

# ECHO HAWAII™

# 31<sup>st</sup> ANNUAL

## FINAL PROGRAM

**January 17–21, 2022**

**The Westin Hapuna Beach Resort  
Kohala Coast, Big Island, HI**

### Course Director

James D. Thomas, MD, FASE  
Past President, ASE  
Northwestern Medicine  
Chicago, IL

### Co-Director

Jonathan R. Lindner, MD, FASE  
Past President, ASE  
Oregon Health & Science University  
Portland, OR



# Welcome Message

## Welcome Message

On behalf of ASE, welcome to the Big Island! Whether you are a regular attendee or a first-time visitor, we are certain you will enjoy the experience and come away a better echocardiographer and clinician. Throughout this five-day meeting, you will learn state-of-the-art echocardiography and how it is applied to clinical decision-making. The international faculty for this meeting is world-class in terms of expertise and teaching prowess. We will start the day early and pack every morning with lectures, cases, and interactive sessions. Mid-afternoons will be free to enjoy the island with friends and family. On Monday through Thursday, we will reconvene in the late afternoon for workshops on Doppler hemodynamics, 3D acquisition/visualization, and strain imaging, as well as a rare live demonstration of contrast perfusion on Tuesday. But rest assured, we will try to finish in time to enjoy the spectacular Hawaiian sunset!

Now it wouldn't be 2022 without some accommodations for COVID-19. The health and safety of our attendees is of utmost importance. We are committed to providing a productive and welcoming environment for everyone. To that end, after much thought and consideration, we feel it is in the best interest of everyone to cancel the Welcome Reception that was planned for Monday evening. We have also instituted a few precautions in partnership with the Westin Hapuna Beach Resort including a COVID Health & Safety Checkpoint, a Comfort Level Sticker System, and Individual Welcome Packets at Registration. Masks are required in the ballroom and we strongly encourage physical distancing.

Echo Hawaii is much more than education, after all you are in Hawaii! The Big Island has something for everyone. Enjoy the waves at the world-class Hapuna Beach, or try snorkeling or scuba diving along the unique volcanic reefs. You may even want to head down the coast for surfing lessons irrespective of your level of experience. Explore the rain forest just 20 miles north of the Westin Hapuna Beach Resort in the town of Hawi.

For the more adventurous, take a walk on the wild side in Volcano National Park where you can hike right up to rivers of lava (with appropriate shoes of course). If you are astronomically inclined, be sure to tour the top of the Big Island's 14,000-foot Mauna Kea volcano for an evening of unmatched stargazing. Not feeling so adventurous? You can always just lay on the beach or by the pool and be glad you're not shoveling snow! The resort features 32 ocean front acres! On the Kohala Coast, there is sunshine almost all year round with an average temperature of 78 degrees in January. In addition, Echo Hawaii takes place during peak humpback whale watching season, something you won't want to miss. You will also find dozens of excellent restaurants close-by for every budget and taste.

Enjoy your time and thank you for your participation at Echo Hawaii 2022!

Aloha!



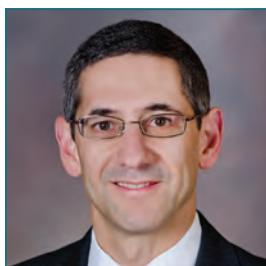
**James D. Thomas, MD, FASE**

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# Invited Faculty

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## Course Co-Director

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## Invited Faculty

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Morristown Medical Center

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**James Hodovan, PhD, RDCS (AE, PE)**

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**Robert R. Moss, MD**

Providence Health Systems

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**Jae K. Oh, MD, FASE**

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@ray\_stainback

ASE President

Texas Heart Institute

Houston, TX

**Wendy Tsang, MD**

University of Toronto

Toronto, ON, Canada



# Program Information

## Overview of Echo Hawaii

Echo Hawaii presents the latest information on established and emerging cardiovascular ultrasound technologies. **Expert U.S. and international faculty** discuss state-of-the-art technologies with a particular focus on how they may be effectively applied in the clinical setting. Case-based approaches are used to discuss new and established applications of echocardiography for diagnosis and guiding management in patients with a broad array of cardiovascular conditions. Topics include: advanced assessment of systolic and diastolic function, 3D/4D imaging, adult congenital heart disease and contemporary approaches to valve disease, guidance of interventional procedures, contrast echocardiography, ischemic heart disease, aortic pathology, and applications of artificial intelligence in echocardiography. When appropriate, multimodality imaging is also covered. Special sessions include workshops on echo quantitation, contrast, 3D visualization, and strain.

## Target Audience

This course is designed for adult cardiologists, physician assistants, critical care specialists, cardiovascular surgeons, cardiovascular anesthesiologists, fellows in training, cardiovascular sonographers, internists, veterinarians, and intensive care specialists with special interest in echocardiography.

## Learning Objectives

Upon completion of this program, participants will be better able to:

- Integrate echocardiographic information in clinical decision making.
- Assess ventricular and valvular function using Doppler hemodynamics.
- Describe Doppler assessment of diastolic function/dysfunction.
- Explain new advances in the echocardiographic assessment of left and right ventricular function.
- Integrate echocardiographic assessment of cardiomyopathies and systemic diseases in patient management.
- Define clinical uses of TEE and 3D echocardiography.
- Recognize how echocardiography is used to help manage patients with ischemic heart disease.
- Recognize the role of echo contrast and be able to incorporate its use in the echo laboratory.
- Integrate echo information in the management of complex valvular heart disease.
- Explain the role of echocardiography in the perioperative and critical care environment.
- Explain the principles of artificial intelligence and how they are being applied to echocardiography.

## Disclaimer

The information provided during this CME activity is for continuing education purposes only and is not meant to substitute for the independent medical judgment of a healthcare provider relative to diagnostic and treatment options of a specific patient's condition.

## Accreditation and Designation

ASE is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians. ASE designates this live activity for a maximum of **29.25 AMA PRA Category 1 Credits™**. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Successful completion of this CME activity enables the participant to earn up to **29.25 MOC points in the American Board of Internal Medicine's (ABIM) Maintenance of Certification (MOC) program and/or The American Board of Anesthesiology® (ABA) Maintenance of Certification in Anesthesiology Program® or MOCA®**. Participants will earn MOC and/or MOCA points equivalent to the amount of CME credits claimed for the activity. It is ASE's responsibility to submit participant completion information to ACCME for the purpose of granting ABA MOCA and/or ABIM MOC points.



