

Curriculum Evaluation Plan

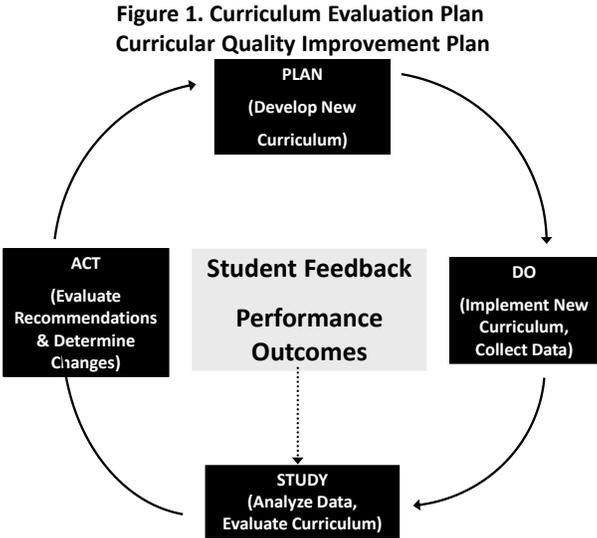
The Northeast Ohio Medical University College of Medicine

Introduction

Ongoing curriculum evaluation plays an important role in educational program planning and improvement. Curriculum evaluation activities include all of the curriculum evaluation requirements outlined by accreditation standards published by the Liaison Committee on Medical Education (LCME). These include evaluation of required courses and clerkships, instructors, segments of the curriculum, and the curriculum as a whole.

Evaluation efforts should provide useful information to faculty decision-makers regarding the medical education program. Evaluation data may be used to gauge student progress toward achievement of educational program objectives, identify strengths and weaknesses of the curriculum and its component parts, and to refine and enhance the educational experience for both the teacher and learner.

The College uses the Plan-Do-Study-Act (PDSA) framework as the basis for continually improving the curriculum (see Figure 1).¹



While the NEOMED College of Medicine Curriculum Committee (NCC) is ultimately responsible for curriculum evaluation, oversight, and approving curriculum revisions (“ACT”), its subcommittees and courses/clerkships also play key roles in curriculum evaluation. For example, the Pre-clerkship Curriculum Subcommittee and the Clinical Curriculum Subcommittee may submit recommendations for major curriculum changes and course or clerkship directors may implement certain curriculum changes within their purview (“PLAN” and/or “DO”). The Curriculum Evaluation Subcommittee is charged to evaluate courses and clerkships (“STUDY”).

This document outlines the principles of a curriculum evaluation plan for the NEOMED College of Medicine MD program. The plan will be overseen by the NEOMED College of Medicine Curriculum Committee and supported by the dean's office and other selected individuals.

Overview of Evaluation Principles

The College of Medicine has established several processes to manage and evaluate the MD program curriculum.

1. Curriculum management is centrally driven by the curriculum committees, which include the NEOMED College of Medicine Curriculum Committee (NCC) and its subcommittees: Pre-clerkship Curriculum Subcommittee (PCS), Clinical Curriculum Subcommittee (CCS), and Curriculum Evaluation Subcommittee (CES). The NCC has ultimate authority over the curriculum, including all curriculum evaluation processes. The function and relation of the subcommittees is described in the Curriculum Management Charter of the MD Program (CMC).
2. Managing the curriculum involves seven activities: leading, planning, directing, coordinating, reporting, evaluating, and controlling. These activities are defined and described in the CMC. One of these activities – evaluation – is the subject of this document.
3. Curriculum evaluation is faculty-driven and collaborative, relying on multiple perspectives and data sources. The LCME identifies multiple components of program evaluation, including the evaluation of instructors, the curriculum as a whole, each curriculum segment or phase (preclinical and clinical), and individual required courses (modules) and clerkships. The NCC directly oversees evaluation of the curriculum as a whole, the PCS oversees evaluation of the pre-clerkship (M1/M2) segment, the CCS oversees evaluation of the clinical (M3/M4) segment, and the CES oversees evaluation of individual modules/courses and clerkships. The PCS, CCS, and CES function within parameters set by the NCC, which has ultimate authority over *all* curricular evaluations. The NCC also recognizes that the course and clerkship directors play a vital role in course and clerkship evaluation and that these important individuals are key to ongoing quality improvement.
4. To evaluate the extent to which various elements of the curriculum (e.g., educational program objectives (EPOs), courses and clerkships, instructors, etc.) are successful, the NCC and its subcommittees will employ agreed-upon performance standards, predetermined standards of excellence that may be used to make decisions regarding conformance and/or quality.
5. The College of Medicine prizes high quality instruction throughout the MD program. The instructor evaluation processes (including the overall plan, evaluation instruments, the minimum quality thresholds, and the dissemination of results) are developed and approved by the NCC.
6. At the course/clerkship level, curriculum evaluation is organized around six domains: goals, content, design, delivery, evaluation, and compliance. These are defined and described in the CMC. The domains are comprehensive and allow for an evaluation of outcomes, goals, and objectives; methods

