2017 | ACMG Annual Clinical Genetics Meeting

ACMG American College of Medical Genetics and Genomics
Translating Genes Into Health®

Platform Presentations - Pediatric Genetics and Genomics

Held in Phoenix, Arizona, March 21-25, 2017

Date of Release: April 3, 2017
Expiration Date: April 3, 2020 (CME, NSGC, P.A.C.E.®)
Estimate Time of Completion: 2 hours
Course must be completed by the expiration dates

COURSE DESCRIPTION

ACMG's Program Committee has assembled abstract-driven platform talks. Each presenting author will give a 10-minute talk followed by 5 minutes of discussion.

LEARNING OBJECTIVES

At the conclusion of this course, participants should be able to:

- Demonstrate the stability of aortic root size in adolescents who do not meet criteria for Marfan Syndrome
- Describe a RNA protocol for assessment of splicing variants
- Describe growth parameters for subgroups of Osteogenesis Imperfecta
- Value the impact of dermal neurofibromas on quality of life for patients with NF1
- Demonstrate the need for continuity of care and re-evaluation of genetic association in complex disease
- Distinguish between Type 1 Diabetes, Type 2 Diabetes and monogenic diabetes
- Investigate truncating alterations in TTN
- Describe the disruption of Central Circadian Components and Dyssomnia in Potocki-Lupski Syndrome

TARGET AUDIENCE

All healthcare professionals interested in the diagnosis, management, treatment and prevention of genetic conditions and increasing their understanding of the genetic basis of common, chronic health problems affecting both children and adults will find the programming applicable to their practice. These select sessions from the ACMG Annual Meeting are targeted for the following professionals:

- Medical and clinical geneticists

- Physicians of all specialties with an interest in genetics, genomics and the genetic basis of disease
- Genetic counselors
- Laboratory geneticists, directors, technicians and technologists
- Researchers
- Pathologists
- Educators
- Nurses
- Dietitians
- Physician assistants
- Biotechnology and pharmaceutical development professionals
- Fellows, Trainees and Students
- Public health professionals
- Genetic/consumer advocates
- Others with an interest in the science and art of medical genetics and genomics

SESSIONS

- *RAI1* Overexpression Promotes Disruption of Central Circadian Components and Dyssomnia in Potocki-Lupski Syndrome [Abstract Number: 13] Michael Fountain, PhD (Presenting Author)
- Longitudinal Natural History of Dermal Neurofibromas in Individuals with Neurofibromatosis Type 1 [Abstract Number: 14] Ashley Cannon, PhD, MS, CGC (Presenting Author)
- Growth Characteristics in Osteogenesis Imperfecta – Results from an Observational Study from the Linked Clinical Research Centers [Abstract Number: 15] Mahim Jain, MD, PhD (Presenting Author)
- Evolution of Aortic Dilation and Ghent Criteria in Children [Abstract Number: 16] Danielle Monteil, MD, FAAP (Presenting Author)
- Monogenic Forms of Diabetes Remain Misdiagnosed and Often Inappropriately Treated: Updates from the US Monogenic Diabetes Registry [Abstract Number: 17] May Sanyoura, PhD (Presenting Author)
- Knocking Out a Titan: Assessing the Effect of Truncating *TTN* Alterations in a Large Clinical Cohort [Abstract Number: 18] Jesse Hunter, PhD (Presenting Author)
- Evolving understanding of genetic associations and implications of Congenital Diaphragmatic hernia: One center's 20 year experience [Abstract Number: 19] Erica Schindewolf, MS, MS, LCGC (Presenting Author)
- RNA Studies Improve the Classification of Splicing Variants [Abstract Number: 20] Rachid Karam, MD PhD (Presenting Author)

Accreditation:

The American College of Medical Genetics and Genomics is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

Credit Designation:

The American College of Medical Genetics and Genomics designates this activity for a maximum of 2 *AMA PRA Category 1 Credit*s™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Genetic Counselor Credit

The National Society of Genetic Counselors (NSGC) has authorized American College of Medical Genetics and Genomics to offer up to 2 Category 1 contact hours for this OnDemand course. The American Board of Genetic Counseling (ABGC) will accept CEUs earned for this course for the purposes of genetic counselor certification and

recertification. Reporting of credits is sent to NSGC quarterly. Additional fee (~$25) applies for NSGC credit that is billed by NSGC.