*Maintenance of Certification in Anesthesiology Program® and MOCA® are registered certification marks of the American Board of Anesthesiology®. MOCA 2.0® is a trademark of the American Board of Anesthesiology®.*



## Daily breakdown of CME credits:

Monday, January 17, 2022 = 5.5 hours

Tuesday, January 18, 2022 = 7.25 hours

Wednesday, January 19, 2022 = 5.5 hours

Thursday, January 20, 2022 = 6.75 hours

Friday, January 21, 2022 = 4.25 hours

The ACCME and the European Board of Accreditation in Cardiology (EBAC) recognize each other's accreditation systems as substantially equivalent. To obtain EBAC credit for participation in this activity, submit evidence of participation directly to EBAC ([www.ebac-cme.org](http://www.ebac-cme.org)). The European Union of Medical Specialists (UEMS)-European Accreditation Council for Continuing Medical Education (EACCME) has an agreement of mutual recognition of continuing medical education (CME) credit with the American Medical Association (AMA). European physicians interested in converting *AMA PRA Category 1 Credit™* into European CME credit (ECMEC) should contact the UEMS ([www.uems.eu](http://www.uems.eu)).

ARDMS, CCI, and Sonography Canada recognize ASE's certificates and have agreed to honor the credit hours toward their registry requirements for sonographers.

All or a portion of this educational activity may meet the CME requirement for IAC Echocardiography accreditation.

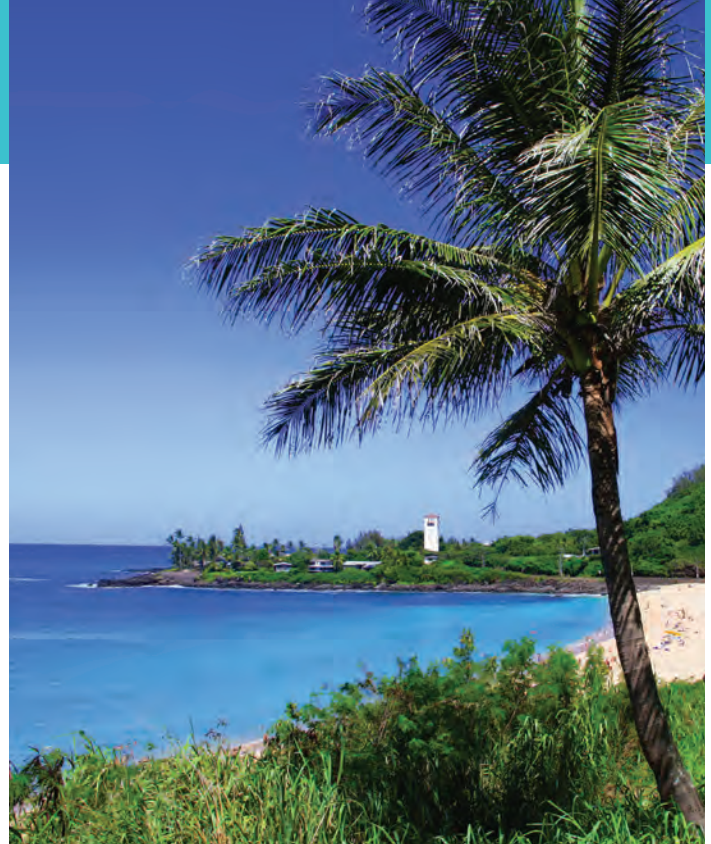
This activity is eligible for Section 1 credits in the Royal College of Physicians and Surgeons of Canada's Maintenance of Certification (MOC) Program. Participants must log into MAINPORT to claim this activity.

Physician Assistants may claim credit for completing this activity. NCCPA accepts *AMA PRA Category 1 Credits™* from organizations accredited by ACCME or a recognized state medical society.

## Disclosure

ASE is committed to ensuring that its educational mission, and all accredited continuing educational programs provide a protected space to learn, teach, and engage in scientific discourse free from influence from organizations that may have an incentive to insert commercial bias into education.

While a monetary or professional affiliation with an ineligible company does not necessarily influence a speaker's presentation, the Standards for Integrity and Independence in Accredited Continuing Education and policies of the ACCME require that all financial relationships with ineligible companies be identified and mitigated prior to engaging in an accredited CE activity. In accordance with these policies, ASE actively identified relevant financial relationships between faculty in control of this accredited CE activity and ineligible companies, and implemented mitigation strategies to eliminate any potential influence from persons or organizations that may have an incentive to insert commercial bias in this activity. Disclosure information is referenced and can be found on page 10 of this program.



## Commercial Support Disclosure Statement

**Educational Grants:** This accredited CE activity is supported in part by unrestricted educational grants from Bracco Diagnostics Inc., Lantheus Medical Imaging, Inc., and Medtronic, Inc.

**In-Kind Donations:** This accredited CE activity is supported in part by in-kind donations from GE Healthcare, and Philips.

## How to Obtain Credit

To claim your CME for Echo Hawaii, please follow the steps below using your Mozilla Firefox, Google Chrome, or Safari browser. **Internet Explorer will not work.** The deadline to claim credit is **February 22, 2022.**

### How to claim your CME credits:

1. Go to **ASELearningHub.org**
2. Log in to your existing account using the **Login Here** button on the right.
3. Click on the blue **"Go to your Learning Center"** box.
4. Locate the Echo Hawaii 2022 Evaluation activity and click the **Launch** button.
5. Once you have completed the evaluation, your certificate will be available for immediate download and can also be found under **"Completed"** tab in your learning center.

\*\*Remember to enter your specialty board number and birth date if you choose to have points for this course submitted to ABIM, ABA, ARDMS and/or CCI. There is a space for this information in the evaluation.

# Attendee Information & Regulations

## Registration Location and Hours

The ASE Registration desk is located outside the Hapuna Ballroom. **ASE strongly recommends that you visit the registration desk on Sunday, January 16 to clear the Health & Safety checkpoint and get all your materials.** ASE staff will be happy to renew your ASE membership or discuss the wide variety of educational products that are available for a 10% discount during the course. The Registration desk will be staffed during the following hours:

Sunday, January 16. . . . . 4:00 – 6:00 PM

Monday, January 17, through Friday, January 21, the registration desk will be open during all session hours.

## Food Functions

ASE will provide breakfast and coffee breaks for registered attendees in the Hau/Lehua room from 6:30 AM until the start of the session each morning. Ample outdoor seating and social distancing measures will be put in place. Due to COVID-19 safety protocols, any unregistered guests are not permitted to enter the meeting space.

Please refer to the program schedule for the times of the daily coffee breaks. The Westin Hapuna Beach Resort offers guests a variety of dining options. Please see page 7 for more details.

## Internet Access

Attendees of the course receive complimentary internet in their guest rooms at the Westin Hapuna Beach Resort and Mauna Kea hotels. There is WiFi access in the meeting room.