of instruction and assessment; curricular alignment and organization; content gaps and redundancies; curricular integration and coordination, efficiency, and overall quality. Compliance involves adherence to both LCME and institutional standards, including bylaws, policies, procedures, and “core principles.” “Core principles,” as described in the CMC, are shared curricular standards established by the NCC. Each required course and clerkship is evaluated in depth at least every 3 years by the CES using standard worksheets approved by the NCC. In addition, each course and clerkship is evaluated (using scorecards) annually by the PCS or CCS and the NCC. This process is described below.

7. Continuous improvement in content integration is a major goal of curriculum evaluation. Several groups are charged with evaluating and improving integration. The Curriculum Evaluation Subcommittee focuses predominantly on integration within the Medical Knowledge competency. The PCS, and particularly the directors of the longitudinal clinical curriculum for the M1 and M2 years, attend to integration within the Patient Care and Communication competencies. The curriculum segment subcommittees (PCS and CCS) attend to integration within the Professionalism, Practice-Based Learning, and Systems-Based Practice competencies. The NCC determines the sequence in which EPOs are evaluated for integration. An annual comprehensive curriculum integration report summarizes efforts by all groups to improve integration over the course of a year. The process of evaluating the curriculum for integration is described in the Curriculum Integration Plan.

Educational Program Objective Evaluation

In accordance with accreditation standards, the college periodically evaluates the success of the curriculum by assessing the extent to which the coursework has led to student achievement of the Educational Program Objectives (EPOs). EPOs achievement is assessed by evaluating the success of all associated outcome measures over time.

EPO outcomes are evaluated over a three-year cycle, to coincide with the evaluation of each major part of the curriculum:

- Year 1 of the cycle: all EPO outcomes assigned to the pre-clerkship (M1/M2) curriculum
- Year 2 of the cycle: all EPO outcomes assigned to the clinical (M3/M4) curriculum
- Year 3 of the cycle: all outcome measures for all EPOs

Hence, every three years all EPO outcomes are reviewed as a comprehensive set. This process repeats every three years.

The evaluation of EPO achievement is facilitated through the use of two documents:

Curriculum Performance Standards (used to establish the general process used to evaluate each EPO)

The “Curriculum Performance Standards” document defines the process and standards used to judge the extent to which the curriculum has resulted in the achievement of each EPO. This document contains the

EPO rubric and Outcome Measure Rubric that are required to make judgements regarding the achievement of each EPO. EPO outcomes are reviewed in two-year “snapshots.”

Curriculum Masterplan (used to define the specific outcome measures associated with each EPO)

The NCC uses the Curriculum Masterplan to facilitate evaluation of the EPOs. This document indicates the assessment tools used to evaluate each EPO and the predetermined performance standards used to judge performance.

Course and Clerkship Evaluations

Required courses and clerkships are evaluated using two distinct processes: an annual scorecard review and a triennial comprehensive evaluation by the Curriculum Evaluation Subcommittee. The dean’s office compiles and disseminates all course and clerkship evaluation data and provides necessary logistical support.

1. Annual Scorecard Review – The PCS and CCS annually review a scorecard that consists of end-of-course and end-of-clerkship evaluation ratings by students (including questions regarding overall quality of the experience, course/clerkship objectives, lecture quality, course/clerkship organization, communication, workload, and exams), instructor ratings, exam scores, and grade distribution across clinical teaching sites. These reviews are forwarded to the NCC for final action as needed.

