U.S.-China Standards and Conformity Assessment Cooperation Program
The United States Trade and Development Agency (USTDA)
美国贸易开发署(USTDA)
中国-美国标准与合格评定合作项目(SCACP)

Value of Physician Ultrasound Education and Certfication in China

超声医师教育认证在中国的价值研讨会

Sponsored by/主办单位:

US Trade and Development Agency / 美国贸易发展署 (USTDA)

Inteleos

Organized by/组织单位:

American National Standards Institute / 美国国家标准协会 (ANSI)

June10, 2017, Beijing
2017 年 6 月 10 日，北京

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Agenda

会议议程

Value of Physician Ultrasound Education and Certification in China

Sponsored by USTDA and Organized by ANSI and Inteleos
June 10, 2017

Beijing Friendship Hotel
#5 Conference Room, 1/F, Jiabing Building
1 Zhongguancun South St. Beijing 100873, P.R. China

8:30 AM – 7:30 PM
Agenda

Registration **8:30AM – 9:00AM**

Welcome and Introductions **9:00 AM – 9:10AM**
Dr. Thomas Shipp, RDMS, Chair, Inteleos Board of Directors
Mr. Dale R. Cyr, MBA, CAE, CEO and Executive Director, Inteleos

Opening Remarks from USTDA and ANSI **9:10 AM – 9:20 AM**
Mr. Steven Winkates, Director, Program Management of East Asia Region
U.S. Trade and Development Agency (USTDA)
Ms. Lily LU – ANSI China

Remarks from Chinese Ultrasound Expert Committee **9:20 AM – 9:30 AM**
Dr. Jinrui Wang, Director, Ultrasound Expert Committee

Ultrasound development and trend in China **9:30 AM – 9:45 AM**
Dr. Yuxin Jiang, President, Chinese Ultrasound Society

Introduction to Certification **9:45 AM – 10:30AM**

Certification Process (20 minutes)
Dr. Thomas Shipp, RDMS, Chair, Inteleos Board of Directors
Mr. Dale R. Cyr, MBA, CAE, CEO and Executive Director, Inteleos

- Value of Certification
- Inteleos Involvement in China
- Eligibility
- Test Development
- Intellectual Property Rights
- Ongoing Proficiency
- Technology / Simulation Preview
- Advancements in Certification

Assessment Delivery (15 minutes)
Mr. Charles Zhao, Vice President of Greater China, Pearson VUE

- Importance of secured and networked proctored sites
- Biometrics
- Online processing and scheduling
- Full alignment with certification body
- Highest professional environment

Review and Summary of PVI-China (10 minutes)
Dr. Jie Tang

Morning Tea Break **10:35AM – 11:00 AM**

Education Showcase **11:00 AM – 12:30 PM**

Importance of Operator Proficiency in Ultrasound Use (5 minutes)
Dr. Thomas Shipp, RDMS, Chair, Inteleos Board of Directors

- Ultrasound is the most operator-dependent modality

Overview of ultrasound continuing education program in China (15 min)
Dr. Jinrui Wang, Director, Chinese Ultrasound Expert Committee

Education as Part of a Comprehensive Certification Program in USA (20 min)
Current and future of ultrasound practice in North America
Dr. Laurence Needleman, FAIUM, Thomas Jefferson University

Overview of Jefferson China-American Ultrasound Scholarship Program (15 minutes)
Dr. Ji-Bin Liu, FAIUM, Thomas Jefferson University

- Summary of education and training as an integral part of a certification program
- Collaborations between TJU and China in ultrasound
- How many people have they trained (snapshot)
- How is this program improving care and quality of ultrasound in China

Sonographer education program at TJU (15 minutes)
Dr. Traci Fox, RT(R), RDMS, RVT, Thomas Jefferson University

Sonographer program and clinical practice at Huaxi (20 min)
Dr. Yan Luo

- Overview of initial collaboration of ARDMS certification with Huaxi
- Review of developing sonographer program in Huaxiina
- Snapshot of progress to-date
- Physician-sonographer work style at Huaxi
- Future developments (training, teleteaching, and ARDMS certification)

Lunch **12:30 PM – 1:30 PM**

Buffet Restaurant, 1F, Youyi Gong

Simulation Showcase **1:30 PM – 2:15 PM**

Speakers: Respond to question: How does your simulation provide ongoing education and proficiency, leading to improved patient care? How does simulation improve access to education and strengthen provider proficiency? How is simulation the link between providers, education and technology?

Mr. Cedrin Law, Senior Product Marketing Manager, CAE Healthcare

Mr. Stuart Gall, CEO, MedaPhor

- Simulation for Ongoing Education and Proficiency

Technology Showcase **2:15 PM – 3:00 PM**

Speakers: 15 minutes to respond to the following: When combined with certification, how does your equipment improve patient care?

Mr. Pengcheng Wang, Deputy General Manager, FUJIFILM SonoSite

Mr. Xuetao Zhang, Point of Care Segment Manager, GE

- New Technology for Patient Care
- Increased Access and Portability

Afternoon Tea Break **3:00 PM – 3:30 PM**

Discussion on How to Use Certification to Improve Patient Care and Provider Proficiency in China **3:30 PM – 4:30 PM**

Capacity Building and Continuing Education Center, National Health and Family Planning Commission of China (15 minutes)

Mr. Aiping Yang

- An introduction for ultrasound capacity building in China

American Chamber of Commerce in China Healthcare Working Group (15 minutes)

Mr. Jun Zhou

- How training and certification can improve sales of equipment in China
- How improved provider proficiency can benefit patient safety and commerce

Questions and Discussion (facilitated by Inteleos) **4:30 PM – 4:45 PM**

Closing Remarks **4:45 PM – 5:00 PM**

Inteleos, ANSI, Chinese Ultrasound Expert Committee

Dinner Reception **5:30 PM – 7:30 PM**

Juxiu Garden, 1F, Youyi Gong

超声医师教育认证在中国的价值研讨会

由美国贸易发展署主办，美国国家标准协会和 Inteleos 共同组织
2017 年 6 月 10 日

北京友谊宾馆，嘉宾楼一层 5 号会议室
北京海淀区中关村南大街 1 号

08:30 - 19:30

日程

注册签到 8:30 - 9:00

致欢迎辞 9:00 - 9:10
Thomas Shipp 博士、超声诊断注册技师、Inteleos 主席和董事会成员
Dale R. Cyr，工商管理硕士、注册协会执行证书、Inteleos 首席执行官及执行董事

开幕致辞 9:10 - 9:20
温凯时先生，美国贸易发展署东亚区项目主任
陆一女士，美国国家标准协会中国代表处项目协调员

中国超声专家委员会致辞 9:20 - 9:30
王金锐教授，中国超声专家委员会主任

中国超声现状和发展趋势 9:30 - 9:45
姜玉新教授，中华医学会超声分会主任委员

认证介绍 9:45 -10:30

认证流程（20 分钟）
Thomas Shipp 博士、超声诊断注册技师、Inteleos 主席和董事会成员
Dale R. Cyr，工商管理硕士、注册协会执行证书、、Inteleos 首席执行官及执行董事

- 认证价值
- Inteleos 在中国
- 资格
- 测试开发
- 知识产权
- 持续的能力
- 技术/模拟预演
- 认证进步

评估交付（15 分钟）

赵博，美国 Pearson VUE 考试公司大中国区副总裁

- 安全和网络监考点的重要性
- 生物鉴定学
- 在线处理预约
- 与认证机构完全符合
- 最高的职业环境

回顾和总结中国医师血管超声认证考试（10 分钟）

唐杰教授，中国医师血管超声认证委员会主任

茶歇 10:35 - 11:00

教育展示 11:00 - 12:30

超声应用中操作者熟练度的重要性（5 分钟）

Thomas Shipp 博士、超声诊断注册技师、Inteleos 主席和董事会成员

超声最依赖于操作者的熟练度

概述中国超声继续教育项目（25 分钟）

王金锐教授，中国超声专家委员会主任

教育是美国综合认证项目的一部分（20 分钟）

北美超声实践的现状与未来

Laurence Needleman 博士、FAIUM，托马斯杰斐逊大学

杰斐逊中美超声学者培训项目概况（15 分钟）

刘吉斌教授、FAIUM，托马斯杰斐逊大学

- 概述教育和培训是认证计划的组成部分
- 托马斯杰斐逊大学与中国的超声合作
- 接受培训的人数（截图）
- 该项目是如何在中国提高超声的护理质量

杰斐逊大学超声技师教育项目（15 分钟）

Traci Fox 博士、血管超声注册技师，超声诊断注册技师，托马斯杰斐逊大学

华西医院的超声检查程序和临床实践（20 分钟）

罗燕教授，华西医院超声科主任

- 概述华西医院与美国注册诊断超声医师协会的初始合作
- 回顾超声技师项目在华西医院的发展
- 迄今为止项目的进展
- 华西医院超声医师-技师的临床工作体系
- 未来发展（培训、电视教学、美国注册诊断超声技师认证）

午餐 12:30 - 13:30

友谊宫一层，自助餐厅

模拟展示 13:30 - 14:15

演讲人：解答问题：模拟如何提供继续教育和熟练度，从而改善患者护理？模拟如何提高教育机会和加强医师的熟练水平？模拟如何将医师、教育和技术联系起来？

Cedrin Law, CAE 医疗高级产品市场经理

Stuart Gall，Medaphor 首席执行官

- 继续教育和熟练程度的模拟

技术展示 14:15 - 15:00

演讲人：每人用时 15 分钟解答：与认证结合时，设备是如何改善患者护理？

王鹏程，富士胶片中国索诺声超声事业部副总经理

张雪涛， GE 医疗临床超声市场部经理

- 患者护理的新技术
- 增加访问和便携性

茶歇 15:00 - 15:30

浅谈如何利用认证提高中国患者护理提供者的熟练度 15:30 - 16:30

中国国家卫生和计划生育委员会能力建设和继续教育中心（15 分钟）

杨爱平主任

- 中国超声医学专科能力建设探索

美国商会医疗保健中国工作组（15 分钟）

周军，美国商会医疗卫生合作项目执行总监

- 如何通过培训和认证提高设备在中国的销售
- 超声提供者熟练度的提高如何有利于患者的安全和商业？

提问与讨论（Inteleos 主持） 16:30 - 16:45

致闭幕辞 16:45 - 17:00

Inteleos、ANSI、中国超声专家委员会

招待晚宴 17:35 - 19:30

友谊宫一层，聚秀园

Hosts and Supporting Agencies Overview

主办单位介绍

U. S. Trade and Development Agency (USTDA)

The U.S. Trade and Development Agency (USTDA) helps to promote U.S. technologies and expertise for priority development projects in emerging economies. USTDA links U.S. businesses to export opportunities by funding project planning activities, pilot projects, and reverse trade missions while creating sustainable infrastructure and economic growth in partner countries.

USTDA promotes economic growth in emerging economies by facilitating the participation of U.S. businesses in the planning and execution of priority development projects in host countries. The Agency's objectives are to help build the infrastructure for trade, match U.S. technological expertise with host country development needs, and help create lasting business partnerships between the United States and emerging economies.

USTDA's Program Activities

Project Development

Project identification and investment analysis generally involves technical assistance, feasibility studies and pilot projects that support large investments in infrastructure that contribute to host country development. Key sectors in China include the transportation, energy, and healthcare sectors.

Trade Capacity Building and Sector Development

Trade capacity building and sector development assistance supports the establishment of industry standards, rules and regulations, market liberalization and other policy reform. In China, USTDA has supported activities to support increased protection of intellectual property rights, fair and transparent government procurement practices, science-based agricultural biotechnology regulations, and standards across a wide range of industry sectors.

International Business Partnership Program

Under the Agency's International Business Partnership Program, USTDA has increased its support for programs designed to bring procurement officials to the United States to witness U.S. technology and ingenuity firsthand and develop the relationships with U.S. companies necessary to spur increased commercial cooperation with emerging economies. These investments include reverse trade missions, technology demonstrations, training and specialized sector-specific workshops and conferences.

Cooperation Programs

The Agency's success in China is due in part to the public-private cooperative programs that USTDA supports in country. These programs provide a forum wherein government agencies and private companies from both the U.S. and China can share technical, policy, and commercial knowledge relevant to a specific field. USTDA has successfully established programs based on this model in the aviation, standards and conformity assessment, energy, and healthcare sectors.

By adapting to the evolving needs of China's market and closely coordinating with Chinese decision makers, these public-private partnerships have enjoyed long-term success, providing continued trade opportunities and enhancing the development of China's key industries.

美国贸易发展署 (USTDA)

美国贸易发展署(USTDA) 致力于在新兴经济体推动经济发展和美国的商业利益。美国贸易发展署通过对项目前期，试点项目以及反向代表团赴美考察等形式的资金资助, 达到在合作伙伴国家推动可持续性基础设施和经济增长的同时帮助美国企业寻找出口机会。

美国贸易发展署鼓励美国公司积极参与新兴经济体项目所在国重点发展领域里的项目规划和实施过程中的机会。目的是帮助美国有技术优势的公司配合项目所在国的发展寻求契机，并建立长期持久合作关系。

美国贸易发展署的项目活动

项目开发

美国贸易发展署支持的项目确认和投资分析通常为了支持项目所在国大型基础设施项目投资决策前以所需要的技术援助，可行性研究分析和试点项目等。在中国的项目集中在交通，能源和医疗卫生领域。

能力建设和行业发展

能力建设和行业发展是为了帮助推动建立行业标准，法规等相关政策需求的活动。在中国，美国贸易发展署支持过的项目内容涉及知识产权，公平透明政府采购，以科学为基础的农业生物技术规范，以及涉及其他更宽泛领域涉及行业标准的内容。

国际商业伙伴关系项目

通过国际商业伙伴关系项目，美国贸易发展署加大资金投入力度，组织更多灵活多样的赴美考察团，技术交流/研讨会和培训等，选择特定的一些行业，帮助中方人员了解美国技术，掌握第一手资料，加深对美国企业的了解并能推动潜在的商务合作。

政府企业合作平台

美国贸易发展署在中国取得成功的部分原因是与其他相关机构共同支持了政府企业合作项目的平台。在这个平台上，美国和中国的政府机构和私营企业均可以共享在特定领域的技术、政策和商业知识。美国贸易发展署已经成功地在航空、标准合格评定、能源和医疗保健等行业推动了该模式。

通过适应中国市场变化的需求，和中国决策者的密切配合，这些公私伙伴关系企业积累了一些长期合作的成功经验，提供持续的贸易机会，并推动中国支柱产业的发展。

U.S.-China Standards and Conformance Cooperation Program

Sponsored by the U.S. Trade Development Agency (USTDA) and coordinated by the American National Standards Institute (ANSI), the **U.S.-China Standards and Conformance Cooperation Program** (SCCP) provides a forum through which U.S. and Chinese industry and government representatives can:

- Cooperate on issues relating to standards, conformity assessment, and technical regulations;
- Foster the relationships necessary to facilitate U.S.-China technical exchange on standards, conformity assessment, and technical regulations; and
- Exchange up-to-date information on the latest issues and developments relating to standards, conformity assessment, and technical regulations.

Beginning in 2013, ANSI will coordinate 20 workshops over a 3-year period in China under the SCCP. The workshops will cover a wide range of sectors, as proposed by interested U.S. private-sector organizations. Workshop topics will be chosen in coordination with relevant industry associations, ANSI, and USTDA.

To learn more about the U.S.-China SCCP or to express interest in sponsoring or participating in a workshop, please visit our website at:

www.standardsportal.org/us-chinasccp

FOR MORE INFORMATION
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美中标准与合格评定合作项目

由美国贸易发展署 (USTDA) 提供资助、 美国国家标准协会 (ANSI) 负责协调的美中标准与合格评定合作项目 (SCCP) 在以下几个方面为美国和中国相关行业和政府代表提供了一个论坛：

- 在标准、合格评定以及技术法规等领域的合作；
- 为促进美中在标准、合格评定以及技术法规等领域的技术交流建立必要的联系；
- 及时交流关于标准、合格评定以及技术法规等领域的 最新议题和发展情况的相关信息

根据 SCCP 项目规定，从 2013 年开始的三年内，ANSI 将在中国协调举办20场研讨会。根据美国私营业界相关组织的建议，研讨会内容将覆盖不同的行业和领域。研讨会的主题将由相关行业组织、ANSI 以及 USTDA 协调选定。

欲了解该项目的更多情况或有意赞助或参与该项目，请访问下列网站：

www.standardsportal.org/us-chinasccp

了解其他信息，请联系

Ms. Madeleine McDougall

项目经 理

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American National Standards Institute (ANSI)

As the voice of the U.S. standards and conformity assessment system, the American National Standards Institute (ANSI) empowers its members and constituents to strengthen the U.S. marketplace position in the global economy while helping to assure the safety and health of consumers and the protection of the environment.

The Institute oversees the creation, promulgation and use of thousands of norms and guidelines that directly impact businesses in nearly every sector: from acoustical devices to construction equipment, from dairy and livestock production to energy distribution, and many more. ANSI is also actively engaged in accrediting programs that assess conformance to standards – including globally-recognized cross-sector programs such as the ISO 9000 (quality) and ISO 14000 (environmental) management systems.

ANSI has served in its capacity as administrator and coordinator of the United States private sector voluntary standardization system for more than 90 years. Founded in 1918 by five engineering societies and three government agencies, the Institute remains a private, nonprofit membership organization supported by a diverse constituency of private and public sector organizations.

Throughout its history, ANSI has maintained as its primary goal the enhancement of global competitiveness of U.S. business and the American quality of life by promoting and facilitating voluntary consensus standards and conformity assessment systems and promoting their integrity. The Institute represents the interests of its nearly 1,000 companies, organization, government agency, institutional and international members through its office in New York City, and its headquarters in Washington, D.C.

美国国家标准协会（ANSI）

American National Standards Institute（ANSI——美国国家标准协会）是由公司、政府和其他成员组成的自愿组织，负责协商与标准有关的活动，审议美国国家标准，并努力提高美国在国际标准化组织中的地位。ANSI 是 IEC 和 ISO 的 5 个常任理事成员之一，也是 4 个理事局成员之一，参加 79%的 ISO/TC 的活动，参加 89%的 IEC/TC 活动。ANSI 是泛美技术标准委员会（COPANT）和太平洋地区标准会议（PASC）的成员。

美国国家标准学会（American National Standards Institute: ANSI）成立于 1918 年。当时，美国的许多企业和专业技术团体，已开始了标准化工作，但因彼此间没有协调，存在不少矛盾和问题。为了进一步提高效率，数百个科技学会、协会组织和团体，均认为有必要成立一个专门的标准化机构，并制订统一的通用标准。1918 年，美国材料试验协会（ASTM）、与美国机械工程师协会（ASME）、美国矿业与冶金工程师协会（ASMME）、美国土木工程师协会（ASCE）、美国电气工程师协会（AIEE）等组织，共同成立了美国工程标准委员会（AESC）。美国政府的三个部（商务部、陆军部、海军部）也参与了该委员会的筹备工作。1928 年，美国工程标准委员会改组为美国标准学会（ASA）。为致力于国际标准化事业和消费品方面的标准化，1966 年 8 月，又改组为美利坚合众国标准学会（USASI）。1969 年 10 月 6 日改成现名：美国国家标准学会（ANSI）。

美国国家标准学会是非赢利性质的民间标准化组织，是美国国家标准化活动的中心，许多美国标准化学协会的标准制修订都同它进行联合，ANSI 批准标准成为美国国家标准，但它本身不制定标准，标准是由相应的标准化团体和技术团体及行业协会和自愿将标准送交给 ANSI 批准的组织来制定，同时 ANSI 起到了联邦政府和民间的标准系统之间的协调作用，指导全国标准化活动，ANSI 遵循自愿性、公开性、透明性、协商一致性的原则，采用 3 种方式制定、审批 ANSI 标准。

ANSI 现有工业学、协会等团体会员约 200 个，公司（企业）会员约 1400 个。领导机构是由主席、副主席及 50 名高级业务代表组成的董事会，行使领导权。董事会闭会期间，由执行委员会行使职权，执行委员会下设标准评审委员会，由 15 人组成。总部设在纽约，卫星办公室设在华盛顿。

Inteleos is a non-profit certification organization that delivers rigorous assessments and cultivates a global community of professionals dedicated to the highest standards in healthcare and patient safety. Inteleos is the management and governance organization to the American Registry for Diagnostic Medical Sonography® (ARDMS®) and the Alliance for Physician Certification &Advancement™ (APCA™).