## Safety

Audience seating is on a first-come, first-served basis. According to fire code, a session must be closed if the room fills to capacity. Inappropriate behavior or undesirable conduct, including, but not limited to, verbal or physical abuse, whether threatened or performed, will not be permitted or tolerated. You must wear your name badge at all times when attending the session or events.

## Photography/AV Policy

No person may record any portion of the 31st Annual Echo Hawaii, either by video, still or digital photography, audio or any other recording or reproduction mechanism. This includes recording of presentations and supporting audio visual materials and of poster presentations and supporting poster materials.

Taking photos of, or recording the content of, presentation slides is also prohibited and is considered intellectual piracy. Attendees who ignore this policy will be asked to leave the educational session and are at risk of losing their name badge and attendance privileges. Photographs taken for the purpose of sharing on social media is allowed, but should avoid showing presentation slides. Please use **#EchoHawaii** when posting on social media.

ASE reserves the rights to all recordings or reproductions at ASE meetings. Please be aware that during the 31st Annual Echo Hawaii, attendees, vendors, guests and exhibitors may be photographed or videotaped by ASE staff capturing the event. Some of these photographs or videos may be displayed by ASE in future publications or other materials. By virtue of your attendance, you agree to allow ASE to use photographs of you in its promotional materials.

## Mobile Device Use

We encourage you to use your mobile device to download the ASE Courses app. It gives you access to the entire meeting program at your fingertips. You can also use the app to ask questions during the sessions you attend. Search “ASE Courses” in the Google Play and Apple Stores to download. **Please remember to turn your mobile device to silent or vibrate mode.**

Download the ASE Live Courses app for Echo Hawaii information at your fingertips





# Location Information & Networking Events

## The Big Island, Hawaii

You will have some free time to enjoy the many sights and activities available on the Big Island such as snorkeling, whale watching, visiting the Volcano National Park, or driving to the summit of the tallest mountain in the world when measured from its oceanic base, Mauna Kea. Nestled amidst the bluffs above the white sands of the sunny Kohala Coast on the Big Island, the Westin Hapuna and Mauna Kea Beach Hotels offer the perfect spot to unplug, unwind, and explore the ocean with family and friends. Visit the concierge at either hotel for a full list of amenities and island offerings.

## Westin Hapuna and Mauna Kea Beach Hotels

The Westin Hapuna Beach and Mauna Kea Beach Hotels are happy to extend these complimentary services for all ASE attendees:

- Complimentary turndown service.
- Complimentary self-parking for registered attendees with a room reservation at either Westin Hapuna or Mauna Kea.
- Complimentary access to the state-of-the-art fitness center.

## Westin Hapuna Beach Resort Dining Options

- **Ikena Landing:** Overlooking Hapuna Beach and the blue Pacific, this casual open-air restaurant offers a thoughtful mix of healthy, creative items along with familiar favorites at the daily breakfast buffet and an extensive a la carte menu. Open daily 6:30 – 10:30 AM. Casual Attire.
- **Meridia:** Mediterranean-inspired cuisine is created with locally sourced ingredients and infused with the island's rich bounty. Serving dinner. Reservations required. Smart Resort Casual Attire.
- **Naupaka Beach Grill:** Providing a casual setting within steps of the beach and family pool for salads, sandwiches, and pupus. Serving lunch and dinner. Resort Attire.
- **Piko:** This centrally located barista bar features 100% Kona coffee, morning lattes, refreshing libations, light snacks, and fresh grab-and-go options. Serving breakfast, lunch, and dinner. Resort Casual Attire.

## Mauna Kea Beach Hotel Dining Options

- **Copper Bar:** Designed to embrace its storied past while launching modern traditions for a dynamic future, it's one of Kohala Coast's favorite dining and gathering places. Tapas and entrees crafted with local ingredients, and handmade cocktails perfectly paired with enduring panoramic views at lunch, dinner and anytime in between. Nightly music with hula from 5:30 – 8:30 PM is a Mauna Kea tradition. Casual Resort Attire.
- **Hau Tree:** Step off the beach and into the open-air, Hau Tree restaurant & bar for a casual dining menu which includes sandwiches, wraps, hamburgers, salads, ice cream, our famous Ovaltine Froth, or a cooling Fredrico cocktail. Sit-down lunches and relaxed dinners are also offered, along with a gazebo-style bar perfectly situated for enjoying cocktails while anticipating the sunset's elusive green flash. Casual Resort Attire.
- **Manta:** Begin your day in our open-air bay-view restaurant, home to a legendary breakfast buffet with made-to-order waffles and omelets, tropical fruits and juices, whole-grain cereals and tasty pastries. As the Big Island of Hawaii sun sets, the ambience changes as the Bar & Lounge come to life and chefs prepare culinary delights in Manta's exhibition kitchen. With live, local music and an award-winning wine list a visit to Manta will enhance any evening. Resort Attire (Breakfast: Casual Resort Attire).
- **Number 3:** The clubhouse Number 3 restaurant offers casual island cuisine in a relaxed atmosphere adjacent to the first tee. Golfers, families, or anyone seeking a delicious lunch can enjoy everything from grass-fed burgers, fish tacos, and classic Crab Louis to cold beer on tap, frosty fruit smoothies, and signature Mauna Kea cocktails. Casual Resort Attire.

Don't forget to ask about the **Clambake** and **Mauna Kea Luau** (both require reservations), which promise an evening of wonderful food and entertainment.

# Schedule of Events

## SUNDAY, JANUARY 16, 2022

4:00 – 6:00 PM	<b>Registration</b>
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## MONDAY, JANUARY 17, 2022