Courses and clerkships that do not meet the minimum quality threshold established by the NCC for any of the performance indicators on the annual scorecard are required to submit a status report to the NCC that details actions taken (or planned actions depending on the timing of the issue) to address the shortcoming(s). The NCC will review the status report to determine if the course has submitted a satisfactory response for each shortcoming.

2. Triennial Review – At least once every three academic years the CES evaluates each required course and clerkship according to a schedule developed by the NCC. Notably, course and clerkship evaluations are not conducted in isolation; the NCC has charged the CES to pay particular attention to horizontal and vertical integration as it evaluates related instructional units in sequence. The NCC strategically sequences course and clerkship reviews to promote and enhance both horizontal and vertical curriculum integration (for example, the review of the Internal Medicine clerkship might be scheduled to immediately follow the review of the Flora, Pathogens, and Defense module).

Each course and clerkship evaluation is guided by a standardized evaluation instrument (approved by the NCC) that addresses course and clerkship goals, content, design, delivery, evaluation, and compliance. As part of each evaluation the CES reviews a large set of data including course instructional activities and content, end-of-unit evaluation reports completed by students, individual course scorecard reports, a summary of interviews with course/clerkship director(s), AAMC Graduation Questionnaire results, final exam grades, final course grades, relevant USMLE scores and subscores, course syllabus, course schedules, and a curriculum mapping report. The CES pays particular attention to curriculum alignment (making sure assessments align with weekly or session

objectives, weekly or session objectives align with course objectives, and course objectives align with EPOs). In addition, attention is given to general course quality, instructor quality, student receipt of summative and formative feedback, organization, workload, assessment/outcome/grades, and quality of communication by the course director.

Each triennial evaluation results in a comprehensive report that is forwarded to the NCC for consideration. After the NCC has approved the final report the course or clerkship director(s) is asked to submit a status report that details actions taken (or planned actions depending on the timing of the issue) to address any identified shortcoming(s).

In addition to the above processes, the NCC or its designated subcommittee may commission a special review of a course or clerkship at any time. This may take the form of a formal CES course evaluation or a mid-year evaluation of a particular dimension of a course or clerkship (e.g., CCS evaluating grade comparability across clinical sites).

Curriculum Segment Evaluations

The Pre-clerkship Curriculum Subcommittee (PCS) evaluates the pre-clerkship segment and the Clinical Curriculum Subcommittee (CCS) evaluates the clinical segment of the curriculum. These evaluations result in a segment report, which is reviewed by the NCC. The NCC may either approve the report or request additional information and revision. Any revision must be approved by the MEC.

As noted earlier, the curriculum-as-a-whole and curricular segments are reviewed every three years on a rotating basis:

- Year 1, pre-clerkship (M1/M2) segment
- Year 2, clinical (M3/M4) segment
- Year 3, curriculum as a whole

A standardized segment evaluation worksheet (approved by the NCC) is used to evaluate the pre-clerkship and clinical segments. Curricular segment evaluation provides a unique opportunity to address issues that cannot be addressed during individual course/clerkship evaluations and that are not addressed in curriculum-as-a-whole evaluations. Specifically, segment evaluations address these kinds of questions:

- Are the EPO assignments satisfactory? Because all curricular change begins with educational program objectives, the curriculum subcommittee must decide if the EPO assignments to each course or clerkship should be maintained or revised.
- Is the segment design satisfactory? Because curricular design is not readily addressed at the course level, the NCC has placed design-related questions (involving more than one course or clerkship) at the segment level. Discussions regarding longitudinal experiences and the blending or splitting of courses occur here.
- Is sufficient content included and appropriately placed? At the level of segment review, the subcommittees must decide if any topics need to be added or removed and if the topics are appropriately allocated to courses or clerkships.