Governed by a volunteer Board of Directors, Inteleos sets the strategic directions, holds fiduciary responsibilities, provides psychometric consulting services, manages all intellectual property and oversees the development of future assessment programs for medical professionals such as nurse midwives, nurse anesthetists, nurse practitioners, physician assistants and many others.

Inteleoshas over 112,000 certified health providers:

- 90,000 sonographers
- 22,000 physicians

Inteleos currently offers the following assessments*(italicized are physician-only):*

- Sonography Principles and Instrumentation
- Abdomen
- Adult Echocardiography
- Breast
- *Cardiac Computed Tomography*
- Fetal Echocardiography
- *Musculoskeletal Sonography*
- Musculoskeletal Sonographer Examination
- *Nuclear Cardiology*
- Obstetrics and Gynecology
- Pediatric Sonography
- Pediatric Echocardiography
- *Physicians' Vascular Interpretation*
- Vascular Technology

International Assessment Programs:

- *Abdomen – Latin America*
- *Obstetrics and Gynecology – Latin America*
- *Physicians Vascular Interpretation – China*

In-Progress Certification Programs:

- Midwife Sonography Certificate
- Accredited Vascular Scientist (AVS)

Future Assessments:

- Advanced Care Provider Ultrasound Assessment

International Experience

Inteleos has extensive experience providing healthcare certification assessments globally. Inteleos has two Latin American assessments, developed and delivered in Spanish, the Vascular Scientist written assessment in Great Britain and Ireland; as well as the Registered Physician in Vascular Interpretation (RPVI) Exam in China. The RPVI-China assessment has been delivered in China since 2006 and was developed in close partnership with the Chinese Ultrasound Doctors Association (CUDA), as well as other physician subject matter experts in China. The RPVI-China certification exam assesses competency in the skills, knowledge and abilities of vascular ultrasound, for the sole purpose of further improving patient care and safety in China. Through a growing network of strategic partnerships, Inteleos hopes to create a global standard of proficiency for ultrasound certification.

Inteleos是一家非营利性的认证机构，提供严格的评估，致力于建立一个医疗和患者安全最高标准的专业人士的全球社区。Inteleos是一家整体性治理和管理美国注册诊断医疗超声医师协会（ARDMS）和医师认证和进步联盟（APCA）的机构。

由志愿董事会管理，Inteleos决定战略方向，承担委托责任，提供心理咨询服务，管理所有的知识产权和监督医疗专业人员如助产师、麻醉师、执业护士、医生助理和其他人员未来评估项目的发展。

Inteleos拥有超过112000名认证的医疗服务提供者：

- 90000名超声技师
- 22000名医生

Inteleos 目前提供以下评估（*斜体仅限医生*）：

- 超声原理与仪器
- 腹部超声
- 成人超声心动图
- 超声检查
- *心脏计算机断层扫描医师考试*
- 胎儿超声心动图
- *肌肉骨骼超音波医师考试*
- 肌肉骨骼超声检查
- *核心脏病学医师考试*
- 妇产科
- 小儿超声
- 小儿超声心动图
- *血管超声医生*
- 血管技术

全球评估项目：

- *腹部-拉丁美洲*
- *妇产科-拉丁美州*
- *血管超声医生 - 中国*

正在进行的认证项目：

- 助产师超声证书
- 认可血管科学家（AVS）

未来评估：

- 先进保健提供者超声评估

国际经验

Inteleos 在提供医疗保健全球认证评估方面有着丰富的经验。Inteleos在拉丁美洲有两个以西班牙语开发并交付的评估项目；在大不列颠和爱尔兰的血管科学家笔试；以及在中国的血管超声注册医生（RPVI）考试。RPVI评估自2006年在中国交付以来，一直与中国超声医师协会（CUDA）以及相关医师专家密切合作开发。RPVI认证考试评估血管超声的技能、知识和能力，以进一步提高中国的患者护理和安全为唯一目的。通过与越来越多的战略合作伙伴的沟通互助，Inteleos希望创造一个超声认证能力的全球标准。

GATEWAY TO THE GLOBAL ULTRASOUND COMMUNITY

www.SONOWORLD.com

THE MISSION OF SONOWORLD

SonoWorld's mission is to improve patient care globally by removing barriers to education for healthcare professionals who wish to deliver quality ultrasound services. This mission is accomplished by providing free access to video lectures, cases, articles, textbook chapters, news and information about ultrasound – all authored and presented by globally-recognized experts. These resources are free to everyone, anywhere in the world via the Internet.

SONOWORLD CONTENT

- ☐ Video lectures by luminary speakers – new lectures released every week
- ☐ Biweekly clinical challenge case – so you can test your diagnostic skills
- ☐ Weekly e-newsletter featuring what's new on SonoWorld
- ☐ Free and low-cost CMEs for both physicians and sonographers
- ☐ Top ultrasound-related news stories from around the world
- ☐ Access to white papers and journal articles
- ☐ A Virtual Exhibit Hall with ultrasound industry and product information

SONOWORLD MEMBERSHIP

To gain full access to the resources, join the SonoWorld community by registering for a free membership. It only takes a few minutes to become part of the world's largest ultrasound community. Visit www.SONOWORLD.com to register.

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Visit: www.SONOWORLD.com to register for a FREE membership today!

GATEWAY TO THE GLOBAL ULTRASOUND COMMUNITY

www.SONOWORLD.com

TESTIMONIALS

"This is an excellent free ultrasonography website…The images are of good quality and ultrasonographic signs as well as how to perform the scan are explained. Topics on the abdomen, pelvis, vascular system and even obstetrics are covered in great detail and clarity. Another good feature is that the normal anatomy is shown."

- Mushtaq Shah, MD

"SonoWorld…is incredibly relevant for point-of-care clinicians... free super-fast registration and some really exceptional quality content."

- Ultrasound Podcast (Matt Dawson, MD; Mike Mallin, MD; and Mike Stone, MD)

"SonoWorld is fortunate to feature lecturers of expert stature and in-depth experience who are also experts in disseminating their knowledge in these didactic sessions."

- Christopher R. B. Merritt, MD

"[SonoWorld] is a wonderful site which provides free ultrasound training."

-Tom Wade, MD

Visit: www.SONOWORLD.com to register for a FREE membership today!

全球超声社区门户网站

www.SONOWORLD.com

SONOWORLD 使命

SonoWorld 的使命是通过提供全球公认的专家所撰写或提出的免费超声视频讲座、案例、文章、教科书章节、新闻和信息消除希望提供高质量超声服务的医疗保健专业人士的教育障碍来改善全球的患者护理。这些资源任何人在世界上任何地方都可以通过互联网免费获取。

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- ☐ 双周的临床挑战案例 – 你可以测试你的诊断技能
- ☐ 每周电子讯刊介绍新视点
- ☐ 为超声医生或技师提供免费和低廉的 CME
- ☐ 来自世界各地的超声相关新闻故事
- ☐ 获得白皮书和期刊文章
- ☐ 虚拟展览厅与超声行业和产品信息

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全球超声社区门户网站

www.SONOWORLD.com

推荐信

“这是一个很好的免费超声网站，图像质量好，超声检查以及如何执行扫描都有解释。关于腹部、骨盆、血管系统，甚至产科的主题都非常详细和清晰。另一个特点是显示正常的解剖结构。”

- Mushtaq Shah, MD

“SonoWorld…现场护理医疗息息相关…免费快速注册和真正卓越的质量内容。”

- Ultrasound Podcast (Matt Dawson, MD; Mike Mallin, MD; and Mike Stone, MD)

“SonoWorld 有幸邀请到具有专家声望以及丰富经验的讲师，他们善于在教学中传播知识”

- Christopher R. B. Merritt, MD

“[SonoWorld]是一个非常好的网站，提供免费的超声培训。””

-Tom Wade, MD

APCA™
Alliance for Physician Certification & Advancement

中国医师血管超声认证考试（RPVI-China）

中国医师血管超声认证考试（RPVI-China）代表了目前中国血管超声诊断的最高标准。

更多信息，请访问www.APCA.org/RPVI-China

RPVI-China认证证书的优势：

- 持有业界公认的证书，享受更多的就业机会。
- 持有全球认可的证书，赢得雇主和同行的关注。
- 履行您为“优质医疗与患者安全”而不断努力的承诺。
- 加入拥有107,000名专业人士的全球社区，专注实现”优质医疗与患者安全“的最高标准。

86% 的RPVI-China认证持有者会向他们的同事推荐此考试。

由于RPVI-China认证能为持有者带来更多就业和晋升的机会，
58%的调查访问者持有该认证。

APCA™
Alliance for Physician Certification & Advancement

APCA™ is part of the non-profit Inteleos™ family of certification alliances.

申请资格及要求

参加RPVI-China考试，您需符合以下要求：

- 持有中国医师执照
- 持有医学学士学位
- 过去的36个月中，在中国执行完成了超过500例血管超声诊断。这些诊断必须面向真实的病人，并在医院、诊所或私人诊所等环境中完成。APCA不接受志愿者、模拟、教学、免费、交换或兽医等形式的诊断经验

考试形式、时长及价格

- RPVI-China的考试语言为中文，共包含110道选择题，每题有四个选项。
- 考生可通过点击选项左侧的按钮做答。
- 考试时长为2个小时。
- 考试费150美金，需要在报名阶段交纳，交费完成后方可预约考位。

考试大纲及学习资料

- RPVI-China认证考试大纲: 英文, 中文
- 更多有关学习资料的信息，请查询中国医师协会超声医师分会（CUDA）网站。

RPVI-China认证考试申请及考试时间

RPVI-China认证考试的报名时间为 2017 年 4 月 13 日 - 8 月 3 日。考试时间为 2017 年 8 月 1 日 - 8 月 28 日。更多信息请访问 www.APCA.org/RPVI-China

考试费

考试申请于 2017 年 4 月 13 日开放注册，申请期间必须支付 150 美元的考试费。考生必须完成付款以便继续预约。

只能使用Visa，Mastercard，American Express或Discover信用卡支付考试费。成功付费后，您将会收到一封包含预约考位详细指导的电子邮件确认函。

PVI-China认证考试预约时间

所有预约必须在 2017 年 8 月 15 日之前完成.交纳考试费后，您会收到一封考试确认邮件，其中包含有关预约考试的详细指导。

医师认证和进步联盟（APCA）

- 医师认证和进步联盟（APCA）与中国医师协会超声医师分会（CUDA）合作开发了”中国医师血管超声认证考试（RPVI-China）”。
- APCA 专注于医师的认证需求，并协助他们持续履行对“优质护理与患者安全”的承诺。

其它问题

若您对 RPVI-China 认证有任何疑问，敬请查看以下信息或发送电子邮件至 PVICHINA@APCA.org.

更多信息，请访问www.APCA.org/RPVI-China.

ARDMS认证项目（RDMS, RDCS, RVT, and RPVI）经由美国国家标准学 (ANSI) 鉴定确认，并通过了国际标准化组织（ISO）17024号标准认证。

Family of Certification Alliances

Inteleos™

APCA™ Alliance for Physician Certification & Advancement
www.APCA.org

ARDMS® American Registry for Diagnostic Medical Sonography
www.ARDMS.org

"APCA was created for physicians, is led by physicians and represents the global physician community whose goal is to improve standards of care and patient safety through certification."

Luciana Young, MD
Pediatric Cardiologist
Chair, APCA Council

"APCA certifications are respected, globally recognized and represent the highest standards of care."

Marnix Van Holsbeek, MD
Radiologist with Musculoskeletal Radiology interest
Vice Chair, APCA Council

APCA™
Alliance for Physician Certification & Advancement

1401 Rockville Pike, Suite 600 • Rockville, MD 20852

APCA.org
1-800-943-1709
240-386-1738

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APCA™
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Creating the Global Standards of Physician Excellence in Patient Care

Discover APCA

APCA meets the certification needs of physicians around the world in the rapidly expanding field of medical imaging. Launched in mid-2016, APCA represents 20,000 physicians dicated to continual learning and providing high-quality and compassionate patient care ough certification.

APCA Certifications

APCA is pleased to offer the following certifications to the physician community. For additional information, please visit **APCA.org**.

RPVI®
Registered Physician in Vascular Interpretation®

RPVI-China™
Registered Physician in Vascular Interpretation in China™

RMSK®
Registered in Musculoskeletal® sonography

CBCCT™
Certification Board of Cardiovascular Computed Tomography™

CBNC™
Certification Board of Nuclear Cardiology™

Latin American Ultrasound Certificate Program

Point-of-Care Ultrasound (POCUS) Academy

Benefits of Certification

APCA certifications support physicians interested in achieving excellence in medical imaging. Certification distinguishes physicians as experts in their field and demonstrates that physicians have the knowledge and skills needed to provide exceptional care to patients.

Physicians who hold APCA certifications:

- Represent the highest standard in their field
- Demonstrate a commitment to patient care and safety
- Increase their career opportunities
- Gain visibility and credibility in the field
- Reassure patients and employers that they are committed to excellence in medical imaging

Volunteer

Write the future of diagnostic imaging by volunteering with APCA to develop certification examinations in a collaborative setting with colleagues from around the world. For details and to apply, visit **APCA.org/Volunteer**.

Mission Statement

APCA recognizes physicians' enduring commitment to the highest quality patient care through rigorous assessments and continual learning.

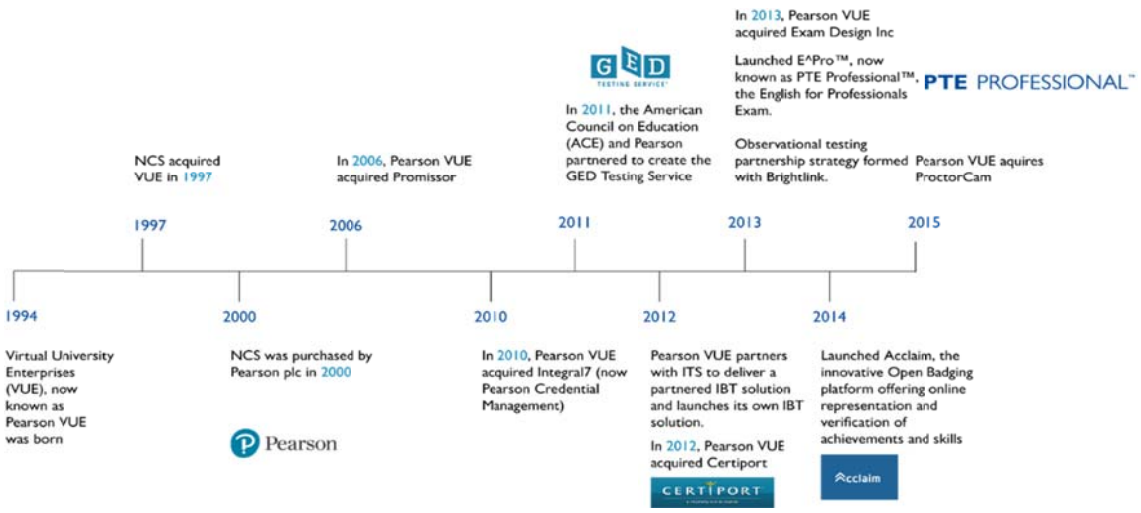
Pearson VUE 公司

Pearson VUE 公司是一家全球最大的计算机化考试和测评公司。本公司与各种规模的机构联手，打造灵活多样、量身定制的测评系统，并在安全可靠的考试环境中提供考试服务。本公司在澳大利亚、美国、英国、迪拜、印度、中国和日本设有办事处，考试中心网络包括 5,500 多个考试中心，遍及 180 个国家。2016 年，本公司代表众多市场中的 450 家客户发送了 1,490 万场考试，涵盖政府、学术/招生、保健和医药、金融服务、信息技术、人力资源和交通运输等行业。

本公司全球考试服务有以下亮点：

- ✓ “英国驾驶理论考试”是世界上最大的独家计算机化考试项目，每年举办 200 万门次考试；
- ✓ 提供特许公认会计师公会（ACCA）和特许管理会计师公会（CIMA）全球考试服务；
- ✓ 提供领先的医学考试，包括：皇家全科医生学院（RCGP）；英国皇家医学院联合会（RCP）；澳大利亚医务委员会(AMC)；沙特阿拉伯卫生专业委员会(SCfHS)；阿布扎比卫生局(HAAD)；国家护理委员会（NCSBN）和 50 多个美国专业委员会考试；
- ✓ 提供英国临床能力测试（UKCAT），用于英国大学医学和牙科学院联合体的选拔过程；
- ✓ 独家提供美国研究生管理入学考试（GMAT®）；
- ✓ 在世界各地提供微软、思科、SAP、惠普、甲骨文，思杰和威睿等顶级公司的 IT 认证考试

Pearson VUE 公司的创新历程表明，我们是一家以客户需求为本，以市场为导向，致力于持续发展的企业。



近期部分重大收购项目和新产品如下：

- ✓ **ExamDeveloper™：**由心理测量师设计、旨在减少创建考试所需时间和成本的综合性试题开发应用程序.。
- ✓ **Certiport：**面向学术机构和 IT 专业人士、基于绩效的职业性认证考试和实务测试解决方案的全球领军者。
- ✓ **扩展考试服务：**Pearson VUE 的一体化考试平台，支持用于在考试中心之外发送考试的多种服务模式：
  - ■ **非监控考试发送** - 支持在无安全保障环境（例如考生家里、办公室或其他地点）进行无监考在线考试发送。
  - ■ **任何地点监控考试发送** - 支持在客户管理场地（例如会场和活动现场）及客户运营场所发送高风险考试。
  - ■ **在线监控考试发送** - Pearson VUE 近期收购了 ProctorCam，一家领先的在线监考公司，以帮助客户采用基于网络摄像机的先进技术，在常规“现场监考”环境之外对考生的考试实施监督。
- ✓ **mindhub™：**一家为客户定制的、致力于促进现有或全新认证及学习产品销售的网络商店平台。
- ✓ **学习平台:**本公司的学习管理系统提供 eLearning 课程及测试考试，帮助考生为高风险考试做好准备。
- ✓ **Provusion™:** 一款亮眼的新服务，旨在利用现有培生网络，协助本公司客户开展认证产品营销和销售。

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Pearson VUE 公司是全球最大的教育公司培生集团旗下公司。培生的多媒体学习工具及考试项目运用于世界数百万人群的教育事业，高于任何其他私营企业。培生公司在伦敦和纽约证交所上市（英国股票代码：PSON；纽约证交所代码： PSO），2016 年营业收入为 45 亿英镑，员工逾 35,000 人，遍布 70 个国家。

CAE Healthcare

CAE Healthcare delivers educational tools that help healthcare professionals provide safe, high quality patient care. Our end-to-end spectrum of simulation solutions includes patient, interventional and imaging simulation, audiovisual solutions and learning applications.

With a broad array of products, CAE Healthcare is able to offer targeted training to hospitals, medical schools, emergency response teams, military branches and nursing, respiratory and allied health programs. Each CAE Healthcare product is developed in collaboration with clinicians and clinical educators whose aim is to ensure physiological accuracy and educational relevance.

CAE Healthcare's Ultrasound portfolio consists of Vimedix, a high-fidelity ultrasound simulator; Blue Phantom, a line of realistic ultrasound task trainers; and ICCU, an E-Learning platform with numerous self-directed courses about ultrasound. Its strong partnerships with the medical community have led to the development of key initiatives including, but not limited to, the International Nursing Association for Clinical Simulation and Learning (INACSL) fellowship as well as the Anesthesia SimSTAT screen-based simulation platform with the American Society of Anesthesiology (ASA). With a commitment to quality of care and patient safety CAE Healthcare strives to be your partner of choice in healthcare education.