6:30 AM	<b>Registration, Breakfast, and Visit Exhibits</b>
<i>Moderator: J. Thomas</i>	
7:00 AM	<b>Welcome and Course Orientation</b> <i>J. Lindner, J. Thomas</i>
7:20 AM	<b>Welcome from ASE President</b> <i>R. Stainback</i>
7:30 AM	<b>Physiology of Systole: What Are We Really Trying to Measure?</b> <i>J. Lindner</i>
7:45 AM	<b>Assessment of Systolic Function: When to Use Contrast or 3D?</b> <i>M. Picard</i>
8:00 AM	<b>Introduction to Strain Imaging: How Does Global Longitudinal Strain Add to Ejection Fraction?</b> <i>S. De</i>
8:15 AM	<b>When Do We Need Contrast? How Can It Be Implemented?</b> <i>A. DeMaria</i>
8:30 AM	<b>Cases in Systolic Function: Assessing the Subtleties</b> <i>Moderator: J. Thomas</i> <i>S. De, A. DeMaria, J. Lindner, M. Picard</i>
8:45 AM	<b>Question &amp; Answer Using the App</b> <i>Moderator: J. Thomas</i> <i>S. De, A. DeMaria, J. Lindner, M. Picard</i>
9:00 AM	<b>Refreshment Break and Visit Exhibits</b>
9:15 AM	<b>Physiology of Diastole: What Are We Trying to Measure?</b> <i>S. De</i>
9:30 AM	<b>Diastolic Guidelines: Are They Helpful?</b> <i>J. Oh</i>
9:45 AM	<b>Assessing the Right Ventricle: Role of Strain and 3D</b> <i>M. Picard</i>
10:00 AM	<b>Evolving Role of Echo in Bedside Critical Care: Lessons from COVID</b> <i>S. McCartney</i>
10:15 AM	<b>Strain in the Assessment of Cardiomyopathies</b> <i>J. Liu</i>
10:30 AM	<b>Echo Beyond 2022: Artificial Intelligence and Machine Learning</b> <i>S. J. Shah</i>
10:45 AM	<b>My Biggest Mistakes: Lessons Learned</b> <i>R. Moss</i>
11:00 AM	<b>Puzzling Cases in Cardiac Function: Read With the Experts</b> <i>Moderator: S. De</i> <i>J. Liu, S. McCartney, R. Moss, J. Oh, M. Picard, S. J. Shah</i>
11:15 AM	<b>Question &amp; Answer Using the App</b> <i>S. De, J. Liu, S. McCartney, R. Moss, J. Oh, M. Picard, S. J. Shah</i>
12:00 PM	<b>Adjourn</b>

3:30 – 5:00 PM	<b>Workshop in Echo Quantitation: Practical Approaches to Use in Your Lab</b> <i>Moderator: J. Oh</i> <i>T. Belcik, M. Jankowski, T. Ryan, M. Saric, S.J. Shah</i>
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## TUESDAY, JANUARY 18, 2022

6:30 AM	<b>Registration, Breakfast, and Visit Exhibits</b>
<i>Moderator: J. Lindner</i>	
7:00 AM	<b>A Potpourri of Fascinating Cases to Learn From</b> <i>Moderator: T. Ryan</i> <i>J. Lindner, M. Picard, R. Stainback</i>
8:00 AM	<b>Stress Echo: Improving Your Batting Average with Contrast and Other Tips</b> <i>T. Ryan</i>
8:15 AM	<b>Chest Pain in the Emergency Room: Which Test for Which Patient?</b> <i>J. Lindner</i>
8:30 AM	<b>Complications of Myocardial Infarction: Echo has the Answer!</b> <i>R. Stainback</i>
8:45 AM	<b>Echo Beyond 2022: Advanced Applications of Contrast: Perfusion and Therapeutics</b> <i>J. Lindner</i>
9:00 AM	<b>Strategies to Make Your Lab Excellent</b> <i>M. Jankowski</i>
9:15 AM	<b>Cases in Coronary Artery Disease: Tips from the Experts</b> <i>Moderator: J. Lindner</i> <i>M. Jankowski, T. Ryan, R. Stainback</i>
9:30 AM	<b>Question &amp; Answer Using the App</b> <i>M. Jankowski, J. Lindner, T. Ryan, R. Stainback</i>
9:45 AM	<b>Refreshment Break and Visit Exhibits</b>
10:00 AM	<b>Assessment of Atrial Function: What is the Answer?</b> <i>S.J. Shah</i>
10:15 AM	<b>Global Normative Echo Data: Lessons from the WASE Study</b> <i>M. Picard</i>
10:30 AM	<b>Echo to Phenotype and Guide Therapy of HFpEF</b> <i>S.J. Shah</i>
10:45 AM	<b>Top Five Situations Where I Find Strain is Helpful</b> <i>S. De</i>
11:00 AM	<b>Valvular Heart Disease: A Decade of Progress</b> <i>L. Gillam</i>
11:15 AM	<b>Cases You'll Never Forget</b> <i>Moderator: S.J. Shah</i> <i>S. De, L. Gillam, M. Picard</i>
11:30 AM	<b>Question &amp; Answer Using the App</b> <i>S. De, L. Gillam, M. Picard, S.J. Shah</i>
12:00 PM	<b>Adjourn</b>
4:00 – 6:30 PM	<b>Contrast Workshop: You, Too, Can Do Myocardial Perfusion</b> <i>Moderator: J. Lindner</i> <i>T. Belcik, A. DeMaria, J. Hodovan, M. Jankowski, R. Moss</i>



# Schedule of Events

WEDNESDAY, JANUARY 19, 2022	
6:30 AM	<b>Registration, Breakfast, and Visit Exhibits</b>
	<i>Moderator: L. Gillam</i>
7:00 AM	<b>A Potpourri of Fascinating Cases to Learn From</b> <i>Moderator: J. Thomas</i> <i>L. Gillam, S. McCartney, M. Saric</i>
8:00 AM	<b>Best Papers in JASE 2021</b> <i>M. Picard</i>
8:15 AM	<b>Quantification of Stenosis: Avoid These Pitfalls</b> <i>W. Tsang</i>
8:30 AM	<b>TAVR 2022: Who Should Get it? Who Still Needs Surgery?</b> <i>L. Gillam</i>
8:45 AM	<b>Valvular Regurgitation: How Can We Be More Accurate?</b> <i>M. Jankowski, J. Thomas</i>
9:00 AM	<b>Starting an Interventional Echo Program: Training, Technique, and Economics</b> <i>R. Moss</i>
9:15 AM	<b>Sitting in With the Heart Valve Team: Cases to Learn From</b> <i>Moderator: L. Gillam</i> <i>M. Jankowski, R. Moss, M. Picard, J. Thomas, W. Tsang</i>
9:30 AM	<b>Question &amp; Answer Using the App</b> <i>L. Gillam, M. Jankowski, R. Moss, M. Picard, J. Thomas, W. Tsang</i>
9:45 AM	<b>Refreshment Break and Visit Exhibits</b>
10:00 AM	<b>3D Assessment of the Cardiac Valves: Learn the Views and the Anatomy</b> <i>S. McCartney</i>
10:15 AM	<b>MitraClip: Who Is It For? How Can It Be Guided?</b> <i>M. Saric</i>
10:30 AM	<b>Crazy Things in the Cath Lab: Plugs, Valve in Valve, Occluders</b> <i>L. Gillam</i>
10:45 AM	<b>Echo Beyond 2022: The Brave New World of Percutaneous Treatment of the Tricuspid Valve</b> <i>R. Moss</i>
11:00 AM	<b>Sitting in with the Heart Valve Team: Mitral and Tricuspid Cases</b> <i>Moderator: S. McCartney</i> <i>L. Gillam, R. Moss, M. Saric</i>
11:15 AM	<b>Question &amp; Answer Using the App</b> <i>L. Gillam, S. McCartney, R. Moss, M. Saric</i>
12:00 PM	<b>Adjourn</b>
4:00 – 5:00 PM	<b>Tricks and Tips for 3D Visualization: A Practical Approach to Use in Your Lab</b> <i>Moderator: M. Saric</i> <i>J. Hodovan, M. Jankowski, S. McCartney, W. Tsang</i>