P.A.C.E. CEUs – Laboratory Directors and Laboratory Personnel

ACMG is approved as a provider of continuing education programs in the clinical laboratory sciences by the American Society for Clinical Laboratory Science (ASCLS) Professional Acknowledgment for Continuing Education (P.A.C.E.®) Program. The American College of Medical Genetics and Genomics designates this course for a maximum of 2 contact hours. ACMG is approved by the Florida Board of Clinical Laboratory Personnel as CE Provider. ACMG is approved by the California Department of Health Services through the ASCLS P.A.C.E.® Program as CE Provider #275.

HIPAA Compliance

The ACMG supports medical information privacy. While the ACMG is not a "covered entity" under HIPAA 1996 and therefore is not required to meet these standards, ACMG wishes to take reasonable steps to ensure that the presentation of individually identifiable health information at ACMG-sponsored events has been properly authorized. All presenters have completed a form indicating whether they intend to present any form of individually identifiable healthcare information. If so, they were asked either to attest that a HIPAA-compliant consent form is on file at their institution, or to send ACMG a copy of the ACMG HIPAA compliance form. This information is on record at the ACMG Administrative Office and will be made available on request.

Content Validation

ACMG follows the ACCME policy on Content Validation for CME activities, which requires:

Content Validation and Fair Balance

1. ACMG follows the ACCME policy on Content Validation for CME activities, which requires:
    a) All recommendations involving clinical medicine must be based on evidence that is accepted within the profession of medicine as adequate justification for their indications and contraindications in the care of patients.
    b) All scientific research referred to, reported or used in CME in support or justification of patient care recommendations must conform to the generally accepted standards of experimental design, data collection and analysis.

2. Activities that fall outside the definition of CME/CE; "Educational activities that serve to maintain, develop, or increase the knowledge, skills, and professional performance and relationships that a physician uses to provide services for patients, the public, or the profession" (source: ACCME and AMA) will not be certified for credit. CME activities that promote recommendations, treatment, or manners of practicing medicine or pharmacy that are not within the definition of CME/CE or, are known to have risks or dangers that outweigh the benefits or, are known to be ineffective in the treatment of patients.
3. Presentations and CME/CE activity materials must give a balanced view of therapeutic options; use of generic names will contribute to this impartiality. If the CME/CE educational materials or content includes trade names, where available, trade names from several companies must be used.

Off-label Uses of Products

When an off-label use of a product, or an investigational use not yet approved for any purpose, is discussed during an educational activity, the accredited sponsor shall require the speaker to disclose that the product is not labeled for the use under discussion, or that the product is still investigational. Discussions of such uses shall focus on those uses that have been subject of objective investigation.

Disclaimer: *ACMG educational programs are designed primarily as an educational tool for health care providers who wish to increase their understanding of the application of genomic technologies to patient care. The ACMG does not endorse, or recommend the use of this educational program to make patient diagnoses, particular by individuals not trained in medical genetics. Adherence to the information provided in these programs does not necessarily ensure a successful diagnostic outcome. The program should not be considered inclusive of all proper procedures and tests or exclusive of other procedures and tests that are reasonably directed at obtaining the same results. In determining the propriety of any specific procedure or test, a healthcare provider should apply his or her own professional judgment to the specific clinical circumstances presented by the individual patient or specimen.*

2017 ACMG Program and Education Committee Members Disclosures

Members of the ACMG Staff, Education and Program Committees involved in planning the 2017 ACMG Annual Clinical Genetics Meeting are required to disclose relevant relationships which could be perceived by some as a real or apparent conflict of interest in planning. All disclosures have been reviewed and conflicts of interest resolved by the Education Committee COI sub-committee or the Executive Director and CME Associate Director and conflicts of interest are disclosed. In the cases where a conflict existed then the committee member refrained from the discussion.

