ACGME Program Requirements for Graduate Medical Education
in Medical Genetics

IMPACT STATEMENT

Line Number(s): 43-45
Requirement Revision (major revisions only): Int.D

The educational program - A residency in clinical medical genetics must be twenty-four months in length, may be accredited to provide two and/or four years of graduate medical education.

Describe, as appropriate, how the revision:

1) impacts the quality and safety of patient care; N/A
2) improves the quality of resident education; The current 4-year option is intended to provide 2 years of clinical education in primary care prior to education in medical genetics but is not specific regarding the required elements of that education or the expected outcomes. The new program requirements limiting the length of the program to two years also include a requirement for one year of clinical education prior to entering the residency and specify the required educational experience and required competencies that incoming medical genetics residents must demonstrate.
3) affects the way the resident, the service, and the staff provide patients with continuing care; N/A
4) requires a change in institutional resources (e.g., facilities; organization of other services; addition of faculty; financial impact); The elimination of the 4-year option will reduce the required institutional resources needed for those that sponsor 4 year programs.
5) may change the volume and variety of patients required to provide proper educational resources in the institution(s); and The elimination of the 4-year option will reduce the volume and variety of patients required for 4 year programs, specifically those needed for education in primary patient care, but will not affect the volume and variety of patients required for medical genetics education.
6) impacts residency education in other specialties. N/A

Line Number(s): 66-68
Requirement Revision (major revisions only): PR I.A.1.
The program director must be provided with at least 0.2 full time equivalent (FTE) protected time and financial support for his or her educational and administrative responsibilities to the program.

Describe, as appropriate, how the revision:

1) impacts the quality and safety of patient care; N/A
2) improves the quality of resident education; Requiring program director support should help to ensure that adequate time is devoted to the administration of educational activities.
3) affects the way the resident, the service, and the staff provide patients with continuing care; N/A
4) requires a change in institutional resources (e.g., facilities; organization of other services; addition of faculty; financial impact); The RC has been using the common
program requirement I.A. to cite programs where it is apparent that the program
director does not have the time and support to meet the requirements for
administering and maintaining the program. Since medical genetics programs are
small, they often do not get the institutional support they need. The RC has
clarified that since program directors are core faculty, they are expected to devote
at least 15 hours per week (20% time or 0.2 FTE) to the program. For those
institutions that have not been providing this support, there will be an added
financial cost.

5) may change the volume and variety of patients required to provide proper educational
resources in the institution(s); and N/A

6) impacts residency education in other specialties. N/A

Line Number(s): 111-125

Requirement Revision (major revisions only): PR II.A.1.a)-II.A.1.a.(2)
Sponsoring institutions must develop and implement policies and procedures to ensure
continuity when the program director departs, is on sabbatical, or is unable to meet his or her
duties for any other reason. An interim program director must be appointed for a temporary
absence of the program director of one or more months.

The interim program director must have current American Board of Medical Genetics
(ABMG) certification in the specialty and at least two years of experience following the
completion of graduate medical education.

If the absence of the regularly-appointed program director extends beyond nine months,
a permanent replacement must be appointed.

Describe, as appropriate, how the revision:

1) impacts the quality and safety of patient care; N/A

2) improves the quality of resident education; The current requirement is intended to
ensure continuity of program leadership, but is not clear on expectations. The RC
currently has an FAQ related to this issue and is now incorporating that FAQ into
the program requirements.

3) affects the way the resident, the service, and the staff provide patients with continuing
care; N/A

4) requires a change in institutional resources (e.g., facilities; organization of other
services; addition of faculty; financial impact); N/A

5) may change the volume and variety of patients required to provide proper educational
resources in the institution(s); and N/A

6) impacts residency education in other specialties. N/A

Line Number(s): 141-146

Requirement Revision (major revisions only): PR II.A.3.b).(1)-(2)
The Review Committee accepts only current ABMG certification in clinical genetics.

The program director must meet the requirements for Maintenance of Certification in clinical
genetics through the ABMG.