THURSDAY, JANUARY 20, 2022	
6:30 AM	<b>Registration, Breakfast, and Visit Exhibits</b>
	<i>Moderator: R. Stainback</i>
7:00 AM	<b>A Potpourri of Fascinating Cases to Learn From</b> <i>Moderator: A. DeMaria</i> <i>J. Oh, T. Ryan, R. Stainback</i>
8:00 AM	<b>A Systematic Approach to Multi-Valve Disease</b> <i>J. Thomas</i>
8:15 AM	<b>A Practical Approach to Prosthetic Valves</b> <i>L. Gillam</i>
8:30 AM	<b>Exercise Echo and Strain to Time Intervention in Valvular Heart Disease</b> <i>J. Oh</i>
8:45 AM	<b>Use of Echo to Manage Endocarditis</b> <i>T. Ryan</i>
9:00 AM	<b>Sitting in with the Heart Valve Team: One Last Hurrah</b> <i>Moderator: J. Thomas</i> <i>L. Gillam, J. Oh, T. Ryan</i>
9:15 AM	<b>Question &amp; Answer Using the App</b> <i>L. Gillam, J. Oh, T. Ryan, J. Thomas</i>
9:30 AM	<b>Refreshment Break and Visit Exhibits</b>
9:45 AM	<b>Findings in Repaired Congenital Disease: Expected Finding or Problem?</b> <i>R. Stainback</i>
10:00 AM	<b>When Do Adults with Congenital Heart Disease Need An Intervention? The Role of Echo</b> <i>S.B. Shah</i>
10:15 AM	<b>TEE in Emergent Situations</b> <i>S. McCartney</i>
10:30 AM	<b>Athlete's Heart: How to Separate Abnormal from Supraphysiologic</b> <i>A. DeMaria</i>
10:45 AM	<b>Use of Echo in Pulmonary Hypertension</b> <i>S.J. Shah</i>
11:00 AM	<b>Handheld Echo: How Far Can it Go</b> <i>R. Moss</i>
11:15 AM	<b>Puzzling Cases to Learn From: Read with the Experts</b> <i>Moderator: R. Stainback</i> <i>A. DeMaria, S. McCartney, R. Moss, S.B. Shah, S.J. Shah</i>
11:30 AM	<b>Question &amp; Answer Using the App</b> <i>A. DeMaria, S. McCartney, R. Moss, S.B. Shah, S.J. Shah, R. Stainback</i>
12:00 PM	<b>Adjourn</b>
4:00 – 6:00 PM	<b>Strain from A to Z: Technique, Analysis, and Application</b> <i>Moderator: J. Thomas</i> <i>T. Belcik, S. De, M. Jankowski, J. Liu, S.J. Shah</i>

# Schedule of Events

# Faculty Disclosure

## FRIDAY, JANUARY 21, 2022

6:30 AM	<b>Registration, Breakfast, and Visit Exhibits</b>
<i>Moderator: J. Oh</i>	
7:00 AM	<b>A Potpourri of Fascinating Cases to Learn From</b> <i>Moderator: J. Liu</i> <i>M. Saric, S.B. Shah, W. Tsang</i>
8:00 AM	<b>Cardio-Oncology: An Integrative Approach</b> <i>J. Liu</i>
8:15 AM	<b>Multimodality Assessment of Cardiac Masses</b> <i>M. Saric</i>
8:30 AM	<b>Amyloidosis: Diagnosis and (Finally) Treatment</b> <i>S.J. Shah</i>
8:45 AM	<b>Think Quick: Make the Diagnosis with Just One Clip</b> <i>M. Picard</i>
9:00 AM	<b>Puzzling Cases to Learn From: Read with the Experts</b> <i>Moderator: J. Oh</i> <i>J. Liu, M. Picard, M. Saric, S.J. Shah</i>
9:15 AM	<b>Question &amp; Answer Using the App</b> <i>J. Liu, J. Oh, M. Picard, M. Saric, S.J. Shah</i>
9:30 AM	<b>Refreshment Break and Visit Exhibits</b>
9:45 AM	<b>Extracorporeal Membrane Oxygenation, Ventricular Assist Device and Transplant: How is Echo Used?</b> <i>S. McCartney</i>
10:00 AM	<b>Carcinoid and Other Valvulopathies</b> <i>W. Tsang</i>
10:15 AM	<b>Pericardial Disease: Never Miss Constriction Again</b> <i>J. Oh</i>
10:30 AM	<b>Diseases of the Aorta: How to Deal with Different Multi-Modality Measurements</b> <i>S.B. Shah</i>
10:45 AM	<b>Question &amp; Answer Using the App</b> <i>Moderator: J. Oh</i> <i>S. McCartney, S.B. Shah, W. Tsang</i>
11:00 AM	<b>Mai Tai Finale and Aloha Until 2023</b> <i>J. Lindner, J. Thomas</i>
11:30 AM	<b>Adjourn</b>

Please note, the Schedule of Events is subject to change. Please visit [ASEcho.org/EchoHawaii](http://ASEcho.org/EchoHawaii) for the most up-to-date information.

The following faculty members do not have any financial relationships with ineligible companies\* to disclose:

Sabe De, MD, FASE	Thomas Ryan, MD, FASE
James Hodovan, PhD, RDCS (AE, PE)	Sangeeta B. Shah, MD, FASE
Sharon McCartney, MD, FASE	Raymond F. Stainback, MD, FASE
Michael H. Picard, MD, FASE	Wendy Tsang, MD, SM