Following is a list of program and education committee members who have disclosed one or more such relationships and names of companies with which those relationships exist:

EC = Education Committee; PC = Program Committee; S = ACMG Staff

1. Major stockholder/ownership interest 2. Grant/Research Support (External) 3. Salary/Employment/Royalty(ies)/Honoraria 4. Consultant/consulting fees/other remuneration 5. Speakers' bureau	6. Non-remunerative positions of influence such as officer, board member, trustee, or public spokesperson (All Committee Members Below are on ACMG Committees –Members with other affiliations are listed) 7. Receipt of intellectual property 8. Other

Georgianne L. Arnold, MD, FACMG - Horizon, 2; Recordati, 2; Biomarin, 2; Actelion, 2; SIMD, 6; ACGME, 6; AAP, 6; ASHG, 6 (PC)
Karen W. Gripp, MD, FACMG – Wiley Publishing Inc., 3; FDNA, 4; Novartis, 4 (PC)
Fuki M. Hisama, MD, FACMG – Horizon Pharmaceuticals, 4; ABMGG, 6 (PC)
Christine A. Curtis, PhD, FACMG - CSI Laboratories, 3 (EC)
Thomas E. Mullen, PhD, MS, FACMG - Good Start Genetics Inc., 3 (EC)
Christian P. Schaaf, MD, PhD, FACMG - Springer Publishing Company, 3 (PC), (EC)
Katrina M. Dipple, MD, PhD, FACMG – ACGME, 6; AAP, 6; ASHG, 6; LA BioMed DSMB, 4; SIMD 6 (PC)

Following is a list of committee, education members and staff who have no relationships to disclose:

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Monica A. Giovanni, MS (EC)
Chad Haldeman-Englert, MD, FACMG (EC)
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Amy E. Roberts, MD, FACMG (EC)
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Gerald Feldman, MD, PhD, FACMG (PC)
Helga V. Toriello, PhD, FACMG (PC)
Hope Northrup, MD, FACMG (PC)
Jennelle C. Hodge, PhD, FACMG (PC)
Jessica Smith, MD (PC)
Joanne Nguyen, MD, FACMG (PC)

Myra Wick, MD, PhD, FACMG (PC)
Omar Abdul-Rahman, MD, FACMG (PC)
Pilar L. Magoulas, MS, CGC (PC)
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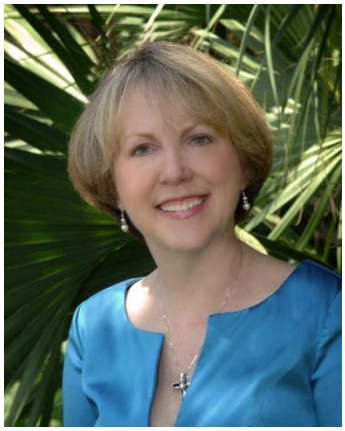
Jane Radford, MHA, CHCP (PC), (EC), (S)
Michael S. Watson, PhD, FACMG (PC), (EC), (S)
Penelope Freire, CMP (PC), (S)

SPEAKERS AND MODERATORS

Faculty Disclosures:

As a sponsor accredited by the ACCME, the American College of Medical Genetics and Genomics must ensure balance, independence, objectivity and scientific rigor in all its sponsored educational activities. All faculty participating in a CME-certified activity are expected to disclose to the audience any relevant financial interest(s) or other relationship(s) with the manufacturer(s) of any commercial product(s), provider(s) of commercial services or any commercial supporters, including diagnostic laboratories, of the activity discussed in an educational presentation. Relevant financial interest(s) or other relationship(s) can include such things as grants or research support, consultancy, major stock holder, etc. The intent of this disclosure is not to prevent a planner or speaker with a relevant financial or other relationship from course planning or making a presentation, but rather to provide learners with information on which they can make their own judgments. It remains for the audience to determine whether the speaker's interests or relationships may influence the presentation with regard to exposition or conclusion. All conflicts of interests have been reviewed and resolved by the education and CME subcommittee.