Describe, as appropriate, how the revision:
1) impacts the quality and safety of patient care; N/A

2) improves the quality of resident education; The RC has been requiring only ABMG certification in clinical genetics via an FAQ. This expectation has now been incorporated into the program requirements. The RC believes that participation in MOC is an important indicator of commitment to the specialty as well as provides a model to residents of continuing lifelong learning.

3) affects the way the resident, the service, and the staff provide patients with continuing care; N/A

4) requires a change in institutional resources (e.g., facilities; organization of other services; addition of faculty; financial impact); N/A

5) may change the volume and variety of patients required to provide proper educational resources in the institution(s); and N/A

6) impacts residency education in other specialties. N/A

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**Line Number(s):** 151-155
**Requirement Revision (major revisions only):** PR II.A.3.c).(1); II.A.3.d)
The program director must have a full-time faculty appointment.

The program director must have at least four years of experience as an attending genetics faculty member following completion of all graduate education.

Describe, as appropriate, how the revision:

1) impacts the quality and safety of patient care; N/A

2) improves the quality of resident education; Requiring that clinical laboratory faculty meet local and state requirements will ensure that residents train in an

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**Line Number(s):** 299-301
**Requirement Revision (major revisions only):** PR II.B.2.e)
Faculty responsible for resident education during laboratory rotations must meet local and state requirements for directing a clinical laboratory.

Describe, as appropriate, how the revision:

1) impacts the quality and safety of patient care; N/A

2) improves the quality of resident education; Requiring that clinical laboratory faculty meet local and state requirements will ensure that residents train in an
environment where quality and safety is taught and practiced.

3) affects the way the resident, the service, and the staff provide patients with continuing care; N/A

4) requires a change in institutional resources (e.g., facilities; organization of other services; addition of faculty; financial impact); N/A

5) may change the volume and variety of patients required to provide proper educational resources in the institution(s); and N/A

6) impacts residency education in other specialties. N/A

Line Number(s): 355-357

Requirement Revision (major revisions only): PR II.C.2

There must be a dedicated program coordinator to assist the program director in effectively fulfilling the administrative requirements of the program.

Describe, as appropriate, how the revision:

1) impacts the quality and safety of patient care; N/A

2) improves the quality of resident education. The new requirement clarifies the RC’s expectation for “necessary clerical personnel for effective administration of the program.” The RC will clarify in an FAQ that a “dedicated” program coordinator needs defined time to support the medical genetics program, but can also support one or more additional resident/fellow education programs.

3) affects the way the resident, the service, and the staff provide patients with continuing care; N/A

4) requires a change in institutional resources (e.g., facilities; organization of other services; addition of faculty; financial impact); N/A

5) may change the volume and variety of patients required to provide proper educational resources in the institution(s); and N/A

6) impacts residency education in other specialties. N/A

Line Number(s): 386-394

Requirement Revision (major revisions only): PR II.D.4.-II.D.4.a

Participating sites must provide. There should be a sufficient number and variety (e.g., patients of all ages and both genders, including women who are pregnant, and non-pregnant, all ages) of inpatients and outpatients to permit residents to gain experience with the natural history of a wide range of genetic disorders and other disorders with a genetic component.

This will mean, typically, that programs will care for should include at least 100-150 different patients or families per year averaged over two years for each resident.

Describe, as appropriate, how the revision:

1) impacts the quality and safety of patient care; N/A

2) improves the quality of resident education. The new requirement clarifies the RC’s expectation for “sufficient number and variety” of patients.

3) affects the way the resident, the service, and the staff provide patients with continuing care; N/A

4) requires a change in institutional resources (e.g., facilities; organization of other
services; addition of faculty; financial impact). N/A

5) may change the volume and variety of patients required to provide proper educational resources in the institution(s); and May require an increase in patient volume/variety if programs do not have sufficient numbers of patients.

6) impacts residency education in other specialties. N/A

Line Number(s): 417-425

Requirement Revision (major revisions only): PR III.A.1. Prior to appointment in the program, residents Physicians who must have successfully completed a at least one year two or more years of a residency program accredited by the Accreditation Council for Graduate Medical Education (ACGME), a program located in Canada and accredited by the Royal College of Physicians and Surgeons of Canada (RCPSC), or a program located in the United Kingdom and accredited by either the Royal College of Physicians or the Royal College of Surgeons, including are eligible for appointment to a two-year medical genetics residency. 12 months of direct patient care experience.