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J. Todd Belcik, BS, ACS, RDCS (AE) (PE), FASE; Bracco (Former Employee)	Robert R. Moss, MD; Abbott (Speaker/ Speaker's Bureau); Edwards Lifesciences (Consultant/Advisor)
Anthony N. DeMaria, MD, FASE; Caption Health (Consultant/Advisor); DIA, Hitachi (Research Grant Support, including PI)	Jae K. Oh, MD, FASE; Abbott, REDNVIA (Research Grant Support, including PI); Medtronic (Consultant/Advisor); UpToDate (Section Editor)
Linda D. Gillam, MD, MPH, FASE; Abbott, Edwards Lifesciences, Medtronic (Oversee core lab contracts, unpaid); Bracco, Edwards Lifesciences, Philips (Consultant/Advisor)	Muhammed Saric, MD, PhD, FASE; Abbott, Boston Scientific, Medtronic, Siemens (Speaker/Speaker's Bureau)
Madeline Jankowski, BS, RDCS, FASE; Bristol Myers Squibb, Caption Health (Consultant/Advisor)	Sanjiv J. Shah, MD, FASE; Axon Therapies, Novo Nordisk (Consultant/Advisor); Corvia (Research Grant Support, including PI)
Jonathan R. Lindner, MD, FASE; Lantheus (Research Grant Support, including PI)	James D. Thomas, MD, FASE; Abbott, GE Healthcare (Research Grant Support, including PI); Caption Health (Consultant/ Advisor)
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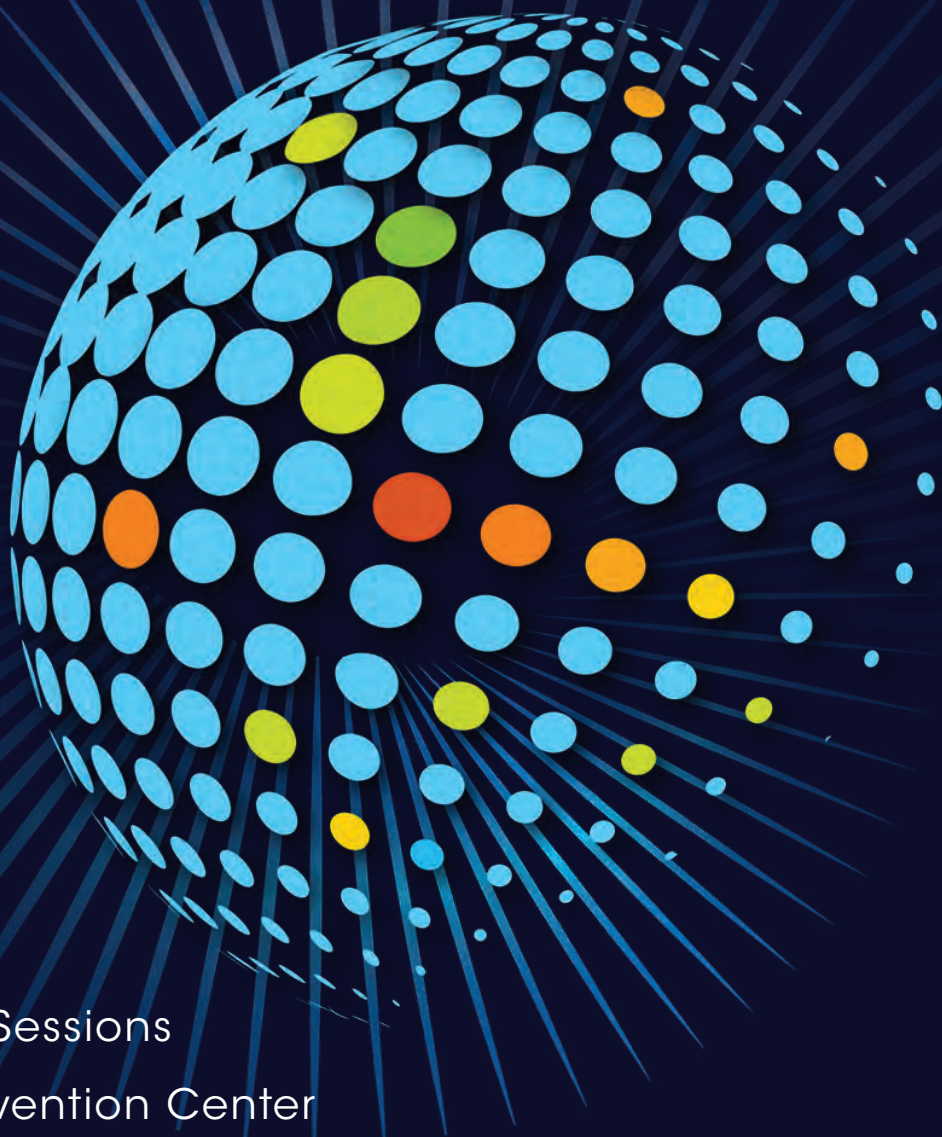
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# Exhibitor Information

## Exhibit Location and Hours

Exhibits are located in the Hau/Lehua Room during the dates and hours listed below.

Monday, January 17 .....	6:30 AM – 12:00 PM
Tuesday, January 18 .....	6:30 AM – 12:00 PM
Wednesday, January 19 .....	6:30 AM – 12:00 PM
Thursday, January 20 .....	6:30 AM – 12:00 PM
Friday, January 21 .....	6:30 AM – 9:45 AM

## Exhibitor Descriptions



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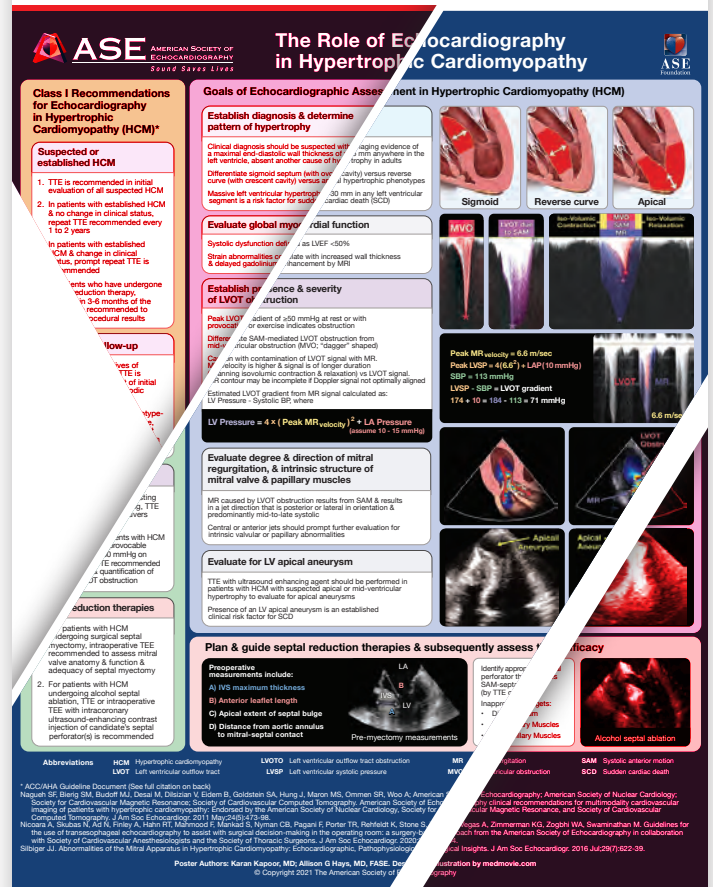
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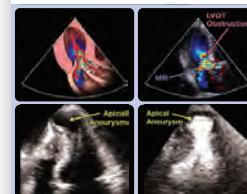
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# DEFINITY<sup>®</sup>

VIAL  
FOR (Perflutren Lipid Microsphere)  
INJECTABLE SUSPENSION

FOR INTRAVENOUS USE

## BRIEF SUMMARY

Please see Full Prescribing Information available at [www.DEFINITYimaging.com](http://www.DEFINITYimaging.com) for additional information.