CAE Healthcare is one of the three core businesses of CAE (NYSE: CAE; TSX: CAE), a global leader in the delivery of training for the civil aviation, defence and security, and healthcare markets.

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MedaPhor

Listed on the London Stock Exchange AIM market (AIM: MED), MedaPhor is a global developer of advanced ultrasound skills training simulators for medical professionals. Founded in 2004, the Company is headquartered in Cardiff, UK and Atlanta, USA, with customers in over 30 countries across the world.

Medaphor owns three of the world's leading ultrasound training and examination simulators – ScanTrainer, ScanTrainer Examine and HeartWorks:

ScanTrainer is an ultrasound scanning skills training simulator and CPD education platform offering an immersive, 24/7 self-directed learning experience. Features include real feel haptic feedback, real full-anatomy scans, ScanTutor real-time expert guidance, structured curriculum learning, metric-based assessment and a range of cloud-based features including the unique ability for a doctor to upload their own patient cases onto the simulator. ScanTrainer enables faster and better skills and knowledge acquisition at any stage of a trainee's ultrasound learning pathway.

ScanTrainer Examine is a cloud-based ultrasound diagnostic skills training simulator. It offers a library of over 500 pathologies and normal patient scans to help medical practitioners learn key diagnostic skills. ScanTrainer Examine also enables ultrasound educationalists to use the simulator as a virtual patient skills assessment tool for examination and certification.

HeartWorks is recognized globally as the leading simulation solution for education in echocardiography, cardiac anatomy and lung ultrasound. Developed by Consultant Cardiac Anesthetists at University College London Hospital, it is unrivalled for quality, accuracy, and realism in the teaching of transthoracic and transoesphageal echocardiography. From the development of the most anatomically correct and realistic 3D heart to a range of fully interactive mannequin based simulators, HeartWorks remains at the cutting edge of simulation technology with a growing portfolio of simulation products for clinical skills acquisition and assessment that help prepare clinicians to deliver quality care to the patients.

FUJIFILM SonoSite

From behind-the-scenes experimental work for the U.S. Department of Defense to today's highly advanced ultrasound systems used around the globe, SonoSite has been defining and redefining next-generation point-of-care (POC) ultrasound as its recognized market leader. Since the company's early pioneering days in the 1980s, SonoSite has continued to enjoy remarkable growth while earning worldwide recognition for its progressive product line, educational programs, and advocacy for a broader understanding of ultrasound's multiple benefits.

SonoSite began originally when the D.O.D awarded a DARPA (Defense Advanced Research Projects Agency) grant to SonoSite's parent company ATL Ultrasound, Inc., to create a portable ultrasound system that weighed less than 10 pounds and was durable enough to withstand the severe, unpredictable conditions of the battlefield. It took the leveraging of over a decade of expertise in digital ultrasound and customized ASIC (application-specific integrated circuit design) technology to meet the project goals, but the result was SonoSite's first point-of-care (POC) ultrasound machine—the SonoSite 180™ system. The 180 represented both a major step forward in technology and a revolutionary approach to bringing ultrasound to the patient, wherever the patient's point of care might be.

In April 1998, ATL spun off SonoSite as a separate, public company with a large-company IP portfolio. Between 1998 and 2012, SonoSite created five more ultrasound systems and numerous accessories while advancing its industry-leading technology. By 2012, 70,000 systems had been installed worldwide and the company was represented by 14 subsidiaries and a global distribution network in over 100 countries. SonoSite expanded into the preclinical research market when, in late June 2010, it acquired Canadian company VisualSonics and its ultra high-frequency micro-ultrasound technology. In March 2012, SonoSite became a wholly owned subsidiary of FujiFilm.

Currently, SonoSite has in excess of 145 patents and holds a number of prestigious design awards. It continues to be the world leader in point-of-care ultrasound.

富士胶片索诺声

从幕后为美国军方进行医学超声技术的前沿研究，到今天在全球各地拥有众多超声系统的装机，索诺声公司作为全球 Point-of-Care 超声的引领者，一直致力于对 Point-of-Care 超声解决方案的推广和定义。自 20 世纪 80 年代公司初创至今， 索诺声公司快速成长，因其不断提升的产品线,临床教育培训项目和对 Point-of-Care 可视化超声理念的推广,获得了全球市场的普遍认可。

索诺声成立之初（母公司为 ATL 超声）获得美国国防部国防高级研究项目署（DARPA）资助,设计研发重量小于 5kg 的便携式超声系统。DARPA 要求这一系统可以坚固耐用，以适应战场上的各种严酷和未知的情况。正式基于这一要求，索诺声利用其积累十余年的数字超声技术和可定制化的专用集成电路芯片（ASIC）技术出色的完成了这个项目，研制出索诺声的第一代 Point-of-Care 超声系统 – 索诺 4 声 180 系统。索诺声 180 系统不仅代表了技术上的一次伟大飞跃，同时革命性的推出 Point-of-Care 超声理念，将床旁超声带给全球各个角落的患者。

1998 年 4 月，索诺声从 ATL 分离，成为一家独立运营的上市公司。在 1998 年和 2012 年之间，技术提升和不断进步的推动下，索诺声公司又相继推出了 5 款超声产品和一些列配附件。截至 2012 年，索诺声产品已在全球拥有超过 70,000 台装机，在 14 个国家和地区建立海外分公司，销售网络遍布全球 100 多个国家。2010 年 6 月下旬，索诺声公司并购了总部设在加拿大，致力于提供超高频微超声成像解决方案的 VisualSonics 公司，使得索诺声的市场扩大到临床前研究领域。2012 年 3 月，索诺声成为富士胶片全资子公司。

自成立以来，索诺声的轻巧、坚固的产品一直引领者 Point-of-Care 超声市场。从大型医院的急诊科到偏远的村庄，索诺声的产品被超过 21 种医学学科门类所应用，索诺声向全球临床专业人士，提供了一种经济高效安全的解决方案。2012 年 7 月召开的第 50 届西雅图国际博览会，华盛顿州全球健康联盟推选索诺声 NanoMaxx 超声系统作为华盛顿州为全球医疗保健事业所作的创新贡献，从而表彰索诺声品牌对全球医疗事业的贡献和影响力。

截至目前，索诺声已拥有超过 145 项专利并获得了诸多著名的设计奖项，并将继续引领全球 Point-of-Care 超声可视化的发展。

GE Healthcare

GE Healthcare provides transformational medical technologies and services to meet the demand for increased access, enhanced quality and more affordable healthcare around the world. GE (NYSE: GE) works on things that matter - great people and technologies taking on tough challenges. From medical imaging, software & IT, patient monitoring and diagnostics to drug discovery, biopharmaceutical manufacturing technologies and performance improvement solutions, GE Healthcare helps medical professionals deliver great healthcare to their patients. For more information about GE Healthcare, visit our website at www.gehealthcare.com.

GE 医疗

GE 医疗集团提供革新性的医疗技术和服务，以满足需求，使全世界更多的人能够以更可负担的成本获得更好的医疗服务。GE（纽约证交所：GE）专注于世界至关重要的问题，以优秀人才和领先技术致力于应对行业重大挑战。GE 医疗集团在医学成像、软件和信息技术、患者监护和诊断、药物研发、生物制药技术、卓越运营解决方案等多个领域，助力专业医务人员为患者提供优质的医疗服务。

Speaker Biographies

演讲人介绍

Dr. Thomas D. Shipp, RDMS
Inteleos / Brigham & Women's Hospital

Tom is the Chair of the Board for Inteleos, the umbrella governance and management organization for the American Registry for Diagnostic Medical Sonography (ARDMS) and the Alliance for Physician Certification and Advancement (APCA). Tom began his tenure with ARDMS in the early 2000's with the initial development of the fetal echocardiography examination. He subsequently was elected to serve on the Board of Directors, and also served as Treasurer and Vice-Chair prior to becoming Chair of the ARDMS Board and then the inaugural Chair of the Inteleos Board. Inteleos is a dedicated ANSI-ISO 17024 accredited organization with 115,000 active certificants across 70 countries and delivers computer-based examinations in 28 countries. Inteleos global expansion includes customized examinations in China and is presently developing a Latin American physician-based ultrasound certification program for a diverse physician practice population.

Dr. Shipp is a perinatologist who specializes in the use of ultrasound in Obstetrics and Gynecology. He completed his residency in Obstetrics and Gynecology at the University of Chicago, Chicago, IL and his fellowship in Maternal-Fetal Medicine at Brigham & Women's Hospital, Boston, MA. Dr. Shipp is currently the Vice President of Diagnostic Ultrasound Associates, PC, Brookline, MA, an academic private ultrasound practice specializing in high-risk obstetrics and gynecology and is also a perinatologist in the Obstetrical High Risk Ultrasound Unit at Brigham & Women's Hospital, Boston, MA.

Dr. Thomas D. Shipp
超声诊断注册技师
Inteleos /布列根和妇女医院

Tom 是 Inteleos 董事会主席，Inteleos 是一家整体性治理和管理美国注册诊断医疗超声医师协会（ARDMS）和医师认证和进步联盟（APCA）的机构。Tom 于 2000 年就任 ARDMS，因首次开发胎儿超声心动图检查而被选入董事会，任财务主管和副主席，随后被任命为 ARDMS 董事会主席及 Inteleos 董事会荣誉主席。Inteleos 是美国国家标准协会 ANSI-ISO 17024 认证及国际标准化组织（ISO）认可的组织，拥有活跃在 70 个国家的 115000 名持证者，并在 28 个国家提供在线考试项目。Inteleos 全球扩张包括在中国定制考试，目前正在开发一个建立在拉丁美洲医生基础上的针对不同的医生执业群的超声认证项目。

Shipp 博士是围产期医生，专攻妇产科超声的使用。他在芝加哥大学妇产科完成了住院实习，并在马萨诸塞州波士顿布列根和妇女医院母胎医学任研究员。Shipp 博士目前任布鲁克林诊断超声协会任副主席一职，专门从事高危妇产学术私人超声实践，也是马萨诸塞州波士顿布列根和妇女医院产科高危超声室的围产期医生。

Dale R. Cyr
Inteleos

Dale is the Chief Executive Officer and Executive Director for Inteleos, the umbrella governance and management organization for the American Registry for Diagnostic Medical Sonography (ARDMS) and the Alliance for Physician Certification and Advancement (APCA). Dale has been an executive within the certification community for 17 years. Inteleos is a dedicated ANSI-ISO 17024 accredited organization with 115,000 active certificants across 70 countries and delivers computer-based examinations in 28 countries. Inteleos global expansion includes customized examinations in China and is presently developing a Latin American physician-based ultrasound certification program for a diverse physician practice population.

Dale has given numerous lectures and workshops in areas of business and certification throughout the world and presently sits on the Board of Directors for the American National Standards Institute (ANSI) and is the Chair of the Association of Talent Development (ATD) Credentialing Institute. Dale is also a co-inventor of patent for a new type of test question and measurement.

Dale has an MBA in finance from the Albers School of Business and Economics, Seattle, WA and also holds the Certified Association Executive (CAE) credential from the American Society of Association Executives (ASAE).

Dale R. Cyr
Inteleos

Dale 是 Inteleos 的首席执行官和执行董事，Inteleos 是一家整体性治理和管理美国注册诊断医疗超声医师协会（ARDMS）和医师认证和进步联盟（APCA）的机构。Dale 在认证中心担任主管已有 17 年。Inteleos 是美国国家标准协会 ANSI-ISO 17024 认证及国际标准化组织（ISO）认可的组织，拥有活跃在 70 个国家的 115000 名持证者，并在 28 个国家提供在线考试项目。Inteleos 全球扩张包括在中国定制考试，目前正在开发一个建立在拉丁美洲医生基础上的针对不同的医生执业群的超声认证项目。

Dale 在全球就商业及认证领域作过多次讲座和研讨会的报告，现任职美国国家标准协会（ANSI）董事会，同时还是人才发展协会（ATD）认证机构的主席。Dale 也是一项新型测试问题和测量专利的共同开发人。

Dale 拥有华盛顿州西雅图阿尔伯斯商业与经济学院金融硕士学位，还持有美国经营者协会（ASAE）的注册协会执行证书（CAE）。

Steven Winkates
Director of Program Management, East Asia Region
U.S. Trade and Development Agency (USTDA)

Steven Winkates is the Director of Program Management for the East Asia Region at USTDA, based at the U.S. Embassy in Beijing, China. He is responsible for managing USTDA's activities in China and Mongolia, directing business development efforts,coordinating with relevant stakeholders in both the region and the United States, and marketing USTDA services to potential partners in both countries.

Prior to this position, Mr. Winkates worked in Beijing for a consulting firm which specializes in developing transportation infrastructure projects. He also previously served as a Country Manager at USTDA, covering China and Southeast Asia during his tenure, and as a Policy Analyst at the U.S. Department of Commerce.

Mr. Winkates holds a Master of Public Policy from Georgetown University and a Bachelor of Arts from Rhodes College.

温凯时
美国贸易发展署东亚区项目主任

温凯时的职务是美国贸易发展署东亚区项目主任，就任于美国驻华使馆。他负责美国贸易发展署在中国和蒙古的项目，指导业务拓展，协调项目所在国相关方与美方的关系，并推动美国贸易发展署与两国潜在合作伙伴的合作。

在就任之前，温凯时在北京一家从事交通基础设施项目的美国咨询公司工作。在此之前，他担任过美国贸易发展署负责中国，东南亚项目的项目经理。还有过在美国商务部从事政策分析的经历。温凯时拥有罗德大学文学学士和乔治城大学公共政策硕士学位。

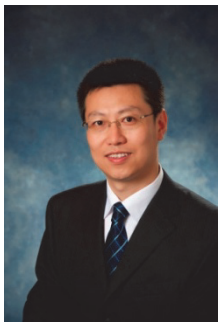
Dr. Yuxin Jiang / 姜玉新
北京协和医院超声诊断科主任医师、教授、博士生导师，北京协和医院书记，副院长
中华医学会超声医学分会主任委员
北京协和—美国杰斐逊超声教育中心主任
中国医师协会超声医师分会副会长
亚洲超声医学与生物学联合会理事

医疗与临床研究工作主要方向：超声造影、乳腺癌早期诊断、甲状腺结节超声诊断、血管与妇产科超声。承担了国家“九五”、“863 科技攻关”、“十一五”国家科技支撑计划、国家自然科学基金、教育部博士点基金等多项课题。科研成果多次获得中华医学科技进步奖。发表论文及合作发表论文 100 余篇。主编多部超声诊断学专著及教材。曾获中华医学科技一等奖 1 项、二等奖 1 项、三等奖 2 项，教育部科技进步二等奖 1 项。

Dr. Jinrui Wang / 王金锐
北京大学第三医院超声科主任医师，教授，博士生导师
中美超声学者培训项目中方主任
内蒙古鄂尔多斯—美国杰斐逊超声教育中心主任

是中国超声医学领域的领军人物之一，尤其在介入超声和声学造影方面，在国内具有很大影响力。科研建树成果斐然，完成科研课题 21 项，9 项成果获省部级科技进步奖，其中 8 项被广泛应用于临床。主编著作 5 部，其中《实用腹部超声诊断学》获第九届中国图书奖和北京市科技进步二等奖。主译著作 3 部，副主编著作 5 部，参编著作 27 部，SCI 及核心期刊发表论文 100 余篇。中华医学会超声分会第六、七届常务委员，中国医学影像技术研究会超声分会常务副主任委员，中国生物医学工程学会超声分会副主任委员，中华医学会“中华医学超声杂志（电子版）”副总编辑，“中国医学影像技术”副主编，“中国医学影像学杂志”副主编，“医学参考报超声医学频道”常务副主编。

Charles Zhao
Vice President, Pearson VUE Greater China



Mr. Charles Zhao joined Pearson VUE with an in-depth insight in service industry and in integration of local market demands with international developing trends. Since 2005, Mr. Zhao led different teams in Pearson VUE China office including channel sale and business development, and has taken the role of country manager to oversee all Pearson VUE's business in the Greater China market since Jul 2012. During his 12 year tenure at Pearson VUE, Mr. Zhao has grown with the company's APAC penetration with his rich and valuable experience in testing and assessment industry from strengthening channel presence, boosting testing volume to exploring new markets.

赵博
Pearson VUE 大中华区副总裁

赵博生先生将其在服务行业的丰富经验以及在跨国环境的工作经历带入了 Pearson VUE，自 2005 年加入 Pearson VUE 后，先后担任中国区渠道发展部经理，业务拓展部经理并于 2012 年 7 月开始全面负责 Pearson VUE 中国区业务；在长期与客户密切合作的过程中，积累了在各种复杂环境下扩充考试渠道、提高考试量及本地业务拓展的宝贵经验。

Dr. Jie Tang

Director of PVI-China

The honorary director, chief physician and doctor tutor, department of ultrasound, PLA general hospital

Chairman, Association of ultrasound in medicine of PLA

Chairman, Ultrasound branch, China International Exchange and Pormotive Association for Medical and Health Care

Former chairman, Chinese Ultrasound Doctor Association

Chinese, Beijing Institute of Ultrasound Medicine

Chief Editor, Chinese Journal of Medical Ultrasound (Electronic Edition)

There were a total of 19 research funds, included 7 of which were National Natural Science Foundation of China.

唐杰

北京解放军总医院超声医学科主任医师，教授

曾任中国医师协会超声医师分会会长，北京超声医学学会会长，中国医学影像技术研究会超声分会副主任委员，血管和浅表器官专业委员会主任委员；中国抗癌协会肿瘤影像专业委员会常务委员；《中华超声医学杂志》（电子版）常务编委；中华超声医学会北京分会血管和小器官专业组副组长；中华医学超声分会青年委员；全军超声专业委员会委员；《中华超声影像杂志》、《中国超声医学杂志》、《中国医学影像杂志》、《中国介入影像与治疗学》等杂志的编委或特约审稿专家。曾在美国 Albany Medical College 放射科作研究学者。擅长腹部及血管彩超检查；超声造影、穿刺活检与介入治疗。应用彩色多普勒对颈部、四肢、腹部血管和门静脉进行临床研究，由人民卫生出版社出版了《腹部和外周血管彩色多普勒诊断学》。相关研究曾获得国家自然科学基金、军队医药卫生和解放军总医院科研课题，经直肠超声引导下系统穿刺活检在前列腺疾病中的应用研究获军队医疗成果二等奖。

Laurence Needleman

MD is Associate Professor of Radiology and Director, Division of Ultrasound and Division of Body CT at Department of Radiology, and also the Medical Director, Non-Invasive Vascular Laboratory, Departments of Radiology and Surgery, Thomas Jefferson University Hospital, Philadelphia, USA. He is the President, Board of Directors, Intersocietal Accreditation Commission – Vascular Testing since 2011 and has been on the board for many years. He has chaired various committees for ACR-AIUM-SRU Practice Guidelines for vascular examinations. He is a fellow of American College of Radiology, American Institute of Ultrasound in Medicine, and Society of Radiologists in Ultrasound. His clinical and research interests are on vascular ultrasound and imaging-guided therapy. He published over 125 papers in peer reviewed journals and more than 180 conference proceedings and abstracts.

Laurence Needleman医生是美国托马斯•杰斐逊大学医院放射科教授，现任超声科、腹部CT室及无创性血管实验室主任。他是美国放射学会、美国超声医学会和美国超声医生学会的资深会员，并担任过上述学会血管超声检查指南委员会主席。自2011年以来，一直担任血管实验室资格认证跨学会委员会董事会主席。他的临床和科研兴趣主要是血管超声及影像引导介入治疗，曾在各种影像期刊上发表125余篇论文及180余篇学术会议摘要。

Ji-Bin Liu

MD, is Professor of Radiology and Director of Special Training Projects at Jefferson Ultrasound and Radiology Education Institute, Department of Radiology, Thomas Jefferson University, Philadelphia, USA. He is a fellow member of the American Institute of Ultrasound in Medicine and a member of Radiological Society of North America. His main research interests are in contrast-enhanced ultrasound imaging, intraoperative ultrasound, and ultrasound-guided therapy. He has published over 160 peer reviewed articles and over 300 meeting abstracts. His research accomplishments have earned him numerous scientific awards and research grants over the years. Currently, he serves as a grant reviewer of National Natural Science Foundation of China and manuscript reviewer for ultrasound journals.