- Is the level of horizontal and vertical integration satisfactory? Integration is assessed at both the segment and curriculum-as-a-whole level. At the segment level, the curriculum subcommittees review relevant parts of the Comprehensive Integration Report, which summarizes efforts over the past year to improve horizontal and vertical integration. The PCS looks specifically at efforts to improve horizontal integration within the pre-clerkship segment and vertical integration across the curriculum. The CCS looks specifically at efforts to improve horizontal integration within the clinical segment and vertical integration across the curriculum. The subcommittees must decide if past and present efforts to improve integration are satisfactory or if additional projects or approaches are needed.
- Is the breadth of instructional methods appropriate? The curriculum database indicates how content related to weekly or session objectives is related to instructional methods. This allows the breadth and frequency of instructional methods to be ascertained for each segment. The curriculum subcommittees review this information to determine, for example, if changes are needed in the balance of instructional methods across the segment.
- Is the breadth of assessment methods appropriate? The curriculum database has information on assessments methods used throughout the core curriculum. This allows the breadth and frequency of assessment methods to be determined for each segment. The subcommittees can then compare, for example, the utilization of knowledge-based assessments with the utilization of skills-based assessments in each segment and determine if specific methods of assessment that could be useful are being neglected.
- Have the educational program objectives assigned to the segment been met? During segment evaluation, the curriculum subcommittee reviews the outcomes report for the EPOs assigned to that segment. If unsatisfactory outcomes are found, the subcommittee must develop a plan of corrective action.

The dean's office compiles evaluation data and provides necessary logistical support for segment evaluation. The NCC receives the reports from the subcommittees and acts on results as necessary.

Curriculum-as-a-Whole Evaluations

Evaluation of the curriculum as a whole is undertaken by the NCC every three years. A standardized curriculum-as-a-whole evaluation worksheet (approved by the NCC) is used to facilitate the evaluation. Curriculum-as-a-whole evaluation is organized around the educational program objectives (EPOs) and includes three general questions and three EPO-specific questions:

General

- Are the goals of the medical education program satisfactory? The NCC reviews the goals of the MD program to determine if they still adequately represent the goals of the faculty (as expressed through the NCC) or if revisions are needed.

- Are the competencies of the MD program satisfactory? The NCC has chosen the AAMC-modified version of the ACGME competencies to guide EPO organization and development. The question of whether to continue using these competencies or to modify them is revisited during curriculum-as-a-whole evaluation.
- Are the EPOs of the MD program satisfactory? The NCC reviews the EPOs annually. This review is included as part of the curriculum-as-a-whole evaluation every three years.

EPO-specific

- Is sufficient content for each EPO included and appropriately placed? At the curriculum-as-a-whole level of evaluation, the NCC reviews the content of each EPO and determines if it is adequate to serve as the content “standard” for that EPO. Specifically, the NCC must decide if any topics should be added or removed and if the topics are appropriately allocated to the courses and clerkships.
- Is horizontal and vertical integration of content satisfactory? The NCC must decide if the organization, placement, and flow of content for each EPO is satisfactory or if revisions should be made.
- Has the educational program objective been met? The “masterplan,” a system of measuring outcomes for each EPO, results in a masterplan outcomes report, in which performance is presented as a color rating: “green” to indicate satisfactory performance, “yellow” to indicate concern, and “red” to indicate unsatisfactory performance. The NCC reviews the outcomes for each EPO and, for any rated “yellow” or “red,” makes recommendations for further investigation and/or corrective action.

Evaluation of the curriculum as a whole is supported by the dean’s office.

Curriculum Database

The College of Medicine uses one45 as its database platform. This system includes a specially tailored interface that allows data entry and searching of traditional course metadata (e.g., session name, instructor name, instructional method, etc.) and a hierarchical USMLE keyword tagging system. Each session is tagged with numerous keywords that convey a rich portrait of content covered for each course session.

The curriculum database includes data for all required courses and clerkships in the curriculum. These data include session title, name of instructor, session duration, linked educational program objectives

(EPOs), content data (i.e., USMLE topics covered), instructional method, and assessment method. Data are accessible to course directors and administrators to access information easily. The following individuals have access to the database: the associate dean of medical education, director of faculty development, senior assessment and evaluation specialist, all course and clerkship directors, all course and clerkship coordinators, and all teaching faculty in the College of Medicine (by request).

Staff in the dean's office are responsible for monitoring and updating database content. Database reports for each course and clerkship are provided each year to the course and clerkship directors to verify that all information is correct. Any errors are reported to the dean's office, which is responsible for correcting the error. Any and all revisions to the database are overseen by the curriculum resource manager in the dean's office. Every summer, the database is updated under the supervision of the associate dean of medical education. The associate dean of medical education is ultimately responsible for the integrity of database content.

