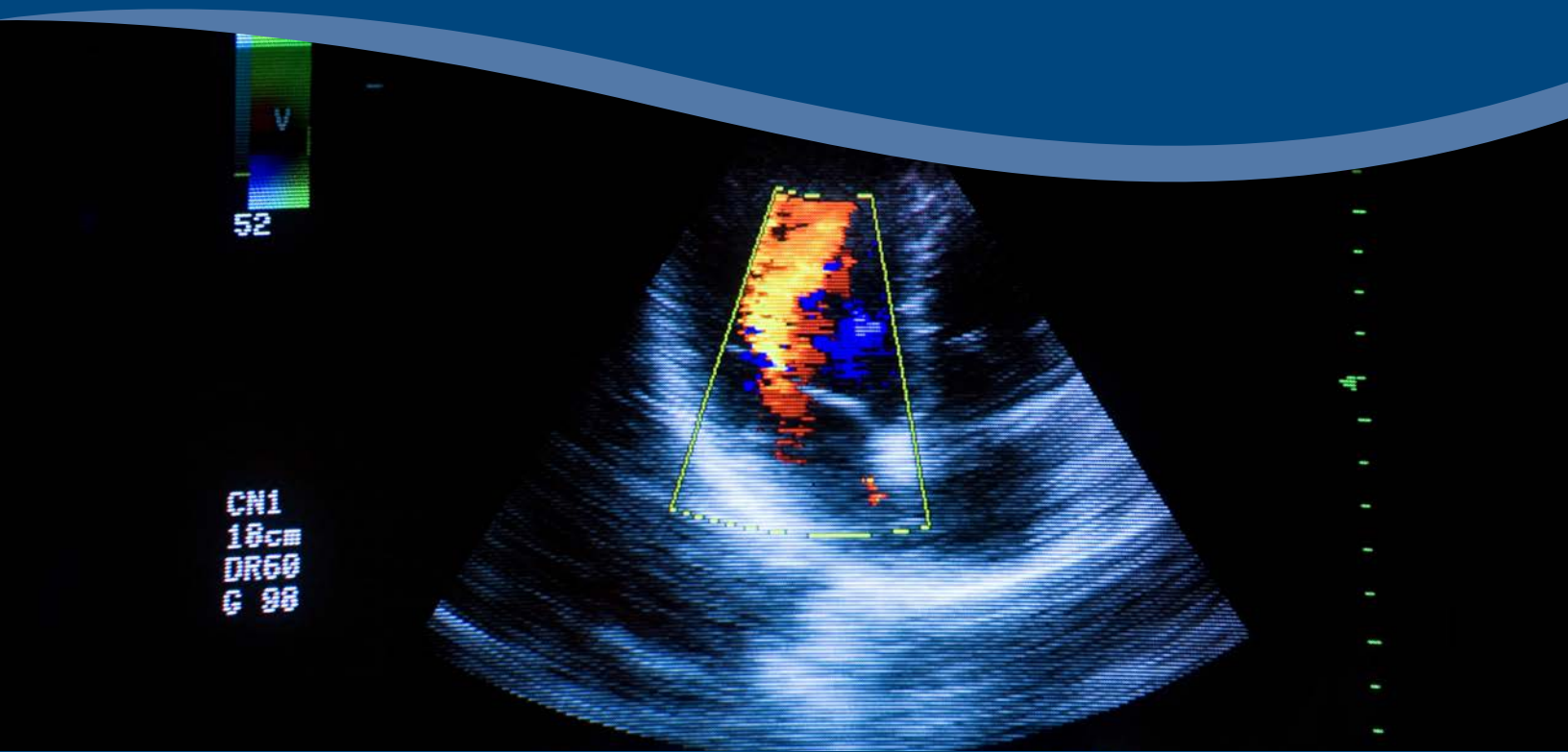


# CRITICAL CARE ULTRASOUND

FOR INTENSIVISTS & EMERGENCY MEDICINE PHYSICIANS



## COURSE DIRECTOR

Colin K. Grissom, MD

**FRIDAY, FEBRUARY 28 - SATURDAY, MARCH 1, 2014**

Intermountain Medical Center  
Doty Family Education Center  
Murray, UT 84107



**Critical Care Ultrasound for Intensivists and Emergency Medicine Physicians**  
**Friday, February 28 – Saturday, March 1, 2014**  
**Doty Family Education Center, Intermountain Medical Center**