刘吉斌

美国托马斯•杰斐逊大学放射科教授，现任杰斐逊超声和放射学教育研究所培训项目主任。他是美国超声医学会及北美放射学会资深会员。他的主要研究领域是超声造影成像、术中超声和超声引导下的治疗。曾在各种影像期刊发表 160 余篇论文及 300 余篇会议摘要。多年来，他的研究获得了多项基金的支持，他的研究成果为他赢得了许多科学奖项。目前担任中国国家自然科学基金及多个超声影像杂志的评审专家。

Traci B. Fox, EdD, RT(R), RDMS, RVT

Assistant Professor and Clinical Coordinator, DMS Program
Department of Radiologic Sciences, Jefferson College of Health Professions
Research Assistant Professor, Dept. of Radiology
Sidney Kimmel Medical College at Thomas Jefferson University

Traci B. Fox, EdD, RT(R), RDMS, RVT, is Assistant Professor in the Department of Radiologic Sciences at Thomas Jefferson University and a Research Assistant Professor in the Department of Radiology at the Sidney Kimmel Medical College at Thomas Jefferson University. Dr. Fox has been a sonographer for over 24 years and an educator since 2005. She holds ARDMS certifications in abdomen, obstetrics & gynecology, breast, and vascular. In 2014, Traci earned her Doctorate in Education from Drexel University. Dr. Fox has co-authored or contributed to five textbooks, and is author/co-author of 18 peer-reviewed publications. Traci has spoken at local, national, and international conferences, and in 2015 was an invited lecturer at the University Immersion Program at Sichuan University in Chengdu, China.

Traci B. Fox，教育学博士，放射科注册技师，血管超声注册技师，注册诊断超声技师
助理教授和临床协调员，DMS 项目
放射科学科,杰斐逊健康专业学院
研究助理教授，放射科
托马斯杰斐逊大学 Sidney Kimmel 医学院

Traci B. Fox, 教育学博士，放射科注册技师，血管超声注册技师，注册诊断超声技师, 是托马斯杰斐逊大学放射科学科的助理教授，也是托马斯杰斐逊大学 Sidney Kimmel 医学院的研究助理教授。Fox 博士从事超声医师工作已有 24 年，并于 2005 年成为一名教育者。她拥有美国注册诊断医疗超声医师协会腹部、妇产科、胸腔、血管的证书。2014 年 Traci 获得德雷塞尔大学教育博士学位。Fox 博士参与合著 5 本著作，也是 18 本同行评审刊物的著者/合著者。 Traci 在当地的，全国的以及国际性的大会上发表演讲。2015 年她受邀成为中国成都四川大学大学沉浸计划的讲师。

Yan Luo / 罗燕

教授，博士生导师，四川省学术技术带头人。专业为超声影像医学与核医学。华西医科大学临床医学系本科及硕士研究生。1999 年及 2004 年分别赴美国 Loma Linda 大学及 Tomas Jefferson 大学学习超声教育及超声。主要从事腹部和血管疾病的超声诊断，在肝脏疾病的超声诊治方面有一定造诣。作为负责人承担各级科研课题 10 余项，包括国家自然科学基金面上项目 4 项。发表各类学术论文 200 余篇；主编专著一部，副主编专著 2 部，参编专著 6 部。获得中华医学会科技进步奖二等奖 1 项。

现为四川大学华西医院超声科主任，华西－Thomas Jefferson 超声教育分中心主任。担任四川省超声医学工程学会会长，四川省医学会超声分委会候任主委、四川省超声医师协会副会长、中国医师协会超声分会常务理事、中国超声医学工程学会常务理事等多项社会职务。担任中华超声影像学杂志（电子版）、中国超声医学杂志、中国医学影像学技术、临床超声医学杂志等杂志编委。

Cedrin Law
CAE Healthcare

Cedrin Law is the Senior Product Marketing Manager for Ultrasound Training Solutions at CAE Healthcare. With an academic background in pharmacology and business, Cedrin has years of business experience in the healthcare industry. In his role with CAE Healthcare, Cedrin is responsible for management of the Ultrasound Simulation Product Roadmap. This includes working with medical societies and subject matter experts to ensure that new functionalities and content meet the current ultrasound training needs of healthcare professionals.

Cedrin Law 先生是 CAE 医疗超声培训方案高级产品经理。有着药物学和商学背景的 Cedrin 在医疗行业已有多年的工作经历。在 CAE 医疗 Cedrin 主要负责超声模拟产品路线管理。包括与医疗团体和相关专家紧密合作，以确保新功能和内容符合当前医疗专业人员对超声培训的需求。

Stuart Gall
MedaPhor

Stuart was appointed Chief Executive Officer of MedaPhor in 2009. He was previously a joint founder and executive director of Fusion IP plc, an AIM listed university IP commercialisation company that specialised in creating and investing in university technology start-ups. Fusion was the main shareholder in MedaPhor before its purchase by IP Group plc for £103 million in 2014. Stuart has over 25 years' experience in both med-tech start-ups and technology led public companies. He previously worked at British Airways plc, The Promotions Partnership Limited and 21st Century Technology plc.

Stuart 于 2009 年被委任 MedaPhor 首席执行官一职。他曾是 Fusion IP plc 联合创始人兼执行董事，Fusion 是一家专门创建、投资大学科技创业的 AIM 上市大学 IP 商业化公司。2014 年被 IP Group PLC 以 1 亿 300 万英镑收购前，Fusion 曾是 MedaPhor 的主要股东。Stuart 拥有在医疗科技初创公司和技术主导上市公司超过 25 年的工作经验。他还曾在英国航空公司、促销伙伴有限公司和二十一世纪科技有限公司工作过。

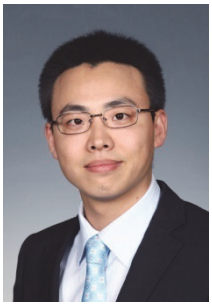
Pengcheng Wang
Deputy General Manager
SonoSite Ultrasound Business Unit, FUJIFILM China

As Deputy GM of SonoSite Ultrasound BU, Mr. Pengcheng WANG oversees the entire business of FUJIFILM ultrasound in China, and also he serves as the Sales Director of SonoSite and VisualSonics business, the role he took over in early 2014. Prior to his position in FUJIFILM SonoSite, Mr. WANG had served various sales management positions in the medical division of FUJIFILM China, including Deputy National Director of PACS, Regional Sales Manager (Northern China), Provincial Sales Manager and Sales Supervisor since 2006. Before he joined FUJIFILM, Mr. WANG worked as Sales Representative for Kodak China Medical (Carestream) from 2003 to 2006. Mr. WANG holds a master degree in Finance from China Renmin University and bachelor degree from University of International Business and Economics in Beijing.

王鹏程
富士胶片中国索诺声超声事业部副总经理

王鹏程先生于 2014 年 4 月加入富士胶片索诺声。作为富士胶片中国索诺声超声事业部副总经理，王鹏程先生目前全面负责富士胶片旗下所有超声产品的在华业务，同时他还兼任索诺声超声产品及 VisualSonics 超高频超声产品的全国销售总监。加入富士胶片索诺声之前，自 2006 年起，王鹏程先生在富士胶片中国医疗部门历任各种销售管理岗位，其中包括，全国 PACS 销售副总监，北中国区大区经理，省区经理及销售主管。2003 年-2006 年，王鹏程先生作为销售代表，供职于柯达中国（现锐柯医疗）。王鹏程先生先后毕业于中国人民大学和对外经济贸易大学，获金融学硕士及文学学士学位。

Xuetao Zhang
GE Healthcare
Point of Care segment manager



10 years ultrasound commercial experience in China, including sales, marketing, product management. Working with physician luminaries to promote the ultrasound learning for 5 years.

张雪涛
GE 医疗，临床超声市场部经理
10 年超声商业经验，包括销售、市场营销、产品管理。与知名医生一起促进超声学习 5 年。

Aiping Yang / 杨爱平
国家卫生计生委能力建设和继续教育中心主任

1988 年毕业于大学新闻系，长期从事新闻传媒、报刊出版、教育培训等工作，后专业从事医疗健康领域人才队伍建设，专注于公立医院院长职业化建设和医疗卫生专业技术人员继续教育工作，具有良好的政策素养和业务功底。

Jun Zhou
Executive Director of the US-China Healthcare Cooperation Program
AmCham

Jun is the current Executive Director of the US-China Healthcare Cooperation Program (HCP) at AmCham China since September 1, 2011. The program is a bilateral public-private partnership initiative that focuses on healthcare capacity building and exploring future business opportunities for the US healthcare industry in China.

Before joining AmCham, Jun worked with Novartis AG and led its China Rural Initiative, developing national business model for non-urban China market, and leading the company's healthcare education programs in rural China. He has successfully established a model for growth that combines all different types of products from Novartis Group, supported by the educational programs, and leveraging company's strong local commercial capacity.

Jun has over 15 years experience in healthcare industry. He was a physician by training, and worked as a Urologist in Beijing Friendship Hospital. Prior to Novartis, Jun worked as senior consultant and engagement manager with IMS Health in APAC region for 5 years, developed and managed over fifty projects, focusing on Growth Strategy, Industry Positioning, M&A, and Market Access. Jun also worked with SAI Healthcare, a strategic consulting firm in the US, as the country manager for China; and with Zuellig Pharma China as Regional Commercial Head.

Jun has strong leadership experience and extensive exposure to different markets. During his career with consulting firms, Jun has led different multinational teams to provide consulting services in the US, China, ASEAN countries and Taiwan. He has helped to develop the strategic consulting business for IMS in China and Southeast Asia from scratch, and devised and implement new multi-business-line model for Novartis that covers innovative drugs, generic, OTC, and vaccine products.

Jun holds a Bachelor's Degree in Clinical Medicine from the Capital University of Medical Sciences in China, and a MBA degree from Thunderbird School of Global Management in Phoenix, Arizona.

周军
中国美国商会医疗卫生合作项目执行总监

周军于 2011 年 9 月加入中国美国商会并担任美中医疗卫生合作项目执行总监。这一项目是作为美中在医疗卫生领域的公立私营伙伴合作的主要平台。

在加入美国商会之前，周军就职于诺华制药公司并领导诺华公司在中国的非城镇市场发展战略，带领多个团队在中国广大市场设计并实施可持续的发展模式，同时领导公司在相关地区开展的卫生教育项目，培训了近千名县乡级医生，成功建立了诺华公司的健康快车项目，并充分利用当地卫生和教育资源推动健康教育。

周军在医疗卫生行业有 15 年以上的工作经验。他毕业于首都医科大学临床专业，曾工作与北京友谊医院泌尿外科。之后主要从事医药产品销售和医疗药卫生咨询等工作。周军有丰富的医疗相关的咨询经验，在美国 SAI 公司和 IMS Health 亚太地区和中国工作 8 年，并任亚太地区战略咨询部门的项目主管，组织并实施超过 50 个项目，主要在企业发展战略，政府间合作，并购和市场策略等多个领域。

周军具有跨文化的，丰富的领导经验和能力。作为部门领导和项目主管，周军在中国，美国以及新加坡等国家工作多年，带领多国家的咨询团队执行项目，并协助 IMS 公司建立了中国和东南亚策略咨询业务。在诺华制药开发创新的市场模式过程中，带领多部门的团队提出了涵盖包括创新药、仿制药、OTC、疫苗等多种产品线的营销模式，并得到相关部门积极配合。
毕业于首都医科大学临床专业，并就读于美国亚利桑那州雷鸟商学院，拥有其工商管理学硕士学位。

Presentations

演讲材料

北京协和医院
PEKING UNION MEDICAL COLLEGE HOSPITAL

中国超声医学教育培训与认证

中华医学会超声医学分会　姜玉新

01 国际超声医学教育与认证

02 产前超声筛查、诊断资格考试

03 农村妇女乳腺癌超声筛查培训

04 中、高级卫生专业技术资格考试

一　国际超声医学教育与认证

- 中美合作成立了多家超声教育中心，开展了系列超声医学教育与认证项目，1995年在北京成立了**北京协和-美国杰斐逊超声教育中心**。
- 协和一个中心二十多年来，举办彩色多普勒超声培训班五十多期。


一　国际超声医学教育与认证

- 组织系列教育与考试认证项目

ICEAF 颁证仪式
2004年3月杭州

一　国际超声医学教育与认证



国际超声医学证书颁证仪式


二　产前超声筛查、诊断资格考试

- 目前，我国已经初步建立了**产前筛查和产前诊断网络**，全国有**600多家**医疗机构开展了产前筛查和产前诊断服务。
- 北京市产前超声筛查医疗机构有**120余家**，诊断中心**8家**。
- 北京市实行了产前超声诊断与筛查证书考试制度。这项工作已连续做了**十年**，每年培训人数约**两百人**，通过率约**40%**，考核合格发证**1032人**。

二 产前超声筛查、诊断资格考试

- 近十年来，超声医学会组织学术活动最多的学组是妇产学组，每年组织开展产前超声规范化筛查及妇科新技术全国巡讲活动。
- 2016年组织全国知名妇产超声专家在全国各地进行了9站巡讲。每场参加人数在260-340名，共计近3000人次。
- 组织各省开展“走基层及手把手带教活动”，共计9次，培训基层人员共计约4000余人次。

二 产前超声筛查、诊断资格考试

- 2010年ISUOG 连续三届主席出席北京产科超声研讨会。

二 产前超声筛查、诊断资格考试

- ISUOG 2012妇产科超声研讨会在北京举办。

二 产前超声筛查、诊断资格考试

- ISUOG 第十届妇产科超声研讨会在北京举办。

二 产前超声筛查、诊断资格考试

- 国家“十一五” 科技支撑计划课题
  --严重胎儿结构异常影像学产前筛查和诊断新技术的研究

北京协和医院联合13家省级产前诊断中心

产前诊断中心：

首都医科大学附属北京妇产医院、中国医科大学盛京医院、上海市第一妇婴保健院、北京大学第一医院、湖北省妇幼保健院、第三军医大学西南医院、深圳市妇幼保健院、浙江大学医学院附属妇产科医院、南京大学医学院附属鼓楼医院、上海交通大学医学院附属新华医院、哈尔滨医科大学附属第二医院、中山大学附属第一医院、四川大学华西第二医院

1家流行病学及统计研究机构：中国医学科学院基础医学研究所

二 产前超声筛查、诊断资格考试

- 国家“十一五” 课题主要目标

- 制定标准化的产前超声筛查和专业化的产前影像学诊断规范
- 建立中国人群胎儿生物学参数正常值范围
- 建立胎儿严重畸形产前影像学诊断的技术平台

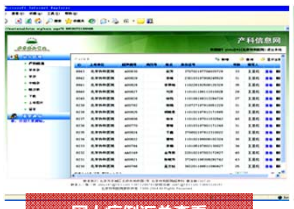
二 产前超声筛查、诊断资格考试

二 产前超声筛查、诊断资格考试

上传孕妇基本资料

上传超声检查结果

二 产前超声筛查、诊断资格考试

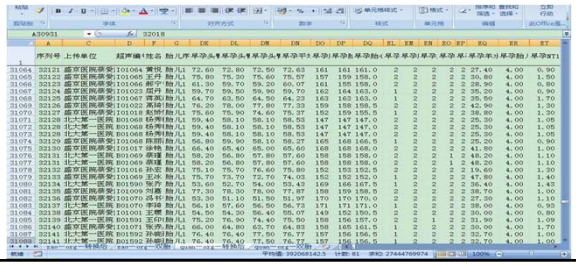


网上病例汇总查看

上传超声图片

二 产前超声筛查、诊断资格考试

胎儿超声数据库



二 产前超声筛查、诊断资格考试

出版中国胎儿产前超声检查规范

发表了中国胎儿生长发育参数

二 产前超声筛查、诊断资格考试

- 国家“十二五” 科技支撑计划课题

--基于基层医院的胎儿孕早中期超声筛查方案的评价研究

- 评价不同地区、不同等级基层医院胎儿孕早中期超声筛查现状和存在的问题
- 构建胎儿严重畸形产前影像学筛查与诊断的转诊网络与技术平台
- 不断提高我国基层医院筛查检出胎儿异常的能力和水平

三 农村妇女乳腺癌超声筛查培训

- **国家重大公共卫生服务项目**
  --2009-2011年全国农村妇女乳腺癌检查

- 未经培训的医生超声检查阳性预测值低
- 专家组成员亲自授课+上机操作+考核，36期培训，共计培训筛查医生3000余人，31个省市及西藏、新疆生产建设兵团
- 完成146万农村妇女筛查早诊率69.7%

三 农村妇女乳腺癌超声筛查培训

- 配合国家“两癌”筛查，2016年在全国各地举办农村妇女乳腺癌超声筛查培训班共6期，培训来自全国各地1000余名学员。2017年5月在山西太原举办了今年第一期乳腺癌超声筛查培训班。

四 中、高级卫生专业技术资格考试

卫生专业技术资格考试

- 全国统一组织
- 统一考试时间
- 统一考试大纲
- 统一考试命题
- 统一合格标准

四 中、高级卫生专业技术资格考试

- 中华医学会超声医学分会承担了组织专家编写考试大纲、考试指导用书、命题与题库建设等工作。

谢 谢！

Inteleos Organizational Structure

Inteleos is a non-profit certification organization that delivers rigorous assessments and cultivates a global community of professionals dedicated to the highest standards in healthcare and patient safety

- Inteleos sets the standards of proficiency in medical imaging, such as ultrasound, nuclear cardiology and cardiac computed tomography
- American Registry for Diagnostic Medical Sonography (ARDMS) sonographer-based examinations and credentials (86,000+ certificants)
- Alliance for Physician Certification and Advancement (APCA) physician certifications in ultrasound and cardiovascular imaging (22,000+ certificants)

Inteleos

Inteleos Foundation
Non-profit 501(c)(3)

Ultrasoundjobs.com
SonoWorld

ARDMS American Registry for Diagnostic Medical Sonography

APCA Alliance for Physician Certification & Advancement

Future Councils

APCA Alliance for Physician Certification & Advancement

Global Community for Physicians

Examinations:

Abdomen – Latin America
Cardiac Computed Tomography Physician Examination
Cardiovascular Magnetic Resonance (CMR) Examination (in development)
Musculoskeletal Sonography Physician Examination
Nuclear Cardiology Physician Examination
Obstetrics and Gynecology – Latin America
Physicians' Vascular Interpretation – China
Physicians' Vascular Interpretation

RPVI-China Overview

Inteleos, through ARDMS and APCA, has been working with Chinese physicians to establish standards of proficiency in ultrasound since 2005

- RPVI-China:
  - Delivered in Chinese
  - Formally launched in 2013
  - Developed in close collaboration with Chinese ultrasound doctors
  - In 2016, nearly 400 Chinese ultrasound doctors took the RPVI-China exam
- Partnership with China is essential to Inteleos -- making a worldwide impact on improving patient care and safety through standards

ARDMS
American Registry for Diagnostic Medical Sonography

Building a Global Community for Sonographers

Examinations:

Sonography Principles and Instrumentation

Abdomen Ultrasound
Adult Echocardiography
Breast Ultrasound
Fetal Echocardiography
Obstetrics and Gynecology
Pediatric Sonography
Vascular Technology

7

Who We Are

- Inteleos holds accreditation from the International Organization for Standardization (ISO) in personnel credentialing for test development and delivery (ISO 17024 Standards)
- Founded in 1975 (as ARDMS), Inteleos has over 112,000 actively certified healthcare providers
- Inteleos, through ARDMS and APCA, delivers approximately 30,000 tests every year via Pearson VUE testing centers
- Inteleos delivers assessments in 28 countries and has certificants in 70 countries