Staff in the dean's office are responsible for producing and preparing documents requested by the CES, PCS, and CCS. The utility of the database is summarized below.

1. Content. The dean's office produces a course report for each course and clerkship evaluated triennially by the CES. The report lists every session in the course along with the content topics linked to each session. This allows the CES to compare actual course content (as indicated by the database report) with expected course content. If discrepancies are found, a gap analysis report is generated and submitted to the NCC along with the course evaluation report. Redundancies within a course can also be detected by reviewing the database report.
2. Instructional methods. The dean's office prepares a report that shows the frequency and breadth of instructional methods used in each curricular segment for review by the curriculum subcommittees during preclinical and clinical segment evaluation. This report allows the subcommittees to determine, for example, if the proportion of lecture-based sessions in the preclinical segment is declining as intended.
3. Assessment methods. Similarly, the dean's office prepares a report that shows the frequency and breadth of assessment methods used in each curricular segment for review by the curriculum subcommittees during pre-clerkship and clinical segment evaluation. This report allows the subcommittees to determine, for example, if the "density" of examinations in a segment is appropriate, if there is sufficient summative assessment of clinical skills within a segment, and if there is sufficient variety in manner of assessment.

Sources

The Curriculum Evaluation Subcommittee uses the following data and information sources in its work. *(This list is not intended to be exhaustive.)*

1. General

- a. AAMC Curriculum Inventory Reports
- b. LCME Data Collection Instrument
- c. USMLE Content Outline
- d. College of Medicine Curriculum Database

2. Program/Course/Clerkship/Match

- a. Goals of M.D. program
- b. Competencies and educational program objectives (EPOs) of M.D. program
- c. Mappings of EPOs to courses and clerkships
- d. Curriculum Evaluation Plan for M.D. Program
- e. Curriculum Integration Plan
- f. Curriculum “Masterplan”
- g. Curriculum performance standards
- h. Comprehensive Curriculum Integration Report
- i. Curriculum Evaluation Subcommittee (CES) reports
- j. Curriculum evaluation worksheet for segment and curriculum-as-a-whole evaluations
- k. Curriculum evaluation worksheet for module, course, and clerkship reviews
- l. Course and clerkship objectives
- m. Individual module/course/clerkship scorecards
- n. Individual end-of-course evaluation reports (pre-clerkship)
- o. Individual module/course/clerkship director interview report (triennial review)
- p. Student clinical encounter (CSEP) reports
- q. Data on quality of teaching by individual instructional staff
- r. Individual module/course/clerkship documents: objectives, syllabi, calendars/schedules
- s. Professionalism concerns reports
- t. Residency matching data
- u. Practice locations of medical graduates

3. Exams

- a. USMLE results (Steps I, II-CK, II-CS)
- b. NBME Customized and Subject Exam results
- c. End-of-year Clinical Skills Assessments
- d. Clerkship OSCEs

4. Surveys and questionnaires

- a. Annual survey of residency program directors
- b. AAMC Graduation Questionnaire (GQ)
- c. AAMC Year Two Questionnaire (Y2Q)

Resources

- ❖ **Faculty development.** Faculty development staff members at both the university and college level provide targeted faculty development and peer review sessions to improve teaching skills.
- ❖ **Curriculum database.** All course and clerkship directors have access to the curriculum database. The database lists every session in the core M.D. program, along with instructor name, course/clerkship name, educational program objective, instructional method, assessment method, session duration, and USMLE content topics.
- ❖ **Other resources.**
 - Outcomes data (e.g., USMLE reports)
 - Survey and questionnaire data (e.g., Graduation Questionnaire reports)
 - Program-specific information (e.g., educational program objectives)
 - Work group / committee information (e.g., curriculum coordination efforts)
 - Educational tools (e.g., manual on writing course objectives)
- ❖ **Infrastructure and support.** The Dean's office and department chairs evaluate resource needs and provide assistance when appropriate.

References and Explanatory Endnotes

1. Cleghorn GD, Headrick LA. *The PDSA cycle at the core of learning in health professions education. Jt Comm J Qual Improv.* 1996 Mar; 22(3): 206-12.
2. *Liaison Committee on Medical Education. Functions and Structure of a Medical School.* 2019.