Moderator: Hope Northrup, MD, FACMG
The University of Texas Health Science Center
No financial relationships to disclose.

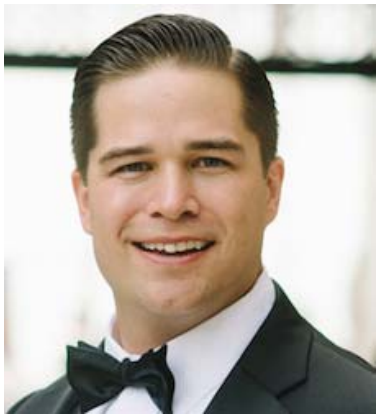


Hope Northrup, MD, is a Medical Geneticist (Clinical, Biochemical and Molecular) in the Department of Pediatrics at The University of Texas Medical School at Houston. She is Vice Chairman of the Department of Pediatrics, Professor and Director of the Division of Medical Genetics. Dr. Northrup is the Director of the Medical Genetics Residency Training Program and the Medical Director of the Genetic Counseling Masters Training Program. Due to her clinical expertise, she has been selected numerous times for inclusion in various publications citing excellence in clinical care including Best Doctors in America, America's Top Doctors, and Texas Super Doctors. Dr. Northrup obtained an M.D. degree from the Medical University of South Carolina. She completed a Pediatric Residency at Children's Medical Center/Southwestern Medical School in Dallas, Texas, and a Medical Genetics Fellowship at the Institute for Molecular Genetics, Baylor College of Medicine in Houston, Texas. Dr. Northrup's research interests focus on unraveling the basis of neurogenetic diseases, specifically tuberous sclerosis complex (TSC) and spina bifida (SB). She founded the Tuberous Sclerosis Complex Center of Excellence at UTH/CMHH in 2006 and co-directs the Center with her colleague, Dr. Mary Kay Koenig. Dr. Northrup has multiple research projects funded through NIH, private

foundations and industry. She has authored/co-authored >100 peer-reviewed articles. Dr. Northrup has provided numerous national and international invited presentations.

Moderator: Chad Haldeman-Englert, MD, FACMG
Fullerton Genetics Center Mission Health
No financial relationships to disclose.

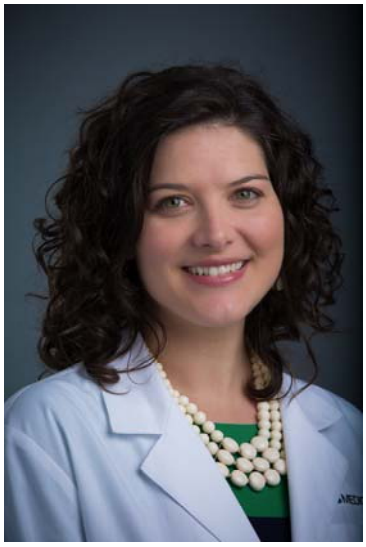
Speaker: Michael Fountain, PhD
Baylor College of Medicine/Jan and Dan Duncan Neurological Research Institute at Texas Children's Hospital
No financial relationships to disclose.