### WARNING: SERIOUS CARDIOPULMONARY REACTIONS

**See full prescribing information for complete boxed warning**

Serious cardiopulmonary reactions, including fatalities, have occurred uncommonly during or following perflutren-containing microsphere administration (5.1). Most serious reactions occur within 30 minutes of administration.

- Assess all patients for the presence of any condition that precludes DEFINITY administration (4).
- Always have resuscitation equipment and trained personnel readily available.

## INDICATIONS AND USAGE

Activated DEFINITY (Perflutren Lipid Microsphere) Injectable Suspension is indicated for use in patients with suboptimal echocardiograms to opacify the left ventricular chamber and to improve the delineation of the left ventricular endocardial border.

## DOSAGE AND ADMINISTRATION

### Important Administration Instructions

- DEFINITY is intended for administration only after activation in the VIALMIX or VIALMIX RFID apparatus. Before injection, this product must be activated and prepared according to the instructions outlined below. The VIALMIX or VIALMIX RFID apparatus should be ordered from Lantheus Medical Imaging, 331 Treble Cove Road, North Billerica, MA, 01862. For customer orders call 1-800-299-3431
- DEFINITY may be injected by either an intravenous (IV) bolus or infusion. Do not administer DEFINITY by intra-arterial injection [see *Warnings and Precautions*].
- The maximum dose is either two bolus doses or one single intravenous infusion. The safety of bolus and infusion dosing in combination or in sequence, has not been studied.

### Dosage

#### Bolus

The recommended bolus dose for activated DEFINITY is 10 microliters (microL)/kg of the activated product by intravenous bolus injection within 30 to 60 seconds, followed by a 10 mL saline flush. If necessary, a second 10 microliters (microL)/kg dose followed by a second 10 mL saline flush may be administered 30 minutes after the first injection to prolong contrast enhancement.

#### Infusion

The recommended infusion dose for activated DEFINITY is via an IV infusion of 1.3 mL added to 50 mL of preservative-free saline. The rate of infusion should be initiated at 4 mL/minute, but titrated as necessary to achieve optimal image enhancement, not to exceed 10 mL/minute.

## CONTRAINDICATIONS

Do not administer DEFINITY to patients with known or suspected:

- Hypersensitivity to perflutren lipid microsphere or its components, such as polyethylene glycol (PEG) [see *Warnings and Precautions*].

## WARNINGS AND PRECAUTIONS

### Serious Cardiopulmonary Reactions

Serious cardiopulmonary reactions including fatalities have occurred uncommonly during or shortly following perflutren-containing microsphere administration, typically within 30 minutes of administration. The risk for these reactions may be increased among patients with unstable cardiopulmonary conditions (acute myocardial infarction, acute coronary artery syndromes, worsening or unstable congestive heart failure, or serious ventricular arrhythmias). Always have cardiopulmonary resuscitation personnel and equipment readily available prior to DEFINITY administration and monitor all patients for acute reactions.

The reported reactions include: fatal cardiac or respiratory arrest, shock, syncope, symptomatic arrhythmias (atrial fibrillation, tachycardia, bradycardia, supraventricular tachycardia, ventricular fibrillation, ventricular tachycardia), hypertension, hypotension, dyspnea, hypoxia, chest pain, respiratory distress, stridor, wheezing, loss of consciousness, and convulsions. [see *Adverse Reactions*].

### Hypersensitivity Reactions

In postmarketing use, serious hypersensitivity reactions were observed during or shortly following perflutren-containing microsphere administration including:

Anaphylaxis, with manifestations that may include death, shock, bronchospasm, throat tightness, angioedema, edema (pharyngeal, palatal, mouth, peripheral, localized), swelling (face, eye, lip, tongue, upper airway), facial hypoesthesia, rash, urticaria, pruritus, flushing, and erythema.

These reactions have occurred in patients with no prior exposure to perflutren-containing microsphere products. DEFINITY contains PEG. There may be increased risk of serious reactions including death in patients with prior hypersensitivity reaction(s) to PEG [see *Adverse Reactions* (and *Description*)]. Clinically assess patients for prior hypersensitivity reactions to products containing PEG, such as certain colonoscopy bowel preparations and laxatives. Always have cardiopulmonary resuscitation personnel and equipment readily available prior to DEFINITY administration and monitor all patients for hypersensitivity reactions.

### Systemic Embolization

When administering DEFINITY to patients with a cardiac shunt, the microspheres can bypass filtering by the lung and enter the arterial circulation. Assess patients with shunts for embolic phenomena following DEFINITY administration. DEFINITY is only for intravenous administration; do not administer DEFINITY by intra-arterial injection [see *Dosage and Administration*].

### Ventricular Arrhythmia Related to High Mechanical Index

High ultrasound mechanical index values may cause microsphere cavitation or rupture and lead to ventricular arrhythmias. Additionally, end-systolic triggering with high mechanical indices has been reported to cause ventricular arrhythmias. DEFINITY is not recommended for use at mechanical indices greater than 0.8 [see *Dosage and Administration*].

## ADVERSE REACTIONS

The following serious adverse reactions are described elsewhere in the labeling:

- Serious Cardiopulmonary Reactions [see *Warnings and Precautions*]
- Hypersensitivity Reactions [see *Warnings and Precautions*]

### Clinical Trials Experience

Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice.

A total of 1716 subjects were evaluated in pre-market clinical trials of activated DEFINITY. In this group, 1063 (61.9%) were male and 653 (38.1%) were female, 1328 (77.4%) were White, 258 (15.0%) were Black, 74 (4.3%) were Hispanic, and 56 (3.3%) were classified as other racial or ethnic groups. The mean age was 56.1 years (range 18 to 93). Of these, 144 (8.4%) had at least one adverse reaction (Table 1). There were 26 serious adverse events and 15 (0.9%) subjects discontinued because of an adverse event.

### Serious Adverse Reactions

Among the 1716 study patients, 19 (1.1%) suffered serious cardiopulmonary adverse reactions.

For all adverse reactions, the overall incidence of adverse experiences was similar for the <65 year age group and the > 65 year age group, similar in males and in females, similar among all racial or ethnic groups, and similar for bolus and infusion dosing. Table 1 summarizes the most common adverse reactions.