Describe, as appropriate, how the revision:

1) impacts the quality and safety of patient care; The need for qualified physician medical geneticists for patient care is growing. By reducing the requirement for prior education from two to one year, a resident can complete training in medical genetics within three years of medical school graduation, which would be consistent with the time needed to complete training in most other medical specialties. This should make this field more attractive to those who are interested but concerned about the length of training.

2) improves the quality of resident education. N/A

3) affects the way the resident, the service, and the staff provide patients with continuing care; N/A

4) requires a change in institutional resources (e.g., facilities; organization of other services; addition of faculty; financial impact); N/A

5) may change the volume and variety of patients required to provide proper educational resources in the institution(s); and N/A

6) impacts residency education in other specialties. N/A

Line Number(s): 427-441

Requirement Revision (major revisions only): PR III.A.1.a)-III.A.1.a).(1)-(6) Residents must demonstrate competency in the following fundamental clinical skills by the completion of this experience:

- obtaining a comprehensive medical history;
- performing a comprehensive physical examination;
- assessing a patient’s medical conditions;
- making appropriate use of diagnostic studies and tests;
- integrating information to develop a differential diagnosis; and,
developing, implementing, and evaluating a treatment plan.

Describe, as appropriate, how the revision:

1) impacts the quality and safety of patient care; By specifying the expectations for prior clinical experience and competency-based outcomes prior to entry into the program, the RC will ensure that residents are competent in providing basic patient care throughout the 24-month program.

2) improves the quality of resident education; As noted earlier, the RC added specific requirements for competency-based outcomes in direct patient care for entering residents in order to place of requiring two years of prior education without specific expectations for what that experience must be. The RC does not wish to limit the specialties for prior education, as long as the resident can document 12 months of direct patient care and the specified competency-based outcomes.

3) affects the way the resident, the service, and the staff provide patients with continuing care; N/A

4) requires a change in institutional resources (e.g., facilities; organization of other services; addition of faculty; financial impact); N/A

5) may change the volume and variety of patients required to provide proper educational resources in the institution(s); and N/A

6) impacts residency education in other specialties. N/A

Line Number(s): 495-559

Requirement Revision (major revisions only): PR IV.A.3.a).(1); IV.A.3.a).(2); (a)-(o)

The didactic curriculum must include:

- ensure that clinical teaching conferences are organized by the faculty for the residents, and that attendance by the residents and the faculty is documented. These conferences must be distinct from the basic science lectures and didactic sessions. Clinical teaching conferences may include formal didactic sessions on clinical laboratory topics, medical genetics rounds, journal clubs, and follow-up conferences for genetic clinics, and

- Attendance by the residents and faculty must be documented.

will participate formally, through lectures or other didactic sessions, in the equivalent of a one-year graduate level course in basic human medical genetics on the following topics:

- basic mechanisms of inheritance, including sex chromosomes, autosomes, and mitochondrial DNA;

- basic molecular biology techniques pertinent to clinical testing and understanding genetic research;

- Bayesian analysis and other methods of genetic risk assessment;

- behavior of genes in a population, including Hardy-Weinberg equilibria of alleles;

- bioinformatic approaches to interpreting molecular test results, including methods to assign causation to novel findings;
Describe, as appropriate, how the revision:

1) impacts the quality and safety of patient care; N/A

2) improves the quality of resident education; This requirement eliminates the requirement for a one-year graduate level course in basic human genetics and instead specifies the topics that must be covered through didactic sessions. This will allow programs greater flexibility in providing this education as well as ensuring that essential topics are covered.

3) affects the way the resident, the service, and the staff provide patients with continuing care; N/A

4) requires a change in institutional resources (e.g., facilities; organization of other services; addition of faculty; financial impact); N/A

5) may change the volume and variety of patients required to provide proper educational resources in the institution(s); and N/A

6) impacts residency education in other specialties. N/A

Line Number(s): 817-827

Requirement Revision (major revisions only): PR IV.A.6.a)-IV.A.6.a).(1).(b)

In both two-year and four-year programs, the **24 months of genetics education curriculum** must include:

- at least 18 months of broad-based, clinically-oriented medical genetics experiences activities; and,

  This must include experiences with pediatric, adult, prenatal, and cancer patients.