I am a Post-doctoral Fellow at Baylor College of Medicine, with an interest in the genetics of neurodevelopmental disorders, both known and unknown. My training has allowed me to spend time in clinic evaluating current patient-care and the diagnosis of various pathologies. This is critical in patients with genetic syndromes, as these individuals typically present with co-morbidities ranging from neurodevelopmental disorders to facial and skeletal malformations and Autism Spectrum Disorder (ASD). My research under Drs. Christian Schaaf and Sarah Elsea, have been dedicated to understanding the genetic basis of neurodevelopmental and neuropsychiatric disorders. My immediate interest is in garnering a better understanding of the underlying pathogenesis of rare genetic disorders, such as Smith-Magenis syndrome (SMS) and Prader-Willi Syndrome, and their associated phenotypes, including ASD. Moreover, we have utilized mouse models of human neuropsychiatric disease to study their behavioral phenotypes, and utilize them to better understand the underlying neurobiology. Most recently, our studies have been able to elucidate the phenotypic manifestations of Schaaf-Yang syndrome, a novel genetic disorder, and identify variants in the gene USP7 as likely causal to a novel neurodevelopmental disorder. Currently, studies include understanding the sleep anomalies associated with Potocki-Lupski syndrome (PTLS), the role of core circadian machinery in the manifestation of PTLS phenotypes, and the investigation of pathomechanisms and treatment considerations of individuals with SMS. We strive to translate key findings from the basic science lab back into the clinic, aiming to develop new, targeted therapeutic strategies for the individuals affected with neuropsychiatric disorders. I am

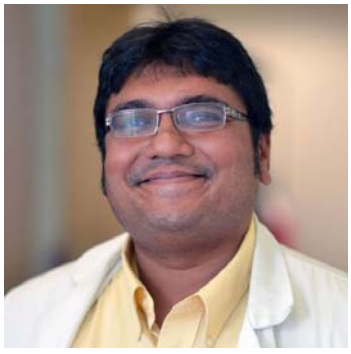
passionate in the pursuit of my ultimate goal to investigate means of improving the quality of life of families and patients with neurodevelopmental disorders.

Speaker: Ashley Cannon, PhD, MS, CGC
Instructor, Dept. of Genetics, University of Alabama at Birmingham
No financial relationships to disclose.



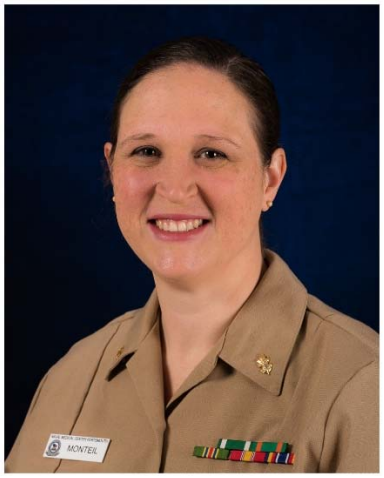
Ashley Cannon, PhD, MS, CGC is an Instructor at UAB in the Department of Genetics. She is a neuroscientist and certified genetic counselor. Her previous research experience at Mayo Clinic Florida encompassed molecular genetics, neuropathology, and mouse modeling of neurodegenerative diseases. This research exposed her to the significance of genetic counseling for individuals and families affected by genetic conditions and motivated her to become trained as a genetic counselor. She received an MS in Genetic Counseling at UAB in 2015. She currently provides genetic counseling for the Neurofibromatosis Clinic and Undiagnosed Diseases Program. Her current research interests include the longitudinal quantification, treatment, and psychosocial impact of dermal neurofibromas in individuals with NF1.

Speaker: Mahim Jain, MD, PhD
Director, Department of Bone and OI, Kennedy Krieger Institute, Kennedy Krieger Institute
No financial relationships to disclose.



Dr. Jain is a clinical and statistical geneticist. He completed his postdoctoral training at Baylor College of Medicine in Houston Texas. He is now on the faculty at Johns Hopkins Medical Institute and is the Director of the Bone and Osteogenesis Imperfecta Department at Kennedy Krieger Institute, where he specializes in diagnosing and treating osteogenesis imperfecta and other rare skeletal disorders.

Speaker: Danielle Monteil, MD, FAAP
Clinical Genetics, Department of Pediatrics, Navy Medical Center Portsmouth
No financial relationships to disclose.



