A DCE alumna explained that her institution's CEU conducted seminars and workshops on health research for clients in Region 6. Same alumna explained: "The experience was a different kind of high because we get the chance to be like our teachers." After 10 years of implementation, it could then be said that the MSE-CE is multiplying itself and is now succeeding to produce the next generation of the country's clinical epidemiologists.

Discussion

The introduction of the Master of Science in Epidemiology-Clinical Epidemiology track in the University of the Philippines College of Medicine was an offshoot of the development of clinical epidemiology as a distinct academic discipline in the Philippines. It was founded on the clear need for physicians to use research evidence in their clinical decision-making. And because the target students were busy adult learners, the curriculum was especially designed to be competency-based. The courses and the program of study were organized

Table 8. Research skills at which respondents need improvement (n=80)

Research skills	Mean	(SD)
1. Conduct of key informant interviews, FGDs, observations and other qualitative methods	2.87	(0.72)
2. Cultural appropriateness of interventions	2.80	(0.80)
3. Planning of strategies for disease control / provision	2.75	(0.81)
4. Use of appropriate statistical analysis	2.66	(0.81)
5. Device methods for evaluating health technology / programs	2.65	(0.91)
6. Designing questionnaire	2.63	(0.75)
7. Statistical computations (using at least one computer software)	2.61	(0.99)
8. Determination of sample size	2.53	(0.78)
9. Formulation of health policies based on evidence	2.53	(0.81)
10. Cost analysis of health programs and interventions	2.31	(0.88)

to slowly build the professional roles and competencies of physicians to become evidence-based in their practice, and, at the same time, become advocates, trainers and teachers of the value of research in their respective institutions.

While the initiative and push to introduce the MSE-CE program came from the outside, it became part of the existing structure in the University of the Philippines Manila. Most of the core courses were taken from the College of Public Health, administrative and faculty items were taken from other colleges and units, while facilities and physical plant for instruction did not really entail new capital outlays and fresh releases of funds and the existing university rules surrounding graduate programs were adopted. The College of Medicine added a new program but basically worked on the same structures.

Specific management decisions could be drawn out from the CIPP evaluation findings. Context evaluation proved the program's determined position to prepare clinicians for decision-making, thereby affirming the need for the program to continue and recruit as many students as possible. Input evaluation provided evidence that, internally, within the college and the university, the program served as an additional program and operated on the same existing structures. External support was adequate to recruit students, enough for them to temporarily leave their respective clinical practice. This implies sensitive management decisions should the external support be terminated. Process evaluation showed that the MSE-CE was appreciated because of the combined dedication and competence of the faculty, staff, administrators and their external partners. However, there is plenty of room left to improve the actual research competency-building of the students not only in terms of appreciating the program, judging research contests and being users of research evidence. There was an apparent need to make the candidates consistent doers of research as well. Product evaluation proved to be the most significant area where the MSE-CE program could claim success. The program did not just create an academic discipline; it also paved the way for other service agencies in government to be evidence-based. By the constant supply of research material provided by both faculty and students, the Departments of Health, and Science and Technology through the Philippine Council for Health Research and Development, among others, admittedly grew and blossomed as mature institutions in terms of handling data and formulating relevant policies.

Conclusions and Recommendations

The Department of Clinical Epidemiology introduced and nurtured Clinical Epidemiology as an academic discipline

through its MSE-CE curriculum. Perceived at the start as a redundancy of public health epidemiology, it grew into a unique field of specialization through the combined support of faculty, students, UP Manila, the Rockefeller Foundation and other partner agencies like the Philippine Council for Health Research and Development. The program was appreciated for building the competence of physicians in appraising evidence for clinical decision-making. Amidst their busy schedules as clinicians, the faculty, graduates and students of the program have become researchers and program managers ensuring the sustainability of the discipline.

The MSE-CE curriculum proved to be a modest success of institution building. Started as a vision of an administrator who challenged the status quo, the program became a reflection of how various educational ingredients of planning with a particular context, generating appropriate and adequate inputs, maintaining competent and committed faculty and staff, and regular monitoring of outcomes and products should be blended at various stages of program development. As an educational product, it is undergoing a continuous process of refinement, slowly gaining ground as an academic discipline. To ensure continuous program quality and relevance, it is recommended that the DCE conduct periodic curriculum evaluation. Courses identified in this study as relevant or otherwise, interesting or otherwise, should be reconsidered. Among others, it is important to monitor retention, attrition and graduation among students. Since faculty advising and thesis support are critically important to ensure quality, it is further recommended that continuous resource generation is done to have additional faculty and staff items, and thesis grants.

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DREAMS CAN COME TRUE

A Commentary on the Evaluation of the Master of Science in Epidemiology (Clinical Epidemiology) Curriculum

By
Professor Richard F. Heller

Professor Richard Heller served as Director of the Centre for Clinical Epidemiology and Biostatistics (CCEB) of the University of Newcastle, Australia for more than 15 years. The CCEB is one of the first clinical epidemiology and research training centers (the only one in Australia) established by the Rockefeller Foundation in the early 80's. Prof. Heller is currently Emeritus Professor of the Universities of Manchester, UK, and Newcastle, Australia and Coordinator of the Peoples-uni (http://peoples-uni.org;http://courses.peoples-uni.org/)-- an open access education initiative.

In the late 1970's, the Rockefeller Foundation realised that clinicians were important instruments of change in health policy, but were not trained in the population sciences so unable to provide a Public Health perspective to their policy advice. The International Clinical Epidemiology Network (INCLEN) was born, to train clinicians in what subsequently became Evidence Based Practice. The University of the Philippines, Manila, was selected as a site for the training of mid-career clinicians in the first round of training, and a number of bright young academics went overseas to take Masters courses in Clinical Epidemiology. The dream was that these people would then become change agents themselves, both in the practice, advocacy, policy role and teaching. This paper shows how the dream has come true in the Philippines.

The genesis of a new Masters course is described carefully and the paper shows how best practice evaluation was performed using a 'Context, Input, Process and Product evaluation (CIPP)' design. Interviews, observations and focus groups amongst the relevant players provided information which not only led to course improvements, but was able to be used to demonstrate the value of the course. As a result, as shown by the postscript, the University has supported the course, which is now sustainable. Because of this, the high quality of those initially trained, and through the training of the next cadre of clinical epidemiologists, the whole discipline has become institutionalized as a distinct discipline among medical colleges in the Philippines. Graduates play important roles in health policy formulation for the Philippines and internationally. This story is important to be told, and I applaud the authors and the Journal for this publication.

Mapping of MS Epidemiology (Clinical Epidemiology) graduates and students

The M.S. Epidemiology-Clinical Epidemiology has trained more than 150 health professionals from various health institutions in the Philippines, Indonesia and China. The following map shows their areas of practice in the Philippines. While there are a number who are practicing in the provinces (including the provinces in Visayas and Mindanao), majority (82%) are based in Metro Manila. To address this inequity, the Department of Clinical Epidemiology at the University of the Philippines is partnering with the Philippine Council for Health Research and Development to attract health professionals based in areas outside of Metro Manila. One major hurdle identified is the difficulty of uprooting a clinician from his area of practice for a year (the program requires one year of course work in Manila). It is within this context that the long-term plan of offering selected courses and eventually the program by distance learning was envisioned.