  For metabolic patients, residents must have experience in both inpatient and
Describe, as appropriate, how the revision:

1) impacts the quality and safety of patient care; N/A
2) improves the quality of resident education; This requirement provides an expectation for resident experiences in both inpatient and outpatient settings that is consistent with the requirements for program resources. In addition, it clarifies the RC’s expectations that all residents must have experience with pediatric, adult, prenatal, and cancer patients.
3) affects the way the resident, the service, and the staff provide patients with continuing care; N/A
4) requires a change in institutional resources (e.g., facilities; organization of other services; addition of faculty; financial impact); N/A
5) may change the volume and variety of patients required to provide proper educational resources in the institution(s); and May require an increase in the variety of patients if programs do not have all types available. For example, if residents in a program currently see primarily cancer patients, the program will need to seek participating site that have sufficient non-cancer pediatric, adult and prenatal patients.
6) impacts residency education in other specialties. N/A

Line Number(s): 838-882
Requirement Revision (major revisions only): PR IV.A.6.a).(2).(a)-IV.A.6.a).(2).(c).(iii)
Experiences in the clinical biochemical genetics laboratory must include:

- interpreting the results of acylcarnitine analysis;
- interpreting the results of analyses of enzymes by any methodology;
- interpreting the results of tests for plasma amino acid and urine organic acid; and,
- observing diagnostic techniques utilized by the laboratory.

Experiences in the clinical cytogenetics laboratory should include:

- interpreting karyotyping (G-banding) and analysis of interphase and metaphase cells using fluorescence in situ hybridization (FISH);
- interpreting the results of testing for copy number gains and losses, including techniques to detect deletions, duplications, and other copy number variations or changes in gene expression; and,
- observing diagnostic techniques utilized by the laboratory.

Experiences in the clinical molecular genetics laboratory should include:

- interpreting the results of genotyping, including techniques to assess for known variants;
- interpreting the results of sequencing techniques used to discover known and novel variants; and,
observing diagnostic techniques utilized by the laboratory.

Describe, as appropriate, how the revision:

1) impacts the quality and safety of patient care; N/A
2) improves the quality of resident education; The RC has clarified expectations for the required laboratory experience in each of the three types of laboratories. The focus should be on learning to interpret test results, which includes an understanding of sample preparation and how tests are conducted.
3) affects the way the resident, the service, and the staff provide patients with continuing care; N/A
4) requires a change in institutional resources (e.g., facilities; organization of other services; addition of faculty; financial impact); N/A
5) may change the volume and variety of patients required to provide proper educational resources in the institution(s); and N/A
6) impacts residency education in other specialties. N/A

Line Number(s): 884-886

Requirement Revision (major revisions only): PR IV.A.6.a).(2).(d) Residents must not be assigned clinical responsibilities at the same time they are participating in the required laboratory experiences.

Describe, as appropriate, how the revision:

1) impacts the quality and safety of patient care; N/A
2) improves the quality of resident education; Allows residents to have time dedicated to laboratory experiences without interruption by clinical concerns
3) affects the way the resident, the service, and the staff provide patients with continuing care; N/A
4) requires a change in institutional resources (e.g., facilities; organization of other services; addition of faculty; financial impact); N/A
5) may change the volume and variety of patients required to provide proper educational resources in the institution(s); and N/A
6) impacts residency education in other specialties. N/A

Line Number(s): 893-897

Requirement Revision (major revisions only): PR IV.A.6.c) will develop mature clinical judgment through properly supervised patient care commensurate with their ability. This can be achieved only if the resident is directly involved in providing the decision-making process and in the continuity of patient care, including decision making regarding that care.