Clinical Geneticist at Navy Medical Center Portsmouth

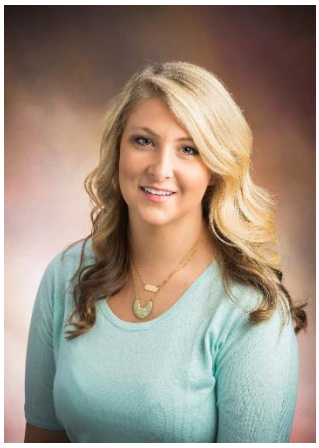
Speaker: May Sanyoura, PhD
University of Chicago
No financial relationships to disclose.

My pre-doctoral and doctoral research years were primarily focused on the study of diabetes-specifically the identification and study of genes responsible for monogenic and atypical forms of juvenile-onset diabetes. After completing my PhD from Paris, France-I joined the University of Chicago Kovler Diabetes Center. As part of the US Monogenic Diabetes Registry, I continue to focus on the discovery of the genetic and molecular causes of diabetes, in addition to exploring the functions of these genes and their role in the disease parthenogenesis. With the recent advances in genetic technologies, including targeted panels and exome sequencing, we now have more power to identify novel genetic determinants and promote improvements in screening and therapy.

Speaker: Jesse Hunter, PhD
Ambry Genetics
Financial relationships to disclose. (Self): Employee of Ambry Genetics

Dr. Jesse Hunter received his BS and MS degrees in Biochemistry from Brigham Young University (BYU). His research at BYU focused on G-protein coupled receptors found in photoreceptors of the eye. He then obtained a Ph.D. in Cellular and Molecular Biology from the University of Alabama at Birmingham. His Ph.D. research focus was on Huntington's disease, more specifically how the Ubiquitin proteasome system is altered in Huntington's disease (HD) as well as somatic CAG repeat instability. Dr. Hunter then transitioned to studying the role of ApoE4 in Alzheimer's disease (AD) at Eli Lilly and Company. His work focused on many aspects of AD from tau deposition to the role of astrocytes in degrading amyloid plaques to seizure susceptibility in ApoE4 mice. He continued his work in AD at the Banner Sun Health Research Institute where he focused on vascular changes in the brain in AD including blood flow in AD patients measured by MRI, changes to brain microvasculature, and lipid composition in AD brain. He began working at the Translational Genomics Research Institute in 2012 with a research focus on whole exome sequencing (WES) for identification of pathogenic alterations in genes associated with neuromuscular disease. His work also included functional analysis of the effect of pathogenic alterations in UBA1, the cause of X-linked spinal muscular atrophy. He has expertise in numerous experimental methods including HPLC, confocal microscopy, stereology, immunohistochemistry, next-generation sequencing (NGS) and variant analysis, mouse models of disease, MRI analysis, and numerous biochemistry and molecular biology techniques. His current role at Ambry Genetics is as a Clinical Genomics Scientist where his primary role is analysis of WES data.

Speaker: Erica Schindewolf, MS, MS, LCGC
Children's Hospital of Philadelphia
No financial relationships to disclose.



Erica Schindewolf is a licensed certified genetic counselor at the Center for Fetal Diagnosis and Treatment at the Children's Hospital of Philadelphia (CHOP). She received her master's degree from Arcadia University and while there received the Tracy M. Gardner Excellence in Counseling Award. She has trained at CHOP since 2009 first

working in research cardiac genetics and then working as a genetics fellow through the Leadership in Neurodevelopmental and Related Disorder's (LEND) fellowship. She is currently involved in researching the etiology of birth defects and provides individualized clinical genetic counseling to call families who come through the Center for Fetal Diagnosis and Treatment.