**Table 1 New-Onset Adverse Reactions Occurring in ≥0.5% of All DEFINITY-Treated Subjects**

	DEFINITY (N=1716)	
Total Number of Adverse Reactions	269	
Total Number of Subjects with an Adverse Reaction	144	(8.4%)
Body system		
Preferred term	n	(%)
Application Site Disorders	11	(0.6)
Injection Site Reactions	11	(0.6)
Body as a Whole	41	(2.4)
Back/renal pain	20	(1.2)
Chest pain	13	(0.8)
Central and peripheral nervous system disorder	54	(3.1)
Headache	40	(2.3)
Dizziness	11	(0.6)
Gastrointestinal system	31	(1.8)
Nausea	17	(1.0)
Vascular (extracardiac) disorders	19	(1.1)
Flushing	19	(1.1)

N=Sample size 1716 subjects who received activated DEFINITY

n=Number of subjects reporting at least one Adverse Reaction

Other adverse reactions that occurred in ≤0.5% of the activated DEFINITY-dosed subjects were:

**Body as a Whole:** Fatigue, fever, hot flushes, pain, rigors, and syncope

**Cardiovascular:** Abnormal ECGs, bradycardia, tachycardia, palpitation, hypertension and hypotension

**Digestive:** Dyspepsia, dry mouth, tongue disorder, toothache, abdominal pain, diarrhea and vomiting

**Hematology:** Granulocytosis, leukocytosis, leukopenia, and eosinophilia

**Musculoskeletal:** Arthralgia

**Nervous System:** Leg cramps, hypertonia, vertigo and paresthesia

**Platelet, Bleeding, and Clotting:** Hematoma

**Respiratory:** Coughing, hypoxia, pharyngitis, rhinitis and dyspnea

**Special Senses:** Decreased hearing, conjunctivitis, abnormal vision and taste perversion

**Skin:** Pruritus, rash, erythematous rash, urticaria, increased sweating, and dry skin

**Urinary:** Albuminuria

### Postmarketing Experience

In a prospective, multicenter, open-label registry of 1053 patients receiving DEFINITY in routine clinical practice, heart rate, respiratory rate, and pulse oximetry were monitored for 30 minutes after DEFINITY administration. No deaths or serious adverse reactions were reported, suggesting that these reactions are unlikely to occur at a rate of more than 0.3% when DEFINITY is used according to recommendations.

The following adverse reactions have been identified during the post-marketing use of perflutren and PEG-containing microsphere products. Because these reactions are reported voluntarily from a population of uncertain size, it is not always possible to reliably estimate their frequency or establish a causal relationship to drug exposure.

Fatal cardiopulmonary and hypersensitivity reactions and other serious but non-fatal adverse reactions were uncommonly reported. These reactions typically occurred within 30 minutes of DEFINITY administration. These serious reactions may be increased among patients with pre-existing PEG hypersensitivity and/or unstable cardiopulmonary conditions (acute myocardial infarction, acute coronary artery syndromes, worsening or unstable congestive heart failure, or serious ventricular arrhythmias [see *Warnings and Precautions*].

Reported reactions included:

#### Cardiopulmonary

Fatal cardiac or respiratory arrest, shock, syncope, symptomatic arrhythmias (atrial fibrillation, tachycardia, bradycardia, supraventricular tachycardia, ventricular fibrillation, ventricular tachycardia), hypertension, hypotension, dyspnea, hypoxia, chest pain, respiratory distress, stridor, wheezing.

#### Hypersensitivity

Anaphylaxis, with manifestations that may include death, shock, bronchospasm, throat tightness, angioedema, edema (pharyngeal, palatal, mouth, peripheral, localized), swelling (face, eye, lip, tongue, upper airway), facial hypoesthesia, rash, urticaria, pruritus, flushing, and erythema.

#### Neurologic

Coma, loss of consciousness, convulsion, seizure, transient ischemic attack, agitation, tremor, vision blurred, dizziness, headache, fatigue.

## PATIENT COUNSELING INFORMATION

Advise patients to inform their healthcare provider if they develop any symptoms of hypersensitivity after DEFINITY administration, including rash, wheezing, or shortness of breath.

Distributed By  
Lantheus Medical Imaging  
331 Treble Cove Road  
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For ordering, call toll free: 800-299-3431  
All Other Business: 800-362-2668  
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Patent: <http://www.lantheus.com/patents/index.html>

515987-0221

# DEFINITY<sup>®</sup>

VIAL  
FOR (Perflutren Lipid Microsphere)  
INJECTABLE SUSPENSION

## INDICATIONS

Activated DEFINITY<sup>®</sup> (Perflutren Lipid Microsphere) Injectable Suspension is indicated for use in patients with suboptimal echocardiograms to opacify the left ventricular chamber and to improve the delineation of the left ventricular endocardial border.

## CONTRAINDICATIONS

Do not administer DEFINITY<sup>®</sup> to patients with known or suspected hypersensitivity to perflutren lipid microsphere or its components, such as polyethylene glycol (PEG).

## IMPORTANT SAFETY INFORMATION

### WARNING: SERIOUS CARDIOPULMONARY REACTIONS

Serious cardiopulmonary reactions, including fatalities, have occurred uncommonly during or following perflutren-containing microsphere administration [see *Warnings and Precautions* (5.1)]. Most serious reactions occur within 30 minutes of administration.

- Assess all patients for the presence of any condition that precludes DEFINITY<sup>®</sup> administration [see *Contraindications* (4)].
- Always have resuscitation equipment and trained personnel readily available.

In postmarketing use, rare but serious cardiopulmonary or hypersensitivity reactions have been reported during or shortly following perflutren and PEG-containing microsphere administration [see *Adverse Reactions* (6)]. The risk for these reactions may be increased among patients with unstable cardiopulmonary conditions and/or with pre-existing PEG hypersensitivity [see *Adverse Reactions* (6.2)]. It is not always possible to reliably establish a causal relationship to drug exposure due to the presence of underlying conditions.

Please see brief summary of Prescribing Information, including boxed **WARNING** on subsequent pages.

Please see full Prescribing Information at [www.DEFINITYimaging.com](http://www.DEFINITYimaging.com)

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#### REFERENCES:

1. Kurt M et al. J Am Coll Cardiol. 2009;53(9):802-810. 2. Becher H, et al. Heidelberg, NY: Springer-Verlag; 2000:2-44. 3. ©2021 Millennium Research Group, Inc. All rights reserved. Reproduction, distribution, transmission or publication is prohibited. Reprinted with permission. 4. Embase and Medline Search, May 2018. 5. Data on file, Lantheus Medical Imaging, Inc.



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