Value of Standards

- APCA- and ARDMS-certified healthcare professionals demonstrate an ongoing commitment to high-quality patient care
- Globally-accredited assessments help establish a universal standard of proficiency in ultrasound
- Continual education is integral to certification
- Documenting Proficiency Standards is More than an Examination!
  - Eligibility and Application
  - Assessment / Examination
  - Continued Competency / Learning Requirements

Eligibility

- Eligibility criteria to demonstrate ultrasound proficiency standards are established by local subject matter experts and local medical communities for each examination
- Eligibility is associated with education and training
  - Specific clinical case requirements in the content area
- Eligibility documented through the application process
- Each application is reviewed by trained staff
- If an applicant meets eligibility criteria, they are able to sit for the exam

Standards Development Through Examination

- Inteleos' Councils assure that examination subject matter experts conduct all phases of ISO-approved test development for each examination
  - All test questions are authored by subject matter experts who practice in the content area
  - Each examination is directly linked to the Job/Practice Task Survey (documenting a provider's knowledge, skills and abilities)
- Experts and Inteleos' professional testing staff assure all examinations meet rigorous psychometric standards of fairness, validity and reliability

Ongoing Proficiency

- Inteleos believes it is necessary for all certificants to maintain life-long proficiency /competency in the areas for which they have demonstrated proficiencies
- Continuing competency requirements are customized to the essential needs of a particular community and are developed in close alliance with relevant professional communities

Requirements of Proficiency Standards

- Education and training from local professional communities
- Assessment (testing of proficiency standards)
- Continued proficiency in established standards

Technology & Simulation Contributions

Proficient individuals need appropriate equipment to **perform** ultrasound and to receive proper **training**

Technology:
- Rapid advances in technology make ultrasound equipment more affordable, portable and applicable in many clinical situations
- Proper use of ultrasound technology can improve quality and efficiency of patient care

Technology & Simulation Contributions

Proficient individuals need appropriate equipment to **perform** ultrasound and to receive proper **training**

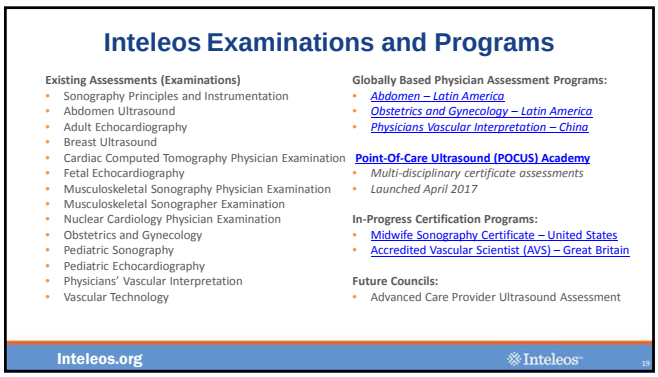
Simulation can:
- Help train healthcare providers in remote or low-resource areas
- Provide state-of-the art ultrasound hands-on experience, separate from formal medical training
- Educate providers on important or unusual clinical presentations

Developing Global Community of Standards Through Alliances

- China and Inteleos (American non-profit healthcare organization) have had a strong ultrasound alliance since 2005
- Alliances with local subject matter experts are critical to program success
- Examination programs must be supported by robust psychometrics to ensure reliability and validity of standards testing
- Continual evolution of the Job Task Analysis and Test Development contributes to a sustainable, quality program for proficiency standards

Goals and Next Steps

- Chinese ultrasound community and APCA develop a sustainable alliance to integrate education, training and proficiency standards for ultrasound careers
- Expand to more areas of ultrasound use to include sonographers
- Continue to build and expand China-APCA alliances with Chinese ultrasound doctor experts
- Have all Chinese ultrasound examinations accredited by ISO
- Continual evolution of the Job Task Analysis and Test Development contributes to a sustainable, quality program for proficiency standards


Inteleos Examinations and Programs
Existing Assessments (Examinations)
Sonography Principles and Instrumentation
Abdomen Ultrasound
Adult Echocardiography
Breast Ultrasound
Cardiac Computed Tomography Physician Examination
Fetal Echocardiography
Musculoskeletal Sonography Physician Examination
Musculoskeletal Sonographer Examination
Nuclear Cardiology Physician Examination
Obstetrics and Gynecology
Pediatric Sonography
Pediatric Echocardiography
Physicians' Vascular Interpretation
Vascular Technology
Globally Based Physician Assessment Programs:
Abdomen – Latin America
Obstetrics and Gynecology – Latin America
Physicians Vascular Interpretation – China
Point-Of-Care Ultrasound (POCUS) Academy
Multi-disciplinary certificate assessments
Launched April 2017
In-Progress Certification Programs:
Midwife Sonography Certificate – United States
Accredited Vascular Scientist (AVS) – Great Britain
Future Councils:
Advanced Care Provider Ultrasound Assessment
Inteleos.org
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APCA™
Alliance for Physician Certification & Advancement

全球医师社区

考试:

腹部-拉丁美洲
心脏计算机断层扫描医师考试
心血管磁共振（CMR）考试（开发中）
肌肉骨骼超音波医师考试
核心脏病学医师考试
妇产科-拉丁美洲
血管超声医师-中国
血管超声医师

4

Inteleos 组织结构

Inteleos 是一个非营利性的认证机构，提供严格的评估，致力于建立一个医疗保健和病人安全最高标准的专业人士的全球社区

- Inteleos 树立医疗成像能力的标准，如超声、核心脏病学和心脏计算机断层扫描
- 美国注册诊断医疗超声医师 协会(ARDMS) 超声考核及认证（持证者86,000名以上）
- 医师认证和进步联盟(APCA) 超声和心血管成像医师认证（持证者22,000名以上）

RPVI-中国 概览

自2005年以来，Inteleos通过ARDMS和APCA，一直与中国医师合作建立超声能力标准

- RPVI-中国:
  - 中文发表
  - 2013正式推出
  - 与中国超声医生密切合作开发
  - 2016年近400名中国超声医生参加了RPVI-中国考试
- 与中国的伙伴关系对Inteleos 来说是必不可少的–通过标准提高病人护理、安全的全球影响

Inteleos

Inteleos Foundation
Non-profit 501(c)(3)

Ultrasoundjobs.com
SONOWORLD

ARDMS
American Registry for Diagnostic Medical Sonography

APCA™
Alliance for Physician Certification & Advancement

Future Councils

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ARDMS
American Registry for Diagnostic Medical Sonography

建立全球超声专家社区

考试:

超声原理与仪器
腹部超声
成人超声心动图
乳腺超声检查
胎儿超声心动图
妇产科
小儿超声
血管超声

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资格

- 证明超声能力标准的资格标准是由当地的学科专家和当地的医疗社区为每个考试设立的
- 资格与教育和培训有关
  - 特定临床病例有内容上的要求
- 通过申请程序的合格证明文件
- 每个申请由训练有素的人员审查
- 如果申请人符合资格标准，他们就可以参加考试

我们是谁？

- Inteleos具有国际标准化组织（ISO）认可，从事人员资格认证的测试开发与交付（ISO 17024标准）
- 成立于1975（与ARDMS同期），Inteleos拥有超过112,000家活跃的认证医疗机构
- Inteleos通过ARDMS和APCA，每年在Pearson VUE考试中心提供约30000次考试
- Inteleos在28个国家提供评估，持证者遍布70个国家。

通过考试发展标准

- Inteleos理事会保证考试领域专家每次考试执行各个阶段ISO批准的测试开发
  - 所有测试问题都由实践在内容相关领域的专家撰写
  - 每次考试都直接与工作/实践任务调查相关联（记录提供者的知识、技能和能力）
- 专家和Inteleos专业测试人员确保所有考试符合严格心理测量标准的公平性、有效性和可靠性

标准的价值

- APCA和ARDMS认证的医疗保健专业人士持续承诺高质量的病人护理
- 全球认可的评估有助于建立超声的通用标准
- 继续教育是认证的组成部分
- 记录能力标准胜过考试！
  - 资格及申请
  - 评估/考试
  - 持续能力/学习要求

能力持续性

- Inteleos认为所有被认证人员有必要在其所认证的领域保持终生的水平/能力
- 持续能力的要求根据特定社区的基本需要，并与相关专业团体紧密合作情况而定制

能力标准的要求

- 当地专业团体的教育和培训
- 评估（能力标准测试）
- 对既定标准的持续熟练

通过联盟发展全球标准共同体

- 中国和Inteleos（美国非营利医疗机构）自2005以来就有强大的超声合作
- 与当地相关领域专家的合作是项目成功的关键
- 考试程序必须由强大的心理支持，以确保标准测试的可靠性和有效性
- 工作任务分析和测试开发的持续发展，有助于实现可持续的、高质量的能力标准

技术与模拟贡献

熟练的个人需要在合适的设备上**进行**超声操作和接受适当的**培训**

技术:
- 技术上的快速进步使超声设备更实惠、更便携和适用于更多临床情况
- 正确使用超声技术可提高患者护理质量和效率

目标和下一步

- 中国超声社区与APCA共同建立可持续联盟，致力于超声整合教育、职业培训和能力标准
- 扩大超声使用领域，包括超声检查
- 与中国超声医生、专家共同持续建立和扩大中国-APCA联盟
- 让ISO认可所有在中国的超声考试
- 工作任务分析和测试开发的持续发展，有助于实现可持续的、高质量的能力标准

技术与模拟贡献

熟练的个人需要在合适的设备上**进行**超声操作和接受适当的**培训**

模拟:
- 帮助在偏远或资源稀缺地区培训医疗保健提供者
- 与正规的医学培训分开，提供最先进的超声实践操作经验，
- 提供重要或不寻常的临床教育案例


Inteleos 考试项目
现有评估（考试）
超声原理与仪器
腹部超声
成人超声心动图
超声检查
心脏计算机断层扫描医师考试
胎儿超声心动图
肌肉骨骼超音波医师考试
肌肉骨骼超声检查
核心脏病学医师考试
妇产科
小儿超声
小儿超声心动图
血管解释医师
血管技术
全球医师评估方案：：
腹部-拉丁美洲
妇产科-拉丁美国
血管解释医师-中国
超声护理（POCUS）学院
多学科证书评估
2017年4月成立
正在进行的认证计划：：
助产士超声证书-美国
认可血管科学家（AVS）-大不列颠
未来成员:
先进保健提供者超声评估
Inteleos.org
Inteleos
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Pearson VUE

超声波教育及认证对中国医务工作者的价值

Pearson VUE, PVI-China 考试服务解决方案提供商

赵博生
Pearson VUE 大中华区副总裁

Agenda

关于 Pearson VUE
关于考试中心覆盖率
关于考试安全
关于我们的服务

Committed to
your test
your team &
your candidates' future

Pearson VUE

关于Pearson

培生集团

- 年销售额超过**40**亿美元
- 针对不同的群体市场提供最广泛、最多样化的教育服务
- 全球最大的教育/测评企业

培生VUE

- 年发送考试超过**1400**万门次
- 全球超过**400**家公司自营专业考试中心
- 全球超过**5100**家第三方授权考试中心，覆盖**180**个国家
- 为超过**450**家客户提供全球考试服务，覆盖学术、金融、医疗证照、护理、IT等众多行业
- 引领全球测评市场，不断创新，保持市场领导地位

Pearson

Pearson VUE

关于考试中心

Pearson VUE 考试中心（中国大陆）

- PPC （Pearson Professional Test Center） 4个
- PVTC （Pearson VUE Authorized Test Center）284个
- 覆盖30个省级行政区域，67个城市

授权中国血管超声医生认证考试（RPVI-China）的考试中心

- PPC 3个
- PVTC 15个
- 覆盖16个省级行政区域，17个城市，18个考场
- 145门考量并发发送能力，435门单日考试发送能力

Pearson VUE

Inteleos & 培生 VUE – 解决方案

合作共赢！

Pearson VUE

Inteleo PVI-China 2016年考量分析

四川，北京，上海及浙江考量较大

考量高峰期在8月底出现，最高考量达到67门

25天发送356门考试（Delivered, No-show）

Pearson VUE

Pearson 专业考试中心（PPC）

最尖端的安全科技

舒适便利的设施

保护考试和考生数据

提供最佳的考试体验

Pearson VUE

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Pearson VUE 授权考试中心（PVTC）

高覆盖率

考试安全保障

专业的合作伙伴

Pearson VUE

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考试安全 - 试题安全管理

高度可靠的数据库集群

传输过程始终处于加密状态

考试系统复杂的安全措施

全球安全团队中设置专门负责安全的产品经理

Pearson VUE

考试安全 - 防替考技术

Pearson VUE安全解决方案实现了全球统一的身份管理功能，确保只有经过适当授权和身份验证的考生才能参加考试，并能发现和防止考生替考。

- **自动化的签到流程** - 业内率先采用自动化的签到流程

- **严格的授权和身份验证要求** - 客户可定制特殊要求，如身份证件要求、注册限制（如禁考的考生）、重考政策和考试间隔周期等

- **电子签名和数码拍照** - 全球唯一在全部考试中心部署生物检测设备的考试公司

Pearson VUE

考试安全 -防考试作弊技术

全球负责考试安全的专业团队，在中国有3人专门负责考试安全管理

Pearson VUE 安全考试框架（Secure Testing Framework™ ）- 该框架为试题开发、考试发布、考试预约、考试管理和成绩评分提供了多层次的保护

数字审核记录 - 每个考生的电子签名和数码照片都被标记时间，并与考试结果和考生击键记录一起打包回传。这些数据提供了可核查的、贯穿整个考试过程的数字审核记号。所有监考行为，如启动或停止考试，也会记入在系统日志中

Pearson VUE

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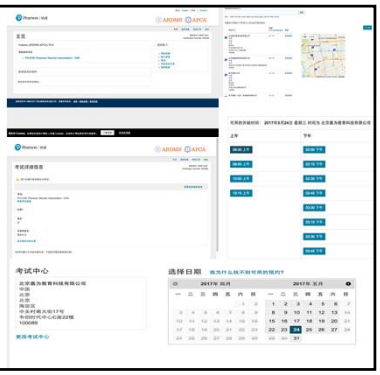
我们的服务

On-Demand 考试方式
- 灵活性
- 方便性

在线注册预约考试
- 在指定时间随时注册
- 注册步骤简单

本土化服务
- 注册页面中文化
- 7 * 24 小时考生服务热线，以及中文考生服务热线



Pearson VUE

医学、护理、医药及健康领域合作伙伴（全球84家）

Pearson VUE

Thank you!

Pearson VUE

Review and Summary of PVI-China

Jie Tang, MD
Director of PVI-China
Former chair, Chinese Ultrasound Doctors Association
Professor, Depart. of ultrasound, PLA General Hospital

Contents

- **Backgroud**
- What would we do
- What was our goal
- Results

2

Contents

- **Backgroud**
- What would we do
- What was our goal
- Results

3

Background

- Most of the ultrasound in China is independent of the radiologic department.
- The ultrasound doctors in China perform examinations besides offer diagnosis.
- Lack of different systems professional certification, such as vascular ultrasound, musculoskeletal ultrasound, cardiac ultrasound.

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Background

… sent the same patient to 10 vascular laboratories. The validating laboratory showed a 30% stenosis of left ICA origin. Significant variation was found at other laboratories, from no mention of the lesion to an 80% stenosis.

Horrow MM, et al. *The limitations of carotid sonography: interpretive and technology-related errors. AJR* 2000; 174:189-194

Background

Dr. David Rogers

Dr. David Rogers was former Chair of Australian-New Zealand ultrasound Association , visited our hospital in May, 2005.

Conclusion

- Whatever tool used, the zealot will achieve good results
- If you could choose any tool for general arterial surveillance, doppler ultrasound would not be your first choice
- Doppler Ultrasound is very useful in many clinical situations with regard to the lower limbs
- With the advent of CTA/MRA doppler ultrasound may be used more frequently as a problem solving and surveillance tool

Contents

Backgroud

What would we do

What was our goal

Results

In May 2007, Professor Jinrui Wang and I visited Thomas Jefferson University and Education Institute.

We also attended the Leading Edge in Diagnostic Ultrasound.

During that trip, Professor Jibin-Liu and we discussed the need for standardized examination and qualification of vascular ultrasound in our country.

Professor Liu gave us an introduction to the ARDMS, he said that it is an authoritative examination organization, and has ultrasound vascular certification examination in the North American, This test is specifically for vascular ultrasound doctors.

By understanding, we are encouraged very much and decided to cooperate with ARDMS to establish a Chinese vascular ultrasound certification test.

In November 2008, Professor Leer, former Chair of ARDM, Mr. Cyr Dale, CEO of ARDMS, Professor Zierler and Jibin Liu visited our hospital.

A symposium on China-US vascular ultrasound certification was held in Beijing in November 1, 2008, more than 500 delegates attended the meeting.

Professor Leer introduced to ARDMS ultrasound vascular certification exam.

Pilot of American Registry for Diagnostic Medical Sonography (ARDMS)® PVI® Examination in China

From October 31, 2008 to November 2, the first American vascular ultrasound doctors certification exam (Registered Physician in Vascular Interpretation, RPVI) held in Beijing.

Contents

Backgroud

What would we do

What was our goal

Results

What was our goal?

First stage

•Establish cooperative relationship with ARDMS

•A good English doctor takes a test directly

Second stage

•Set up RPVI-China

• According to the requirements of ARDMS established Chinese test question bank

•More Chinese vascular ultrasound doctors can take the exam

What was our goal?

First stage

•Establish cooperative relationship with ARDMS

•A good English doctor takes a test directly

With Professor Leer and Dale

What was our goal?

First stage

•Establish cooperative relationship with ARDMS

•A good English doctor takes a test directly

With Professor Kevin D. Evans , R. Eugene Zierler and Dale

What was our goal?

First stage

•Establish cooperative relationship with ARDMS

•A good English doctor takes a test directly

Second stage

•Set up RPVI-China

• According to the requirements of ARDMS established Chinese test question bank

•More Chinese vascular ultrasound doctors can take the exam

Professor Shipp

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Contents

- Backgroud
- What would we do
- What was our goal
- **Results**

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Pilot of American Registry for Diagnostic Medical Sonography (ARDMS)® PVI® Examination in China

October 31 – November 2, 2008

PVI in China Results

Performance of China and US Examinees on PVI

		Examinee Performance					Required to Pass		
	Number of Examinees	Lowest Proportion Correct	Highest Proportion Correct	Average Proportion Correct	SD	Average Scaled Score*	Required Proportion Correct	Required Scaled Score*	Percent of Examinees who Passed
China	57	.25	.85	.59	.15	559	.58	555	50%
US	60	.51	.92	.75	.09	614	.58	555	97%

*Scaled scores range from 300 to 700. The scale is designed so that 555 is always required to pass.

PVI-CHN				
Year/Form	Failed	Passed	Total Volume	Pass %
2014	21	39	60	65.00%
PVI-CHN_A		1	1	100.00%
PVI-CHN_B	21	38	59	64.40%

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Thank you for your attention!

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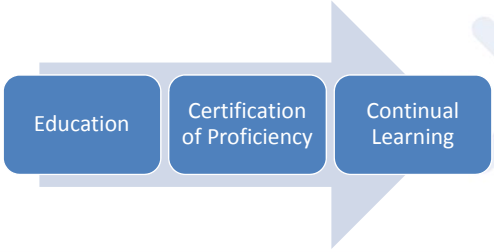
Proficiency in Ultrasound

- Individual healthcare provider proficiency is critically important in ultrasound as compared to other imaging modalities.
  - Ultrasound is handheld – the provider must use good scanning technique to obtain clear and useful images.
  - Ultrasound images are operator-dependent. Failure to obtain all relevant images may lead to a false diagnosis.
- Ultrasound in medical education has not been standardized.
- Many healthcare providers begin using ultrasound after graduation from medical school, so additional education and training are needed.