**Friday, February 28, 2014**  
**Morning Session**

Time	Topic	Speaker
7:00 – 7:30 AM	<b>Breakfast</b>	
7:30 – 7:45 AM	Focused Echocardiography and Ultrasound in Critical Care: Aims and Place in Echo Training	Colin K. Grissom, MD
7:45 – 8:15 AM	Ultrasound Physics and Knobology	Mark P. Hamlin, MD, MS
8:15 – 8:45 AM	Ultrasound Anatomy of the Heart: Basic TTE Views and FATE protocol	Eliotte L. Hirshberg, MD
8:45 – 9:15 AM	Assessment of Left Ventricular Systolic Function	Ritesh Dhar, MD
9:15 – 9:45 AM	Chest Ultrasound: Pneumothorax	Mark P. Hamlin, MD, MS
9:45 – 10:15 AM	Chest Ultrasound: Pulmonary Edema	William Beninati, MD
10:15 – 10:25 AM	<b>Break</b>	
10:25 AM – 12:30 PM	Hands on Training Session I (5 Stations)	All Faculty

<b>Hands on Training Session I</b>			
Station	Topic	Faculty	Time
Station 1a Station 1b	Parasternal Window, Long Axis and Short Axis Views	Achikam Oren-Grinberg, MD Eliotte L. Hirshberg, MD	10:25 AM – 12:30 PM
Station 2a Station 2b	Apical Window, 4 and 2 Chamber Views	S. Patrick Bender, MD Samuel M. Brown, MD	10:25 AM – 12:30 PM
Station 3a Station 3b	Subcostal Window, Long Axis View, IVC	Todd W. Sarge, MD Matthew J. Griffee, MD	10:25 AM – 12:30 PM
Station 4a Station 4b	Lung and Pleural Ultrasound	Mark P. Hamlin, MD, MS William Beninati, MD	10:25 AM – 12:30 PM
Station 5a Station 5b	Case Review	Michael J. Lanspa, MD Ritesh Dhar, MD	10:25 AM – 12:30 PM



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**Friday, February 28, 2014**  
**Afternoon Session**

12:30 – 1:00 PM	<b>Lunch</b>	
1:00 – 1:30 PM	Principles of Doppler Ultrasound and Measurement of Cardiac Output	Todd W. Sarge, MD
1:30 – 2:00 PM	Assessment of Right Ventricular Systolic Function	Matthew J. Griffee, MD
2:00 – 2:30 PM	Evaluation of Acute Cor Pulmonale: Pulmonary Embolism and ARDS	Achikam Oren-Grinberg, MD, MS
2:30 – 3:00 PM	Assessment of Tamponade Physiology	Colin K. Grissom, MD
3:00 – 3:15 PM	<b>Break</b>	
3:15 – 5:20 PM	Hands on Training Session II (5 Stations)	All Faculty

<b>Hands on Training Session II</b>			
<b>Station</b>	<b>Topic</b>	<b>Faculty</b>	<b>Time</b>
Station 1a Station 1b	LV systolic function	Eliotte L. Hirshberg, MD Samuel M. Brown, MD	3:15 – 5:20 PM
Station 2a Station 2b	RV systolic function	S. Patrick Bender, MD Achikam Oren-Grinberg, MD	3:15 – 5:20 PM
Station 3a Station 3b	Measurement of Cardiac Output	Todd W. Sarge, MD Michael J. Lanspa, MD	3:15 – 5:20 PM
Station 4a Station 4b	Tamponade	Colin K. Grissom, MD Matthew J. Griffee, MD	3:15 – 5:20 PM
Station 5a Station 5b	Case Review	William Beninati, MD Mark P. Hamlin, MD	3:15 – 5:20 PM
5:20 – 6:30 PM	<b>Reception</b>		