Speaker: Rachid Karam, MD PhD
Associate Director, Ambry Translational Genomics Lab, Ambry Genetics
Financial relationships to disclose. (Self): Employee of Ambry Genetics

Rachid obtained his medical degree in Brazil, at the Federal University of Health Sciences of Porto Alegre, one of the most reputable medical schools in the country. Rachid has a PhD in Oncogenetics, and did his graduate studies on the role of the nonsense-mediated mRNA decay (NMD) pathway in the regulation of the CDH1 gene expression, at University of Porto, in Europe, and at MD Anderson Cancer Center, Houston, Texas. He did his postdoc at University of California, San Diego (UCSD) School of Medicine, where he focused on RNA biology research. Rachid joined Ambry Genetics in 2014, and currently he is the Associate Director of Ambry's Translational Genomics (ATG) Lab. The ATG Lab is a state of the art research laboratory designed to perform Functional Assays aiming to elucidate the pathogenicity of patients genomic variants.

Participation Instructions

1. Participant logs into ondemand.acmg.net
2. Once logged in the participant will access the session they would like to view. They will be asked if they would like to claim credit for the meeting, or if they will not claim credit for the meeting. Then, this information (Course description) will appear, and participant will have to attest that they have read the information. They will then click Continue.
3. After that, the participant will be able to select the credit types to claim.
4. For each session with a post-test, the participant will need to mark and complete the matching pre-test.
5. Then the participant will watch the session presentations.
6. Participant will complete viewing all session content. "Check marks" indicate which presentations have been viewed.
7. After viewing all presentations within a session, participant will click the "Claim Credit for Session" button under the CME dropdown at the top of the page.
8. Participant should take and then successfully pass the post-test. If they do not pass with a score of 80% or higher, they will have unlimited tries to pass the post-test.
9. Participant will continue the steps above to earn credits for additional sessions.
10. If a session does not have a test attached, the participant will not need to take a pre- or posttest, but will have to complete a Concurrent or Plenary session-specific evaluation to claim credit.
11. To print their certificate, the participant will click the "Print Certificate" button under the CME dropdown at the top of the page. Participant must complete the meeting evaluation (one time only) before they can access their certificate. Participant will then choose their certificate(s). The certificate(s) will be automatically updated as they earn new credits.

Stream Requirements	
Network	For best results, use a hardwired network connection instead of wireless
Full Screen Viewing	If you would like to view the webcast full screen, display the tool bar at the bottom and click the double arrow in the far right corner. The screen will enlarge to the full screen of you system. To restore the size, press the "ESC" key
Refresh Browser Window	If the webcast freezes and does not recover in 3-4 seconds, refresh browser window
Freezing or Stuttering Issues	Adjust the amount of bandwidth needed by putting your mouse anywhere over the video window. A tool bar will appear at the bottom. On the right side you will see a "HD" button, click on that button and you will see a list of options. The top is "auto", with decreasing numbers below. Select a lower bandwidth (such as 360p) to see if your webcast improves
For Technical Support call	1-800-504-5379

Mobile Viewing Requirements	
Android Devices	Android 2.3+ with Adobe Flash Player 10.2 or better installed Install Flash Player
Apple Devices	iOS 4+

Online Viewing Requirements	
Bandwidth	512kbps

Required Hardware and Software	Screen resolution of 1024X768 or larger Sound card and speakers/headphones
Browser	Microsoft Internet Explorer 7.0 or better Mozilla Firefox 4 or better Safari 5 or better
Windows	Operating System: Windows 8 desktop mode, Windows 7; Windows Vista; Windows XP Service Pack 2 or 3 x86 or x64 (Browsers must be in 32-bit mode) 1.6-gigahertz (GHz) or higher processor 512MB of RAM
Mac OS	Operating System: Apple Mac OS X 10.4.8 or above Intel Core™ Duo 1.83GHz or faster processor 512MB of RAM

Registration and Fees

ondemand.acmg.net
ACMG Members and ACMG Trainees: ($50)
Non-members ($60)
Additional fee (~$25) applies for NSGC credit that is billed by NSGC.

Questions regarding CE credit should be directed to education@acmg.net.

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