Education is a Critical Component of Proficiency



Certification Continuum

- Presentations from Thomas Jefferson University will highlight successful models of ultrasound education
- After the education presentations, there will be two presentations by simulation companies that will explain how simulation complements education by:
  - Broadening clinical exposure
  - Reaching users in remote locations
  - Providing unusual (and important) cases as part of training
- Finally, equipment manufacturers will present on the value of high-quality ultrasound equipment in providing the best patient care in China

熟练掌握超声

- 相比其它影像学检查，个体医疗保健提供者的熟练度在超声检查中显得尤为重要
  - 超声是手持式的- 提供者必须具有良好的扫描技术来获取清晰和有用的影像
  - 超声图像完全取决于操作者。获取相关图像的失败可能导致错误的诊断
- 医疗教育中超声仍未被标准化
- 许多医疗保健提供者是在医科学校毕业后才开始从事超声，因此需要额外的教育和培训

教育对熟练度至关重要

教育 → 能力认证 → 继续学习

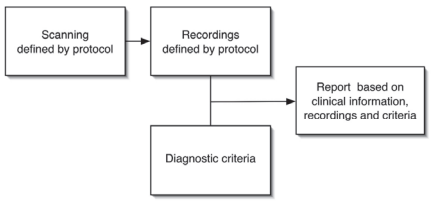
认证连续

- 托马斯杰斐逊大学的演讲将强调超声教育的成功模式
- 继教育演讲，还会有来自模拟公司的两场演讲，解释模拟如何与教育互补：
  - 扩大临床接触
  - 达到远程用户
  - 提供罕见的（且重要的）案例作为培训的一部分
- 最后，设备制造商将展示在中国，高质量超声设备对患者护理的价值

Sonographer Workflow: Implications for China

Laurence Needleman, MD
Director of Ultrasound
Thomas Jefferson University

Workflow



Diagnostic criteria

- Used by all members of the department
  - Sonographers and Physicians
- In writing
- Common nomenclature
- Easy to understand criteria
- Easy to understand **exceptions**

Easy to understand criteria

Table 2. **Guidelines for Transvaginal Ultrasonographic Diagnosis of Pregnancy Failure in a Woman with an Intrauterine Pregnancy of Uncertain Viability.***

Findings Diagnostic of Pregnancy Failure	Findings Suspicious for, but Not Diagnostic of, Pregnancy Failure†
Crown–rump length of ≥7 mm and no heartbeat	Crown–rump length of <7 mm and no heartbeat
Mean sac diameter of ≥25 mm and no embryo	Mean sac diameter of 16–24 mm and no embryo
Absence of embryo with heartbeat ≥2 wk after a scan that showed a gestational sac without a yolk sac	Absence of embryo with heartbeat 7–13 days after a scan that showed a gestational sac without a yolk sac
Absence of embryo with heartbeat ≥11 days after a scan that showed a gestational sac with a yolk sac	Absence of embryo with heartbeat 7–10 days after a scan that showed a gestational sac with a yolk sac
	Absence of embryo ≥6 wk after last menstrual period
	Empty amnion (amnion seen adjacent to yolk sac, with no visible embryo)
	Enlarged yolk sac (>7 mm)
	Small gestational sac in relation to the size of the embryo (<5 mm difference between mean sac diameter and crown–rump length)

* Criteria are from the Society of Radiologists in Ultrasound Multispecialty Consensus Conference on Early First Trimester Diagnosis of Miscarriage and Exclusion of a Viable Intrauterine Pregnancy, October 2012.
† When there are findings suspicious for pregnancy failure, follow-up ultrasonography at 7 to 10 days to assess the pregnancy for viability is generally appropriate.

Uniformity of language

Table 1. **Terminology and Diagnostic Tests Used Early in the First Trimester of Pregnancy.**

Terminology	Comments
Viable	A pregnancy is viable if it can potentially result in a liveborn baby.
Nonviable	A pregnancy is nonviable if it cannot possibly result in a liveborn baby. Ectopic pregnancies and failed intrauterine pregnancies are nonviable.
Intrauterine pregnancy of uncertain viability	A woman is considered to have an intrauterine pregnancy of uncertain viability if transvaginal ultrasonography shows an intrauterine gestational sac with no embryonic heartbeat (and no findings of definite pregnancy failure).*
Pregnancy of unknown location	A woman is considered to have a pregnancy of unknown location if she has a positive urine or serum pregnancy test and no intrauterine or ectopic pregnancy is seen on transvaginal ultrasonography.
Diagnostic tests	
Human chorionic gonadotropin (hCG)	Serum hCG concentration is measured with the use of the World Health Organization 3rd or 4th International Standard. A positive serum pregnancy test is defined by a serum hCG concentration above a positivity threshold (5 mIU/ml).
Pelvic ultrasonography†	Minimum quality criteria include transvaginal assessment of the uterus and adnexa and transabdominal evaluation for free intraperitoneal fluid and a mass high in the pelvis; oversight provided by an appropriately trained physician; scans performed by providers and interpreted by physicians, all of whom meet at least minimum training or certification standards for ultrasonography, including transvaginal ultrasonography; and scanning equipment permitting adequate visualization of structures early in the first trimester.

* In a woman with a positive urine or serum pregnancy test, an intrauterine fluid collection with rounded edges containing no yolk sac or embryo is most likely a gestational sac; it is certain to be a gestational sac if it contains a yolk sac or embryo.
† Transabdominal imaging without transvaginal scanning may be sufficient for diagnosing early pregnancy failure when an embryo whose crown–rump length is 15 mm or more has no visible cardiac activity.

Overview of workflow

- Patient history and symptoms - Sonographer
- Acquisition of images per protocol – Sonographer
- Evaluation of images – Sonographer preliminary
- Review of images – Physician
  - Additional imaging – Specialized sonographer or physician
- Preliminary – to be determined, likely Physician
- Report – Physician

Protocols are acquisition checklists

Scanning Protocols

- In writing
- For each organ to assure completeness
  - Some machines set up the order of the scan to assure a uniform acquisition order
    - Out of order images are invariable due to presence of abnormalities, appearance of difficult anatomy to "get it while one can"
    - Future direction: reordering images in uniform order via ?PACS

Recording Protocols

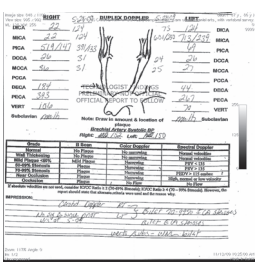
- In writing
- For each organ to summarize findings
  - Sampling issue – enough to insure physician comfortable issuing report
  - Optimize signal to noise
  - Image versus video versus combination
    - Rules for what to video including, e.g. abnormals, questionable areas, perhaps normal
- Normal has a certain set of images
- Abnormal must have more images to document the location, size (extent), and type of abnormality

Protocols

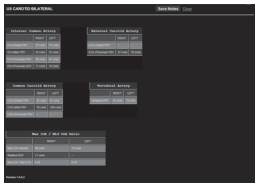
- Acquisition is described in general way
  - Variation is common, e.g. liver may be few to many images in any order
- Modern workflow
  - Machines have built in workflows and protocols
    - US machine automatically changes labels on scan, changes mode to/from gray to Doppler, etc.
    - Images are presented in consistent manner
      - Very effective for normal studies
    - e.g. Segment 1 transverse, segment 2 transverse, segment 2 sagittal, and so on
- Future directions for US machines and/or PACS
  - Images arranged so complicated studies are presented in a standard format

Evaluation of Images

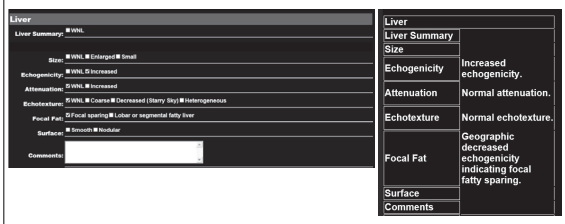
- Sonographer creates worksheet
- A check on completeness and consistency



Electronic worksheets



Worksheet and summary



Is there an advantage to having sonographers?

- Sonographers can spend more time with patient than physician
  - High demand for physician time
  - Physician can do more with less time
- Sonographer needs skill set to be eyes and ears of physician
- Physician interaction with patient lessened
- Best practice is to have physician available to scan
  - Physicians scan all patients may not be realistic
  - Physicians scan some, but not all, patients based on indication for examination OR initial findings by sonographer OR discrepant history/preliminary findings

Review of images and preliminary

- Sonographer presents case to physician
  - All cases presented?
  - Can some sonographers discharge patient and doctor reviews image off line after patient leaves?
  - Telesonography - Is off site review reasonable?
- Sonographer questions should lead to a dialog between sonographer and physician
  - More scanning
    - By sonographer and/or physician
  - To be solved by physician

Report

- In USA scope of practice is to describe findings, not diagnoses
- Is sonographer capable of rendering part of a report to be finalized by physician?
- Does sonographer identification appear on images? On report? Neither?

Sonographer learning

- Sonographers should be constantly learning as their experience grows
- Sonographer-physician interaction
  - Teaches sonographers deeper understanding of sonography
    - Sonographer skill is more easily pulled up than pushed or entirely self directed
    - Sonographer can also learn from senior sonographers as the profession becomes more mature
  - Sonographers grow an understanding of medicine
    - e.g. most relevant components of the test, therapeutic implications of their findings

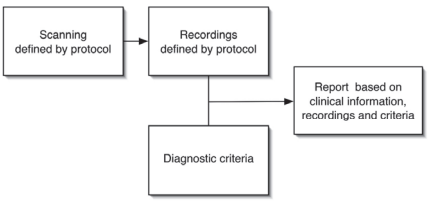
Feedback

- Sonography is hard – mistakes will happen and can be an important source of learning
- System should allow an open discussion of problems.
  - Sonographers should be free to discuss the shortcomings of their scans
- Case conferences, Quality improvement conferences
- Feedback MUST include acknowledgement of good work and shortcomings

Feedback

- Feedback MUST include acknowledgement of good work and shortcomings
  - "Ideal" proportion is two good reviews for each bad
    - All bad reviews leads to sense of hopelessness
    - Mixture implies improvement is possible

Workflow



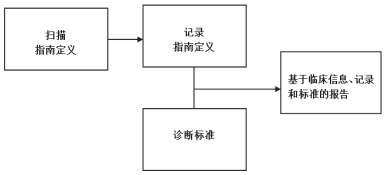
How to certify ultrasound staff?

- Sonographer certification: an estimated 90% of hospitals require at least one certification for employment
- Physician
  - No national standard although some specialty organizations do have well defined requirements
  - Physicians are given privileges at local hospital privilege committees
    - Some accept or require external certification
      - Accreditation from outside agencies: intersocietal accreditation commission, American College of Radiology, joint commission
      - Certification, e.g. RPVI for medical staff reading vascular studies

超声检查流程:
对中国的启示

Laurence Needleman, 医学博士
超声科主任
托马斯杰斐逊大学

工作流程



诊断标准

- 供全科室使用
  - 超声技师和医师
- 以书面形式
- 通用术语
- 标准易于理解
- **例外**易于理解

标准易于理解

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* Criteria are from the Society of Radiologists in Ultrasound Multispecialty Consensus Conference on Early First Trimester Diagnosis of Miscarriage and Exclusion of a Viable Intrauterine Pregnancy, October 2012.
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语言统一性

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工作流程概述

- 患者病史和症状 – 超声技师
- 根据指南获取图像– 超声技师
- 图像评估 – 超声技师初步
- 图像审查 – 医师
  - 附加图像– 专科超声技师或医师
- 初步– 待定, 可能是医师
- 报告 –医师

指南是采集清单

扫描指南

- 以书面形式
- 保持每个脏器的完整性
  - 有些机器设置扫描顺序以保证统一的采集顺序
    - 由于出现异常，失序图像总是存在, 对于困难解剖的出现则 “能获得就获得”
    - 未来方向: 通过PACS统一顺序重新排序图像

记录指南

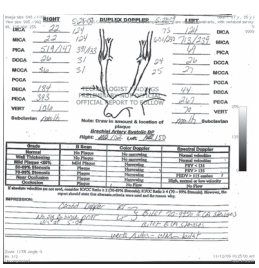
- 以书面形式
- 对每个脏器进行总结
  - 抽样问题 – 足以确保医师能够发布报告
  - 优化信噪比
  - 图像与视频组合
    - 视频记录的规则， 如： 异常, 可疑区域, 疑似正常
- 正常有特定一组图像
- 异常须有更多图像来记录位置，大小（范围）及异常的类型

指南

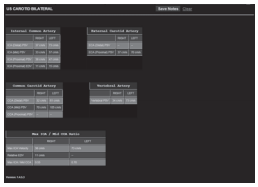
- 用常规方法描述获取
  - 变化是常见的, 例如： 肝脏可能在任何顺序中有几个或多个图像
- 现代工作流程
  - 机器已经内置工作流程和指南
    - 美国设备自动改变标签扫描,改变模式到/从灰色到多普勒等等
    - 图像呈现一致
      - 对于正规学习十分有效
    - 例如： 断片 1 横向,断片 2 横向,断片 2 径向, 等等
- 美国设备及/或PACS的未来方向
  - 图像排列十分复杂，研究呈现标准格式

图像评估

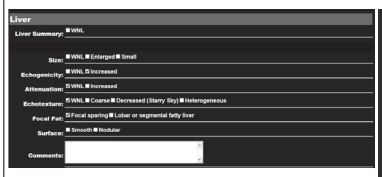
- 超声技师创建工作表
- 对完整性及一致性进行检查



电子工作表



工作表及摘要


Liver

Liver Summary: ■ WNL

Size: ■ WNL ■ Enlarged ■ Small

Echogenicity: ■ WNL ☐ Increased

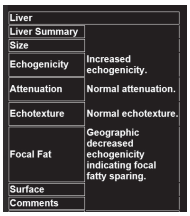
Attenuation: ☑ WNL ■ Increased

Echotexture: ☑ WNL ■ Coarse ■ Decreased (Starry Sky) ■ Heterogeneous

Focal Fat: ☐ Focal sparing ■ Lobar or segmental fatty liver

Surface: ■ Smooth ■ Nodular

Comments:



Liver	
Liver Summary	
Size	
Echogenicity	Increased echogenicity.
Attenuation	Normal attenuation.
Echotexture	Normal echotexture.
Focal Fat	Geographic decreased echogenicity indicating focal fatty sparing.
Surface	
Comments	

有了超声技师就有了优势?

- 超声技师可以比医师花更多的时间在患者身上
  - 对医师时间的需求高
  - 医师可用更少的时间做更多的事情
- 超声技师所需的技能是可作为医师的耳目
- 医师与患者的互动减少
- 最好的做法是让医师可以扫描
  - 医师要扫描所有患者不现实
  - 医师基于检查指示扫描一些,但并非全部患者**或是**已由超声技师做了初步检查的**或是**不符合历史/初步检查结果的

图像审查及准备工作

- 超声技师向医师介绍病例
  - 介绍所有病例?
  - 超声技师能否放患者出院，医师是否可以在患者出院后在线下审查图像?
  - 远程超声诊断 - 线下审查合理吗?
- 超声技师的问题应引起超声技师和医师之间的对话
  - 更多扫描
    - 由超声技师和/或医师操作
  - 由医师解决

报告

- 美国的实践范围描述的是结果而不是诊断
- 最终由医师完成的报告中超声技师能否参与部分?
- 超声技师鉴定是否会出现在图像上? 报告中? 还是两者都不会?

超声技师学习

- 超声技师随着其经验的增长应不断地学习
- 超声技师-医师相互影响
  - 教习超声技师加深对超声的理解
    - 超声技师技能相比施压或完全自我指导更容易提升
    - 超声技师亦可以向专业日渐成熟的高级超声技师求教
  - 超声技师增长了对药物的了解
    - 例如： 大多相关测试组件, 他们的发现带来的治疗影响

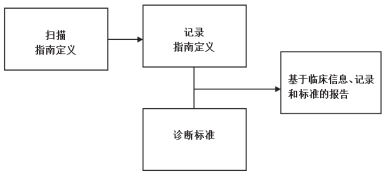
反馈

- 超声检查术很难 – 错误会发生并且可能是学习的一个重要来源
- 系统应准许公开探讨问题
  - 超声技师应可以自由讨论他们扫描的不足
- 案例会议, 质量促进会议
- 反馈**必须**包括肯定工作中的成绩以及承认当中的不足

反馈

- 反馈**必须**包括肯定工作中的成绩以及承认当中的不足
  - "理想" 比例是两个好评对一个差评
    - 全是差评将导致毫无希望的绝望感
    - 好差混合意味着仍有改进的空间

工作流程



如何认证超声工作人员?

- 超声技师认证: 估计90%的医院需要至少一个职业证书
- 医师
  - 虽然没有国家标准，但一些专业组织有明确的要求
  - 医师在地方医院特权委员会享有特权
    - 有些接受或要求外部认证
      - 外部机构认可：社会间认可委员会, 美国放射学会, 联合委员会
      - 认证, 例如：美国血管超声医师认证(RPVI)-医护人员阅读血管研究

Overview of Jefferson China-American Ultrasound Scholarship Program

Ji-Bin Liu, MD, FAIUM

Director, Special Training Programs
Professor of Radiology
Department of Radiology
Jefferson Ultrasound and Radiology Education Institute

托马斯杰斐逊大学简介

- 托马斯杰斐逊大学(私立医学院, 医院)建于1824年, 位于费城市中心
- 2014全美医院排名第17位
- 床位950张, 员工7233, 医生1200, 护士1800

杰斐逊超声研究所

(Jefferson Ultrasound Research and Education Institute)

- 经WHO批准建立的世界超声医学中心
- 由前任世界超声主席Goldberg教授创办并任所长，现任所长Nezarian教授
- 临床、科研、教学三位一体，共有职工92名，其中专职科研人员10余名
- 在全世界有70多个培训中心
- 国内有北京协和、北医三院、北京友谊、西安西京、四川华西、上海中山、内蒙鄂尔多斯等合作教育中心
- 2013年成立中美超声交流学者项目

Jefferson超声教育研究所

- 每年培训各类超声医务人员
- 课程设置、教员水平和教学设施均为世界一流
- 该超声学院有教室、声像控制室、照相室、图书资料室、视听室等
- 每月定期给美国和世界各地的医生授课，全年大约40-50期
- 每年在大西洋城主办超声前沿研讨会（Leading Edge in Diagnostic Ultrasound）大约800-1500人参加, 已经连续37年

Jefferson Ultrasound Institute Affiliate Centers (n=73)*

Europe / Eurasia
Albania
Armenia
Austria
Bosnia & Herzegovina
Bulgaria
Croatia
Estonia
Hungary
Ireland
Italy (2)
Latvia
Lithuania
Macedonia
Poland (2)
Romania
Slovakia
Slovenia
Switzerland
Turkey
Ukraine (2)

Asia
Afghanistan
Bangladesh
China (5)
Georgia
India (6)
Indonesia
Kazakstan
Kyrgyzstan
Malaysia
Mongolia
Nepal
Pakistan (2)
Russia
Uzbekistan

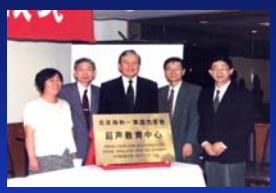
South America
Argentina
Brazil (2)
Venezuela

Africa
Egypt
Nigeria (3)
South Africa (3)
Uganda
Kenya
Ghana
Sierra Leone

Middle East
Israel

* As of February 2012

杰斐逊超声研究所在中国的附属中心



- Beijing Peking Union Hospital in 1995
- Director： Dr. Yu-Xin Jiang
- Shanghai Zhong Shan Hospital in 1996
- Director: Dr. Zhi-Zhang XU

杰斐逊超声研究所在中国的附属中心

- Xian Xijing Hospital in 2000
- Director: Dr. Yun-Qiu Qian

- Chengdu Huaxi Hospital in 2004
- Director: Dr. Yan Luo

杰斐逊超声研究所在中国的附属中心

- Inner Mongolia Erdos Central Hospital in 2009
- Director: Dr. Jinrui Wang

- Beijing University Shenzhen Hospital in 2017
- Director: Dr. Yun Chen

杰斐逊超声研究所在中国的附属中心

- Beijing University Third Hospital in 2015
- Director: Dr. Ligang Cui

- Beijing Friendship Hospital in 2016
- Director：Dr. Linxue Qian

Current Program Overview

- In 2013, Jefferson Ultrasound and Radiology Education Institute (JUREI) has collaborated with Beijing Medical Ultrasound Association (BMUA) to establish China-American ultrasound scholar training program (CAUSTP)