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**Saturday, March 1, 2014**  
**Morning Session**

Time	Topic	Speaker
7:00 – 7:30 AM	<b>Breakfast</b>	
7:30 – 8:00 AM	Focused Echocardiographic Evaluation in Life Support (FEEL) Algorithm	S. Patrick Bender, MD
8:00 – 8:30 AM	Shock and Assessment of Volume Status	Michael J. Lanspa, MD
8:30 – 9:00 AM	Diastolic Function	Samuel M. Brown, MD
9:00 – 9:30 AM	FAST Exam	Thomas W. White, MD, FACS
9:30 – 10:00 AM	Vascular Access	Michael J. Lanspa, MD
10:00 – 10:15 AM	<b>Break</b>	
10:15 AM – 12:20 PM	Hands on Training Session III (5 Stations)	All Faculty

<b>Hands on Training Session III</b>			
Station	Topic	Faculty	Time
Station 1a Station 1b	Diastolic Function, MV Inflow and TD	Colin K. Grissom, MD Matthew J. Griffiee, MD	10:15 AM – 12:20 PM
Station 2a Station 2b	Procedural Guidance, IJ and SC Venous Access	William Beninati, MD Michael J. Lanspa, MD	10:15 AM – 12:20 PM
Station 3a Station 3b	FAST Exam	Thomas W. White, MD, FACS Matthew J. Parsons, MD	10:15 AM – 12:20 PM
Station 4a Station 4b	Ask the Expert	Mark P. Hamlin, MD, MS S. Patrick Bender, MD	10:15 AM – 12:20 PM
Station 5a Station 5b	Case Review	Achikam Oren-Grinberg, MD, MS Todd W. Sarge, MD	10:15 AM – 12:20 PM



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**Saturday, March 1, 2014**  
**Afternoon Session**

12:20 – 1:00 PM	<b>Lunch</b>	
1:00 – 1:30 PM	Overall Approach to the Patient in Shock	Achikam Oren-Grinberg, MD
1:30 – 2:00 PM	Clinical Cases with Audience Response System	Todd W. Sarge, MD Colin K. Grissom, MD

<b>Hands on Training Session IV</b>			
<b>Station</b>	<b>Topic</b>	<b>Faculty</b>	<b>Time</b>
Station 1a Station 1b	Fluid Responsiveness Passive Leg Raise	Eliotte L. Hirshberg, MD Todd W. Sarge, MD	2:30 – 4:05 PM
Station 2a Station 2b	Chest US Thoracentesis Procedural Guidance	William Beninati, MD Michael J. Lanspa, MD	2:30 – 4:05 PM
Station 3a Station 3b	Complete Echo Exam FATE Protocol	Mark P. Hamlin, MD Matthew J. Griffiee, MD	2:30 – 4:05 PM
Station 4a Station 4b	Ask the Expert	Samuel M. Brown, MD Achikam Oren-Grinberg, MD	2:30 – 4:05 PM
Station 5a Station 5b	Case Review	Colin K. Grissom, MD S. Patrick Bender, MD	2:30 – 4:05 PM

4:05 – 4:15 PM	<b>Break</b>	
4:15 – 4:45 PM	Pitfalls and Limitation of Focused Echocardiography	S. Patrick Bender, MD
4:45 – 5:00 PM	Implementation and Organization of an ICU Ultrasound Program	Colin K. Grissom, MD
5:00 – 5:30 PM	Post – Test, Audience Response System	Colin K. Grissom, MD
5:30 PM	<b>Adjourn</b>	

## **Purpose**

The Critical Care Ultrasound Conference will provide critical care and emergency medicine physicians with a fundamental knowledge base in the application of basic echocardiography and ultrasound to critically ill patients. You will be taught skills in operating bedside ultrasound systems for basic cardiac, lung, and abdominal ultrasound as well as the use of ultrasound for procedural guidance.