Describe, as appropriate, how the revision:

1) impacts the quality and safety of patient care; N/A
2) improves the quality of resident education; Clarifies the RC expectation that all residents must have direct participation in providing continuity of patient care.
3) affects the way the resident, the service, and the staff provide patients with continuing care; N/A
4) requires a change in institutional resources (e.g., facilities; organization of other services; addition of faculty; financial impact); N/A

5) may change the volume and variety of patients required to provide proper educational resources in the institution(s); and N/A

6) impacts residency education in other specialties. N/A

Line Number(s): 904-905
Requirement Revision (major revisions only): PR IV.A.6.e)
Residents must enter into the ACGME Case Log System all cases in which they directly participated.

Describe, as appropriate, how the revision:

1) impacts the quality and safety of patient care; N/A

2) improves the quality of resident education; The RC has developed an ACGME case log system for medical genetics which will replace the currently used ABMG logbook system. Cases will be electronically transferred to the ABMG for its use in verifying eligibility for certification. As with other specialties that use the ACGME case log system, national benchmark data will be developed as the data accumulates once residents begin to use the system.

3) affects the way the resident, the service, and the staff provide patients with continuing care; N/A

4) requires a change in institutional resources (e.g., facilities; organization of other services; addition of faculty; financial impact); N/A

5) may change the volume and variety of patients required to provide proper educational resources in the institution(s); and N/A

6) impacts residency education in other specialties. N/A

Line Number(s): 915-918
 Requirement Revision (major revisions only): PR IV.B.2.a)
Programs must provide opportunities for residents to become involved in research and teaching. Each resident must demonstrate scholarship through submission of at least one scientific presentation, abstract or publication.

Describe, as appropriate, how the revision:

1) impacts the quality and safety of patient care; N/A

2) improves the quality of resident education; The new requirement clarifies expectation of the RC for resident scholarly activity.

3) affects the way the resident, the service, and the staff provide patients with continuing care; N/A

4) requires a change in institutional resources (e.g., facilities; organization of other services; addition of faculty; financial impact); N/A

5) may change the volume and variety of patients required to provide proper educational resources in the institution(s); and N/A

6) impacts residency education in other specialties. N/A
Residents must take the in-service exam each year.

Use of the results must be limited to identifying areas that need improvement for individual residents as well as program curriculum areas that need improvement.

Describe, as appropriate, how the revision:

1) impacts the quality and safety of patient care; N/A
2) improves the quality of resident education; This requires the use of the in-service exam as one method for monitoring resident’s progress towards achieving the required outcomes in medical knowledge. It specifically precludes the results from being used for any other reason than to identify gaps in knowledge and plan appropriate remediation.
3) affects the way the resident, the service, and the staff provide patients with continuing care; N/A
4) requires a change in institutional resources (e.g., facilities; organization of other services; addition of faculty; financial impact); N/A
5) may change the volume and variety of patients required to provide proper educational resources in the institution(s); and N/A
6) impacts residency education in other specialties. N/A

At least 75% of those completing the program in the preceding five years must have taken the ABMG clinical genetics certifying examination.

If fewer than 10 residents graduated from the program in the preceding five years, then at least 75% of the program’s 10 most recent graduates must have taken the ABMG clinical genetics certifying examination.

At least 75% of a program’s graduates from the preceding five years taking the ABMG clinical genetics certifying examination for the first time must pass.

If fewer than 10 residents graduated from the program in the preceding five years, then at least 75% of the program’s 10 most recent graduates taking the ABMG clinical genetics certifying examination for the first time must pass.

Describe, as appropriate, how the revision:

1) impacts the quality and safety of patient care; N/A
2) improves the quality of resident education; The expected pass and “take” rates were established after analysis of Board pass and “take” rates across all programs for the three most recent exam cycles (2005-2009). During that period, the average pass rate was over 80%. The RC did not have data on take rates and arbitrarily set the take rate to be the same as the pass rate. Because medical genetics programs are small and the exam is given only every other year, additional language was added for programs that have fewer than 10 residents graduating in the preceding five years.
3) affects the way the resident, the service, and the staff provide patients with continuing care; N/A

4) requires a change in institutional resources (e.g., facilities; organization of other services; addition of faculty; financial impact); N/A

5) may change the volume and variety of patients required to provide proper educational resources in the institution(s); and N/A

6) impacts residency education in other specialties. N/A