- The purpose of the program is to establish an international exchanging and training platform for Chinese ultrasound doctors and scholars and to facilitate academic exchange activities between American and China in the filed of medical ultrasound

Program Management

- The program is managed by a bilateral program committee
- Directors: Dr. Ji-Bin Liu (USA) and Dr. Jinrui Wang (CN)
- Deputy Directors: Dr. Yuxin Jiang and Dr. Jie Tang
- Secretary-Generals: Dr. Linxue Qian and Dr. Junlai Li
- Secretary: Dr. Xiangdong Hu

Program Establishment

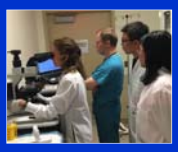
Program Contents

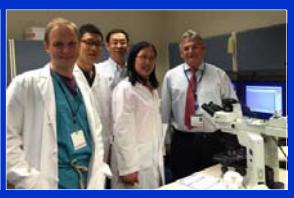
- The program include:
- A. short-term scholarship program (1-3 months)
- B. mid-term scholarship program (6 months)
- C. long-term scholarship program (12 months)
- D. Advanced Ultrasound Symposium (14 days)


Program Activities

- The program allows the visiting scholars to attend JUREI regular education courses and specially designed lectures, to observe clinical practice and to participate in research activities.
- Over the past 3 years, 60 Chinese ultrasound visiting scholars participated in the program from 1 to 12 months

超声进修学者临床学习

超声进修学者临床学习



中国超声进修学者

First and Second Advanced Ultrasound Symposium October 2013 and May 2014


Third Advanced Ultrasound Symposium May 2015


Fourth Advanced Ultrasound Symposium May 2017


Contribution Awards



Jefferson Ultrasound and Radiology Education Institute, Sidney Kimmel Medical College at Thomas Jefferson University presented Outstanding Contribution Awards to Dr. Jinrui Wang, Dr. Xing Yu and Mr. Aiping Yang

Program Website

http://www.cuda.org.cn/zmcs/index.php

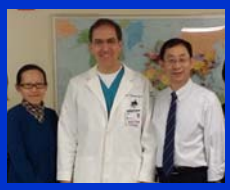
Program Website

http://www.jefferson.edu/university/jmc/departments/radiology/jurei/China-America-Ultrasound-Scholar-Training.html

West China Project

- To work with Department of Radiologic Sciences and Jefferson School of Health Professions for establishing newly-initiated sonographer program at West China Medical School
  - To send Jefferson teacher to provide summer courses at West China Medical School (sponsored by Sichuan University)
  - To assist in development of curriculum for sonographer program
  - To host senior student from West China Medical Imaging Technology program
  - To work with ARDMS for certification and credentialing of West China sonographer

Visiting scholars from West China Hospital




Traci Fox, ARDMS, PhD attending the international exchange teacher program at West China Medical School

- To attend West China summer immersion program:
- To provide two courses (2 weeks with 32 hours):
  1. Principles and Instrumentation of Medical Ultrasound
  2. Hemodynamics and Doppler Ultrasound


专家委员会主任 姜玉新，常务主任 王金锐

建立系统、规范、权威的专科能力培训、测评、认证体系

组织专家队伍，建立培训基地，建设继教网络
统一培训大纲、规范教学内容、建立测评标准
五年内10万超声医生接受培训



Sonography Program Structure

Thomas Jefferson University

Jefferson Faculty

Traci B. Fox, EdD, RT(R), RDMS, RVT

- Assistant Professor, Jefferson College of Health Professions
  Assistant Research Professor of Radiology, Sidney Kimmel Medical College of
  Thomas Jefferson University
- Clinical Coordinator of Diagnostic Medical Sonography Program

Thomas Jefferson University

- Department of Radiologic Sciences
- Jefferson College of Health Professions (JCHP)
- Established in early 1980s as hospital-based program
- Became University-based in late 1980s

- Concentrations (tracks) – Each one year long:
  - General sonography
  - Vascular sonography
  - Cardiac sonography

Jefferson Sonography Program

- **One year program**
  - Students already have BS degree or higher
  - Students pick one concentration
  - Need to have 50 pre-requisite credits before starting

- **Two year program**
  - Students pick two concentrations
  - Students need 50 pre-requisite credits before starting

Program Goals and Student Learning Outcomes

- Goal # 1: Clinical Performance and Clinical Competence
- Goal # 2: Problem Solving Skills and Critical Thinking
- Goal # 3: Communication Skills
- Goal # 4: Professional Development and Growth:

Basic Courses For Sonography Programs

Basic Courses

- Pre-requisites (Bachelor of Science degree)
  - Math
  - English
  - Physics
  - Chemistry
  - Anatomy & Physiology
  - Medical terminology

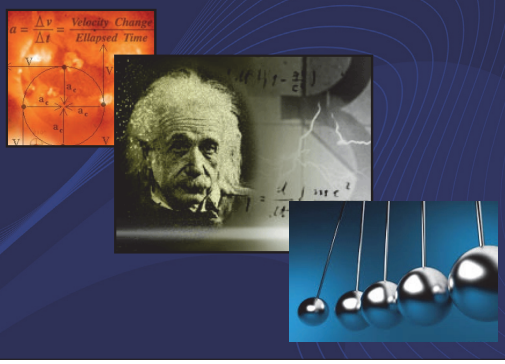
Sonography Courses

- Courses are designed to help students learn principles and instrumentation of ultrasound
  - Physics
  - Lab
  - Principles
  - Patient Care
  - 880 hours of clinical time at more than 40 possible clinical sites
- National Board exams (ARDMS)
  - Physics exam + specialty exam (abdomen, vascular, etc.)

National Accreditation

- Commission on Accreditation of Allied Health Education Programs (CAAHEP)
  - Reviews and accredits sonography programs
- Joint Review Committee on Education in Diagnostic Medical Sonography Programs (JRC-DMS)
  - Sets the curriculum and standards for accredited ultrasound programs
- Jefferson's program is CAAHEP accredited and TJU is accredited nationally by Middlestates

Physics



Physics

- Physics is very important part of ultrasound
- Image quality depends on knowledge of physical principles of sound waves and how to obtain best pictures
- Doppler physics is important in order to optimize for different types of flow

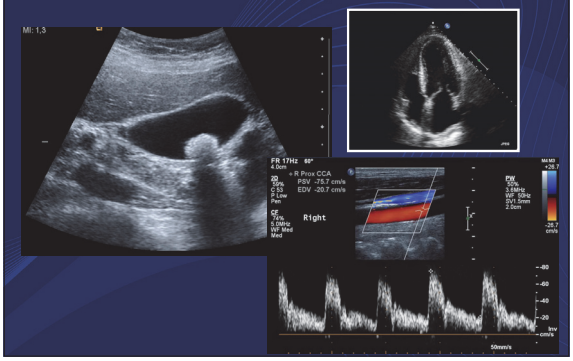
Lab Instruction

The student ultrasound lab, Jefferson College of Health Professions at Thomas Jefferson University

The Ultrasound Lab at Thomas Jefferson University

- Five Toshiba Aplios
- One Parks Flo-lab
- One Philips HD-11
- One Siemens X-300
- One MedaPhor abdomen/ob/gyn ScanTrainer
- One MedaPhor transvaginal ScanTrainer

Anatomy



Anatomy

- Knowledge of detailed anatomy crucial to the sonographer
- It is not possible to know what is “abnormal” looks like if normal anatomy is not known
- Must known cross-sectional and relational anatomy and what it looks like on ultrasound

Patient Care

Students practicing body mechanics in lab

Patient Care

- Students learn basic patient care including vital signs, body mechanics, and sterile technique
- Students also learn about generational differences (i.e., how to treat children, vs. elderly), ethics, and legal issues in medicine

Clinical

We have over 40 clinical sites
3 states

Clinical

- Students spend at least 848 hours in clinical
  - Fall 3 days per week after "boot camp"
  - Spring 3 days per week
  - Summer 4 days per week
- Students usually rotate to 2 or 3 hospitals as part of training
- Challenge: not all hospitals scan obstetrics

Simulation

MedaPhor ScanTrainers

Simulation

Simulation

- We have two MedaPhor ScanTrainers for abdomen, obstetrics, gynecology, and transvaginal scanning
- We have four anthropomorphic phantoms for fetal, breast, male pelvis, and transvaginal

Distance Teaching

Classrooms at Jefferson

Distance Teaching (Tele-teaching)

- Students off-campus can learn remotely with camera and audio setup in classroom
- If taught synchronously, students can interact via chat, voice, and on-the-spot quizzes to ensure learning
- If taught asynchronously, students can interact with faculty and students via discussion board posts and other assignments
- This is in development

超声医技一体及分级诊疗初探

罗燕

四川大学华西医院超声科

2017. 4

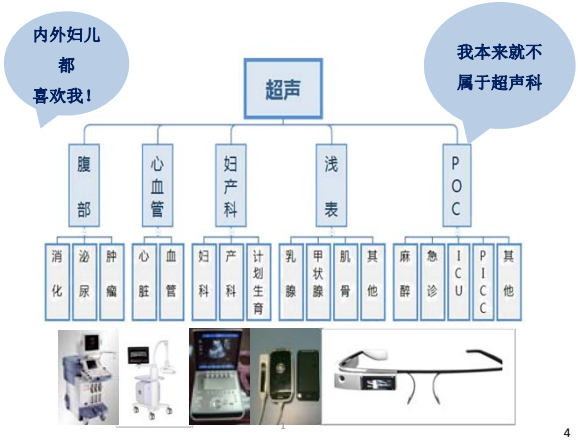
中国超声科&超声人：独特

- ➢中国超声科
  - ✓独立三级学科
  - ✓独立住院医规培
  - ✓复旦专科排名
- ➢中国超声人

- ✓医师资格证书&医师执业证书（彩超上岗证）
- ✓从业者多：14万注册医师，
- ✓有医师无技师：不同于国外、也与国内其他医技科室不同

超声的需求体量巨多

		从业人数	需求（人次，2015）	对象
传统超声	体检	20万	3-4亿	超声医师
	腹部		7-8亿	
	心脏			
	妇产科			
	浅表（乳腺、甲状腺、肌骨、血管、等）			
POC超声（新兴市场）	麻醉、急诊、ICU、呼吸，等	如火如荼 数据不详		临床各科医师
	PICC			护士
	产程监测			助产士



其实超声科越来越已经只是超声的一部分了

- ➢ **传统超声：**
  - 腹部：超声老区，优势微弱
  - 心脏：价值明显，归属不一
  - 妇产科：传统优势，觊觎已久
  - 浅表：新兴领域，分一杯羹
- ➢ **POC超声（Point of care）**
  - 麻醉超声：纳入规培要求
  - 急诊&ICU超声：进入指南
  - 肺超声： BLUE&FALL
  - PICC：遍地开花
- ➢ **智能超声：**也来敲门

Point-of-care ultrasound in medical education: stop listening and look. N Engl J Med. 2014 ,20;370(12):1083-5.

超声&超声科

- ➢超声的价值是什么？
- ➢超声科的价值是什么？
  - ✓满足超声需求
  - ✓体现学科价值
- ➢超声科价值如何体现？
  - ✓满足超声需求
  - ✓体现学科价值

华西超声医技一体&分级诊断模式的尝试

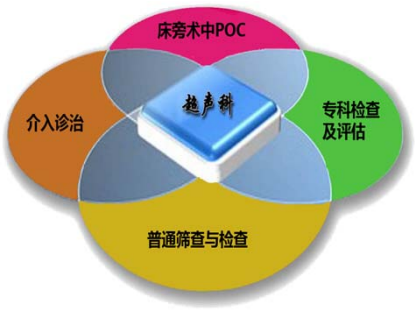
宽　　高

7

确定超声需求的“分级”

- POC (point of care)：床旁特定目的，迅速排查。
- 体检及筛查：发现有无问题，初步诊断，快速。
- 专科需求：精准、个体化、围绕专病，较慢速。
- 介入诊治：微创，包括引导、评估、治疗，慢速。

8



检查：>80%普通、<5%介入、 <10%专科、 < 5%床旁及其他

9

尝试超声的“分级供应”

- 岗位：体检、普检、急诊、会诊、二线、专科、介入
- 人员分级：医师&技师，初、中、高级
- 设备分级：配备
- 空间：普检、专科区域
- 流程：改造与配合

10

超声科各级超声准入资格

检查种类	内容	准入人员	工作模式
体检超声	体检	技师、低年资医师及以上	检查+会诊
普通超声	门诊、住院病人超声筛查及检查	技师、低年资医师及以上、高年资各类学员	检查+会诊
急诊及床旁	急诊、床旁及术中	住院总及副老总	单独完成
普通会诊	超声诊断及会诊	中级及以上	
二线	应急、会诊、考勤，主持每周病案讨论	医疗组长	
专科超声	专科疾病诊断及评估	医疗组长	独立/会诊
介入超声	超声引导下诊断和治疗	中级及以上	单独完成

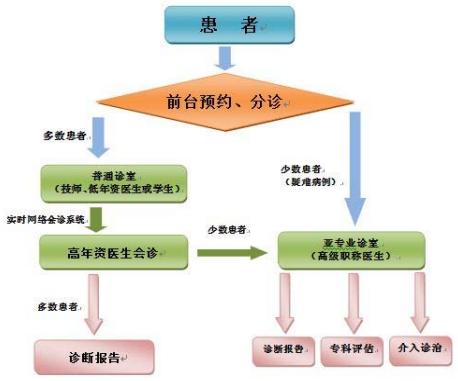
超声设备的分级

- 普通超声：重实用及性能，重性价比
- 专科超声：重临床所需功能
- 床旁及POC超声：基本功能即可，重便捷



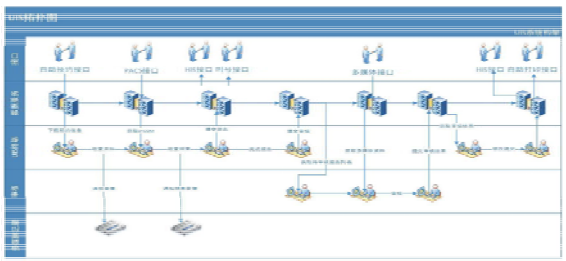
超声科空间“分区”

- 普通检查区
- 专科检查区
- 科外检查区：方便病人及科室
- 介入诊治区
- 绿色通道：二线、其他



14

超声分级诊断及实时质控平台建设与管理（2016-2018中央财政项目）



超声分层教学

- 基本超声：重点是检查规范，技师及初级医师
- 系统超声：常见疾病诊断与鉴别诊断
- 专科超声：发展亚专业及MDT
- 介入超声：与临床及大影像
- POC超声：还不知道怎么办？

16

超声分层教学（目前）

四川大学华西医院超声科住院技师规范化培训计划

- 按医院统一程序进行
- 培训时间两年
- 始于2007年
- 教学内容为第一层次

17

超声分层教学（下一步）

- 医学影像技术系超声技术方向四年本科生：（2016年起四川大学开始招生）
- 课程的设置：参照托马斯杰斐逊大学
- 下一步：申请国际认证与ARDMS考试

18

2017双创项目“多模态影像技术创新训练中心”之“超声可视化模拟训练平台”

包括：

- 传统超声：腹部、心脏、妇产、浅表、血管
- POC超声：麻醉、急诊、ICU
- 超声教学与培训体系构建：中国特色与国际化

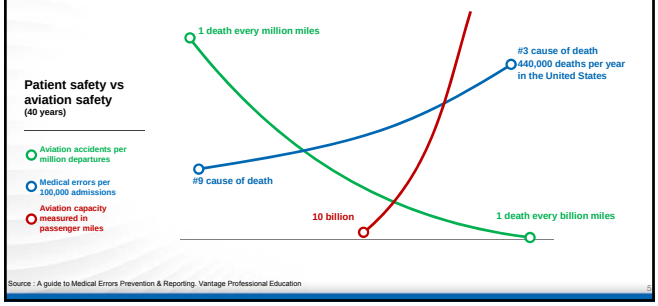
19

OBJECTIVES

- Illustrate the role of CAE Healthcare's Ultrasound Simulation solutions in improving healthcare education and quality of patient care
- Show how simulation improves access to education
- The increasing role of technology in healthcare education and the impact on providers

CAE IS A WORLD LEADER IN TRAINING AND SIMULATION

STRIVING FOR AVIATION SAFETY RATES IN HEALTHCARE



Source : A guide to Medical Errors Prevention & Reporting. Vantage Professional Education

LEVEL OF FIDELITY IN AVIATION

1 hour in a CAE Flight Simulator

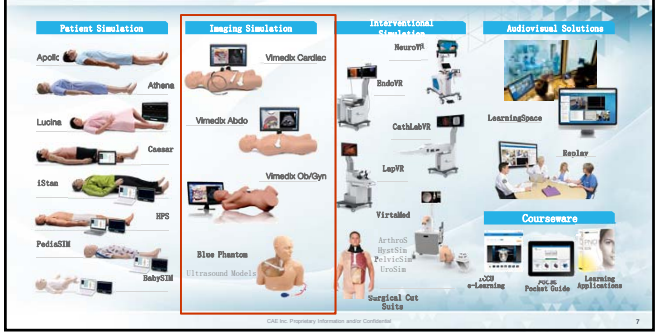
=

1 hour of flight time on an actual airplane

This is what we strive for in healthcare simulation!

CAE HEALTHCARE

OUR PRODUCT OFFERING



THOUGHT LEADER AND SOCIETY RELATIONSHIPS

Educational Institutions

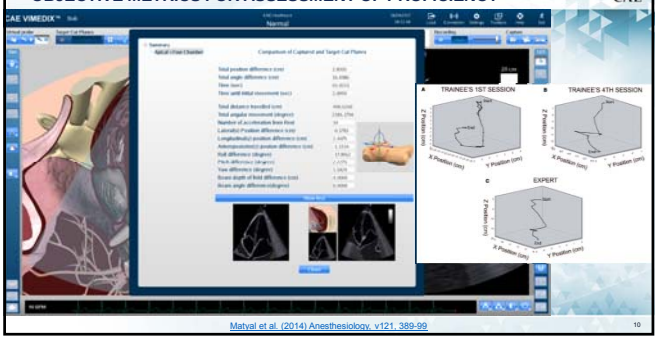
University of Cambridge · Harvard Medical School · Columbia University · Duke University · University of Oxford · Stanford University · Yale · University of Michigan · The University of Chicago · Johns Hopkins University · University of Toronto · McGill

Medical Societies

CHEST American College of Chest Physicians · ESICM · ASE · European Society of Anesthesiology ESA · Simulation Fellowship · critical care Education Network · Canadian Critical Care Society · American Society of Anesthesiologists

CAE Healthcare collaborates with global experts in healthcare and education

OBJECTIVE METRICS FOR ASSESSMENT OF PROFICIENCY



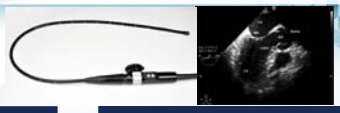
Matyal et al. (2014) Anesthesiology, v121, 389-99

AUGMENTED REALITY: INNOVATION IN EDUCATION

SCREEN-BASED SIMULATION FOR MAINTENANCE OF CERTIFICATION

ACCELERATING PATH TO PROFICIENCY

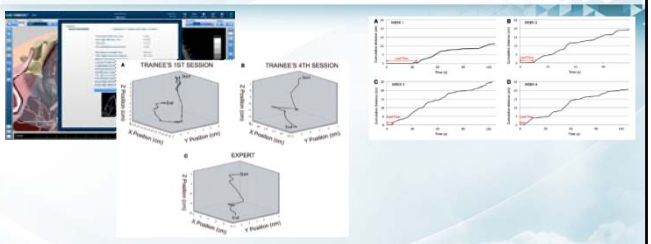
Transesophageal Echocardiography (TEE)



Anesthesia/Cardiology	Emergency Medicine
• 4-week TEE curriculum with E-Learning and Simulation • Demonstrated development of proficiency • Translation into clinical proficiency	• 4-hour TEE Workshop • Most trainees able to obtain basic views after workshop • 95.8% retained ability to obtain views **6 weeks** after workshop

Anesthesiology. 2014 Aug;121(2):389-99. doi: 10.1097/ALN.0000000000000234.
Simulator-based transesophageal echocardiographic training with motion analysis: a curriculum-based approach.
J Cardiothorac Vasc Anesth. 2015 Dec;29(6):1504-10. doi: 10.1053/j.jvca.2015.05.198. Epub 2015 May 27.
Manual Skill Acquisition During Transesophageal Echocardiography Simulator Training of Cardiology Fellows: A Kinematic Assessment.
Crit Ultrasound J. 2015 Dec;7(1):27. doi: 10.1186/s13089-015-0027-3. Epub 2015 Jun 12.
Focused transesophageal echocardiography for emergency physicians-description and results from simulation training of a structured four-view examination.