Expert faculty at the Critical Care Ultrasound Conference will also teach: basic critical care echocardiography method described as Focused Assessed Transthoracic Echocardiography (TTE), or FATE (Jensen, MD. European Journal of Anesthesiology 2004); the basic approach to evaluation of shock described in the consensus statement on focused cardiac ultrasound in the emergent setting from the American Society of Echocardiography and American College of Emergency Physicians (J Am Soc Echocardiogr 2010); and the basic approach to chest ultrasound described by Lichtenstein and colleagues in the bedside ultrasound in the lung (BLUE) protocol (Chest 2008). Procedural guidance for vascular access will follow the consensus recommendations of the American Society of Echocardiography (J Am Soc Echocardiogr 2011). If you attend only one CME event this year; make it the Critical Care Ultrasound for Intensivists and Emergency Medicine Physicians Conference.

The Critical Care Ultrasound for Intensivists and Emergency Medicine Physicians Conference is a unique opportunity to hear from some of the most respected experts in the field of echocardiography and ultrasound.

## **Objectives**

*Upon completion of this activity participants should be able to:*

- Describe the physics of ultrasound pertinent to operating a critical care ultrasound machine and use the appropriate probe and settings to obtain desired images
- Explain how to obtain and interpret the images in the Focused Assessed Transthoracic Echocardiography (FATE) protocol
- Discuss the echocardiographic findings in the evaluation of a patient in shock that provide guidance for diagnosis and treatment
- Review how to obtain lung ultrasound images and the findings specific to pulmonary edema, pneumothorax, and pleural effusion
- Illustrate how to use ultrasound for guidance for internal jugular and subclavian vein catheterization

Disclosure has been made by the faculty and is available for review in the syllabus. We are recommending the use of patient treatment plans not individual products that may be used in patient treatment.

## **Disclosure Information**

### **S. Patrick Bender, MD**

*Assistant Professor, University of Vermont; Attending Anesthesiology and Surgical Critical Care, Fletcher Allen Health Care; Associate Program Director, Anesthesia Residency*

Faculty: Dr. Bender has indicated he has no financial relationships to disclose relevant to the content of the CME activity.

**William Beninati, MD, FCCP**

*Critical Care Physician, LDS Hospital; Chair, Intermountain Critical Care Development Team, Intermountain Healthcare; Clinical Assistant Professor of Medicine, University of Utah School of Medicine; Salt Lake City, Utah*

Faculty: Dr. Beninati has indicated he has no financial relationships to disclose relevant to the content of the CME activity.

**Samuel M. Brown, MD**

*Assistant Director, Critical Care Echocardiography Service, Intermountain Medical Center; Assistant Professor, Pulmonary and Critical Care Medicine, University of Utah School of Medicine; Salt Lake City, Utah*

Faculty/Planning Committee: Dr. Brown has indicated he has no financial relationships to disclose relevant to the content of the CME activity.

**Julie Davis, BA, BS**

*CME Coordinator, Continuing Medical Education, Intermountain Healthcare; Salt Lake City, Utah*

Faculty/Planning Committee: Dr. Brown has indicated he has no financial relationships to disclose relevant to the content of the CME activity.

**Ritesh Dhar, MD**

*Cardiologist, Intermountain Heart Institute Medical Director, Echocardiography Lab Intermountain Medical Center, Intermountain Healthcare; Salt Lake City, Utah*

Faculty: Dr. Dhar has indicated he has no financial relationships to disclose relevant to the content of the CME activity.

**Matthew J. Griffee, MD**

*Assistant Professor, Department of Anesthesiology, University of Utah; SICU and OR, Salt Lake VA; SICU and OR, University of Utah Health Care; Salt Lake City, Utah*

Faculty: Dr. Griffee has indicated he has no financial relationships to disclose relevant to the content of the CME activity.

**Colin K. Grissom, MD**

*Associate Medical Director, Shock Trauma, Intensive Care Unit, Intermountain Medical Center, Intermountain Healthcare; Professor of Medicine, University of Utah School of Medicine; Salt Lake City, Utah*

Course Director/Faculty/Planning Committee: Dr. Grissom has indicated he has no financial relationships to disclose relevant to the content of the CME activity.

**Mark P. Hamlin, MD, MS**

*Associate Professor, Anesthesiology and Critical Care Medicine at the University of Vermont College of Medicine; Burlington, Vermont*

Faculty: Dr. Hamlin has indicated he has no financial relationships to disclose relevant to the content of the CME activity.

**Eliotte L. Hirshberg, MD**

*Attending Critical Care physician, Intermountain Medical Center and Primary Children’s Medical Center; Assistant Professor, Department of Medicine, Adjunct Assistant Professor, Department of Pediatrics, University of Utah School of Medicine; Salt Lake City, Utah*

Faculty/Planning Committee: Dr. Hirshberg has indicated she has no financial relationships to disclose relevant to the content of the CME activity.

**Michael J. Lanspa, MD**

*Director, Critical Care Echocardiography Elective, Intermountain Medical Center; Visiting Instructor, Pulmonary and Critical Care Medicine, University of Utah School of Medicine; Salt Lake City, Utah*

Faculty/Planning Committee: Dr. Lanspa has indicated he has no financial relationships to disclose relevant to the content of the CME activity.

**Achikam Oren-Grinberg, MD, MS**

*Staff Anesthesiologist and Intensive Care Physician, Beth Israel Deaconess Medical Center; Boston, Massachusetts*

Faculty/Planning Committee: Dr. Oren-Grinberg has indicated he has no financial relationships to disclose relevant to the content of the CME activity.

**Todd W. Sarge, MD**

*Instructor, Anesthesia and Critical Care, Beth Israel Deaconess Medical Center; Boston, Massachusetts*

Faculty: Dr. Sarge has indicated he has no financial relationships to disclose relevant to the content of the CME activity.

**SarahAnn S. Whitbeck, MBA, CCMEP**

*Director, Continuing Medical Education, Intermountain Healthcare; Salt Lake City, Utah*

Program Staff: Ms. Whitbeck has indicated she has no financial relationships to disclose relevant to the content of the CME activity.

**Thomas W. White, MD, FACS, CNSC**

*Trauma Surgery/Critical Care, Medical Director Nutrition Support Service, Shock Trauma ICU Attending, Intermountain Medical Center; Clinical Professor of Surgery, University of Utah Surgery Residency Program; Salt Lake City, Utah*

Faculty: Dr. White has indicated he has a financial relationship with Synthes.

**The following models have indicated they have no financial relationships to disclose relevant to the content of the CME activity:**

Breckon Carlton  
Kyle Davis  
Nathan Kingsford  
Guy Koretz  
Darren Lamb  
Mike Mcpheeters  
Drake Myers  
Chris Ridgeway

Max Ridgeway  
Sam Sullivan  
Jesse Thompson  
Eric Tuaone  
Bobby Voortmeyer  
Trent White  
Jeremy Worrell



**In-kind donations have been made by:**

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The Urban Central Region Primary Care Clinical Program Clinical Learning Day (UCR PCCP CLD) syllabus is available to you online. To upload the syllabus visit the following link, <https://intermountainphysician.org/intermountaincme/criticalcareecho/Pages/Critical-Care-Online-Syllabus.aspx> or you can scan the barcode below using any mobile device that supports "quick response" (QR) scanning and reading to instantly access the UCR PCCP CLD syllabus!



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