METRICS TO ASSESS COMPETENCY



Anesthesiology. 2014 Aug;121(2):389-99. doi: 10.1097/ALN.0000000000000234.
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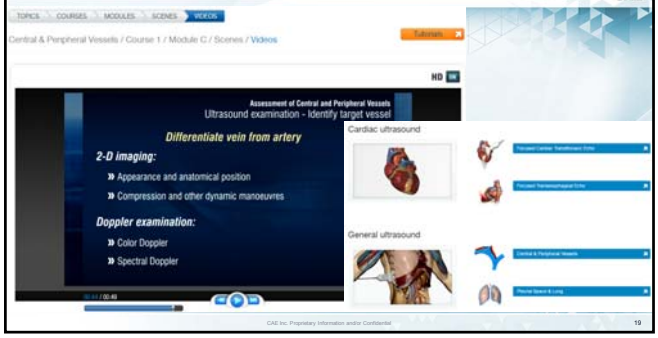
Manual Skill Acquisition During Transesophageal Echocardiography Simulator Training of Cardiology Fellows: A Kinematic Assessment.

SCREEN-BASED SIMULATION FOR MAINTENCE OF CERTIFICATION

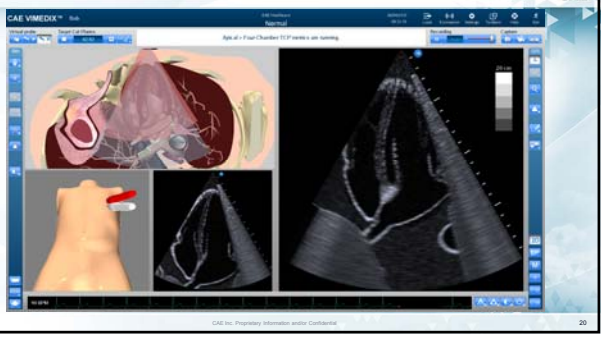
CAE SIMULATION USED FOR ASSESSMENT AND CERTIFICATION

- Vimedix used for European Diploma in Echocardiography exam for Transesophageal Echocardiography
- Vimedix used in assessments for Japanese Society of Anesthesia and
- ICCU E-Learning a component of Chest (ACCP) ultrasound curriculum

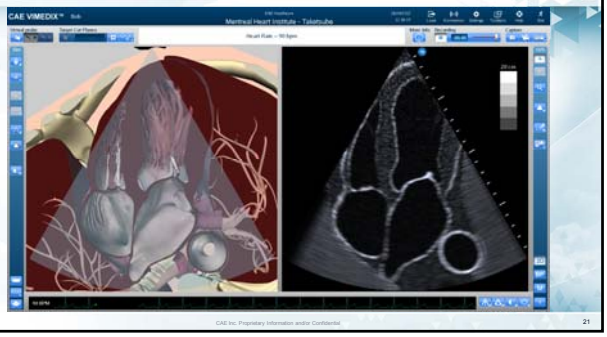
E-LEARNING: FLEXIBLE LEARNING WITH YOUR OWN PACE



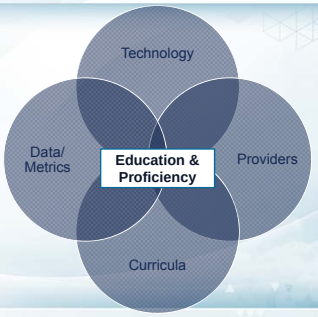
SELF-DIRECTED MODULES TO SAVE INSTRUCTORS TIME



EXPOSURE TO RARE OR URGENT PATHOLOGIES



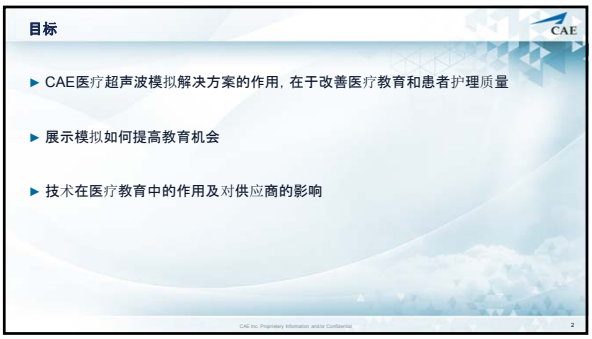
TECHNOLOGY AS A VEHICLE FOR EDUCATION AND PROFICIENCY



PARTNER OF CHOICE FOR SIMULATION IN EDUCATION/ASSESSMENT

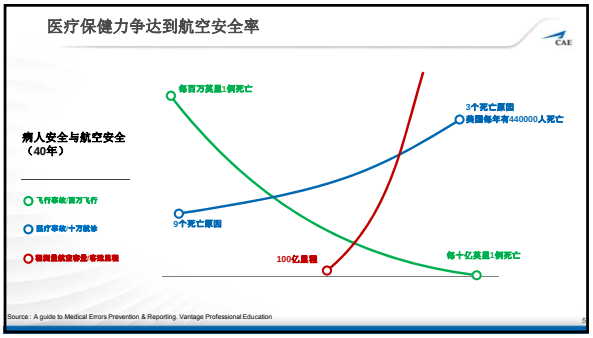

CAE
THANK YOU
CAE Inc. Proprietary Information and/or Confidential
25

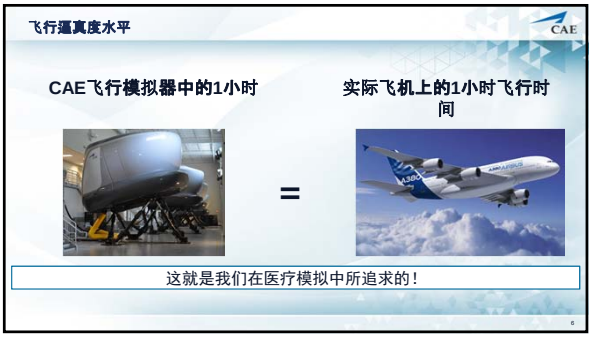

CAE Healthcare
模拟持续教育和能力
Cedrin Law
超声波高级产品市场经理

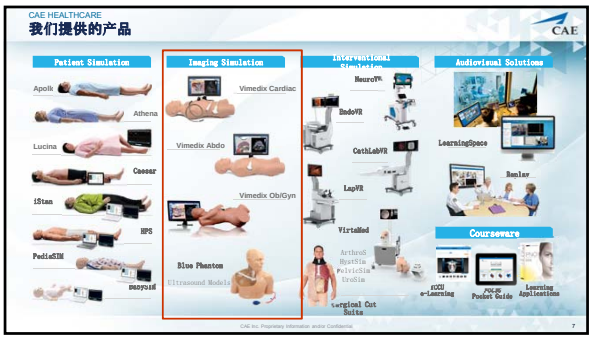

目标
CAE
► CAE医疗超声波模拟解决方案的作用，在于改善医疗教育和患者护理质量
► 展示模拟如何提高教育机会
► 技术在医疗教育中的作用及对供应商的影响


CAE是世界训和模拟的领先者
民用航空
国防和安全
医疗保健


数据
航空公司运营
分析员
操作程序
培训负责人
培训程序
虚拟训练
数据
模拟器
自适应闭环训练：
飞行运行质量保证(FOQA)
模拟器操作的质量保证(SOQA)


医疗保健力争达到航空安全率
病人安全与航空安全（40年）
飞行事故/百万飞行
医疗事故/十万就诊
每百万英里1例死亡
3个死亡原因
美国每年有440000人死亡
9个死亡原因
100亿里程
每十亿英里1例死亡
Source : A guide to Medical Errors Prevention & Reporting, Vantage Professional Education


飞行逼真度水平
CAE
CAE飞行模拟器中的1小时
=
实际飞机上的1小时飞行时间
这就是我们在医疗模拟中所追求的！


CAE HEALTHCARE
我们提供的产品
Patient Simulation
Imaging Simulation
Interventional Simulation
Audiovisual Solutions
Apollo
Athena
Lucina
Caesar
iStan
HPS
PediaSIM
Vimedix Cardiac
Vimedix Abdo
Vimedix Ob/Gyn
Blue Phantom
Ultrasound Models
NeuroVR
EndoVR
CathLabVR
LapVR
VirtaMed
ArthroS
HystSim
PelvicSim
UroSim
Surgical Cut Suits
LearningSpace
Replay
Courseware
eICU e-Learning
POC-US Pocket Guide
Learning Applications


贯穿领导与社会关系
教育机构
医学学会
University of Cambridge
Harvard Medical School
Columbia University
Duke University
University of Oxford
Stanford University
Yale
University of Chicago
Johns Hopkins University
University of Toronto
McGill
CHEST
American College of Chest Physicians
ESICM
ASE
European Society of Anesthesiology
ESA
Simulation Fellowship
critical care education network
American Society of Anesthesiologists
CAE医疗保健与全球保健和教育的专家合作


技术的最新进展


能力评估的客观指标
CAE VIMEDIX™
Comparison of Captured and Target Cut Planes
TRAINEE'S 1ST SESSION
TRAINEE'S 4TH SESSION
EXPERT
Malyal et al. (2014) Anesthesiology, v121, 389-99


增强 真实感:教育创新


圆面模拟认证维护
American Society of Anesthesiologists
CAE Healthcare

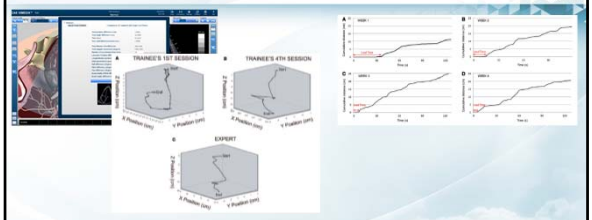
加快通往熟练

经食管超声心动图
(TEE)

麻醉/心脏病	急救医学
• 4周的TEE在线学习和模拟课程 • 熟练度发展示范 • 转变成临床熟练	• 4小时的TEE研习班 • 大多数学员在研习班后能够获得基础认识 • 研习班结束6周后仍有95.8% 的学员能维持基础认识的能力

Anesthesiology. 2014 Aug;121(2):389-99. doi: 10.1097/ALN.0000000000000234.
Simulator-based transesophageal echocardiographic training with motion analysis: a curriculum-based approach.
J Cardiothorac Vasc Anesth. 2015 Dec;29(6):1504-10. doi: 10.1053/j.jvca.2015.05.198. Epub 2015 May 27.
Manual Skill Acquisition During Transesophageal Echocardiography Simulator Training of Cardiology Fellows: A Kinematic Assessment.
Crit Ultrasound J. 2015 Dec;7(1):27. doi: 10.1186/s13089-015-0027-3. Epub 2015 Jun 12.
Focused transesophageal echocardiography for emergency physicians-description and results from simulation training of a structured four-view examination.

能力评估指标



Anesthesiology. 2014 Aug;121(2):389-99. doi: 10.1097/ALN.0000000000000234.
Simulator-based transesophageal echocardiographic training with motion analysis: a curriculum-based approach.

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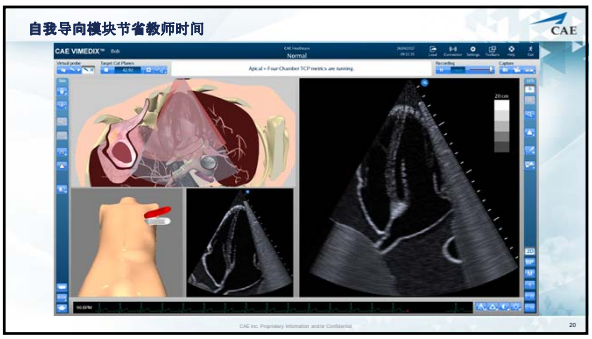
Manual Skill Acquisition During Transesophageal Echocardiography Simulator Training of Cardiology Fellows: A Kinematic Assessment.

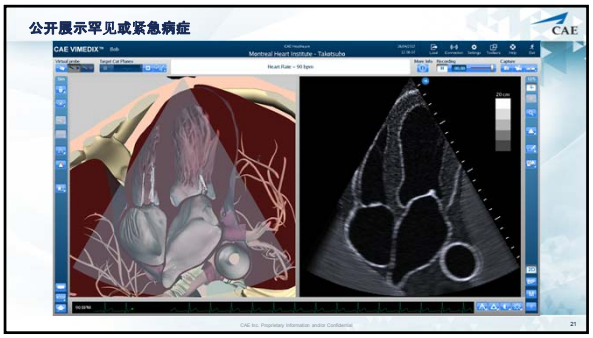
圖面模拟认证维护

用于评估和认证的CAE模拟设备

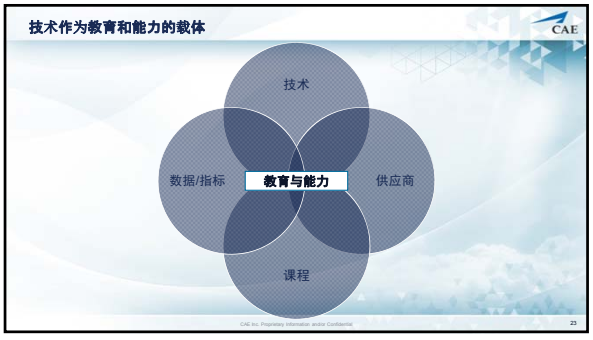
- Vimedix被用于超声心电图欧洲文凭考试 Vimedix used for European Diploma in Echocardiography exam for Transesophageal Echocardiography
- Vimedix用于评估日本社会麻醉Vimedix used in assessments for Japanese Society of Anesthesia and
- ICCU在线学习是胸部 (ACCP)超声课程的一部分

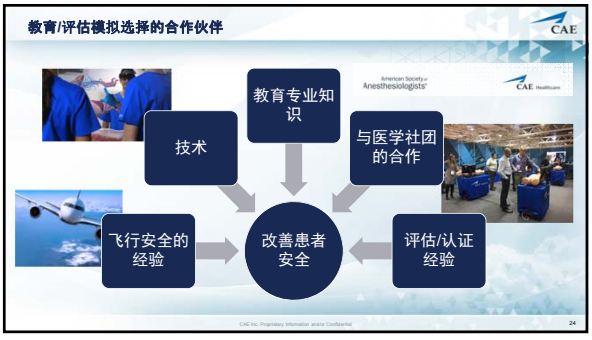

在线学习：灵活的学习时间
CAE
TOPICS
COURSES
MODULES
SCENES
VIDEOS
Central & Peripheral Vessels / Course 1 / Module C / Scenes / Videos
Tutorials
HD
Assessment of Central and Peripheral Vessels
Ultrasound examination - Identify target vessel
Differentiate vein from artery
2-D imaging:
» Appearance and anatomical position
» Compression and other dynamic manoeuvres
Doppler examination:
» Color Doppler
» Spectral Doppler
Cardiac ultrasound
General ultrasound


自我导向模块节省教师时间
CAE


公开展示罕见或紧急病症
CAE
CAE VIMEDIX


关联供应商与教育和技术


技术作为教育和能力的载体
CAE
技术
数据/指标
教育与能力
供应商
课程


教育/评估模拟选择的合作伙伴
CAE
教育专业知识
技术
与医学社团的合作
飞行安全的经验
改善患者安全
评估/认证经验


CAE
非常感谢！
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Simulation for Ongoing Education and Proficiency

Presentation by:
Stuart Gall
CEO

BODYWORKS HEARTWORKS SCANTRAINER

MedaPhor

THE ULTRASOUND LEARNING PATHWAY

Pre-clinical training → Clinical training → On-going

Theory | Hands-on skill repetition | Skills assessment | Clinical practice | Diagnostic assessment | Certification | Continuous Professional Development

- This is the ideal ultrasound learning pathway for both education and proficiency
- But it needs:
  - experts to teach and supervise (at the right time)
  - patients to learn on (at the right time)
- And none of these provide a standardised learning or objective assessment
- Simulation provides all of the above and dramatically improves access to structured education within a medical institution

---

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IMPROVING ACCESS TO EDUCATION

Flexible ultrasound skills learning for all medical practitioners

Classroom teaching | Study Groups | Self-learning

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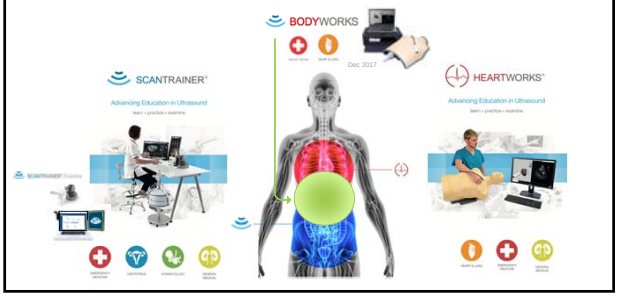
SIMULATION TRAINING AND EXAMINATION:



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THE ULTRASOUND LEARNING PATHWAY

Pre-clinical training → Clinical training → On-going

Theory | Hands-on skill repetition | Skills assessment | Clinical practice | Diagnostic assessment | Certification | Continuous Professional Development

SCANTRAINER — SCANTRAINER Examine

BODYWORKS
HEARTWORKS

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THEORY

Ultrasound Physics | **Learning Resources** | **Expert Videos**

Cloud based e-learning

HEARTWORKS eLearn | SCANTRAINER

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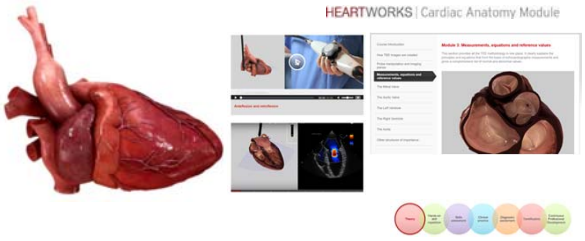
THEORY

Comprehensive Anatomy



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THE ULTRASOUND LEARNING PATHWAY

Simulation for Ongoing Education and Proficiency

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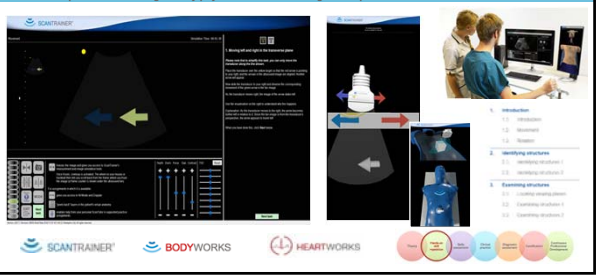
HANDS ON SKILLS REPETITION

Probe manipulation – learning the key psychomotor skills using 3D shapes



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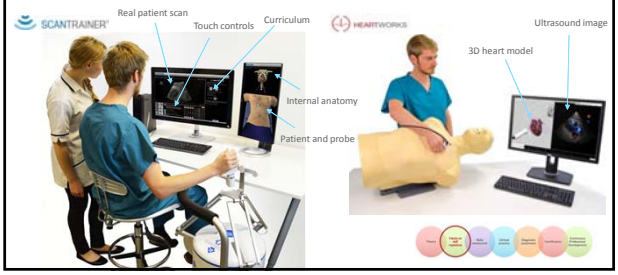
HANDS ON SKILLS REPETITION

Core and Advanced ultrasound scanning skills by speciality



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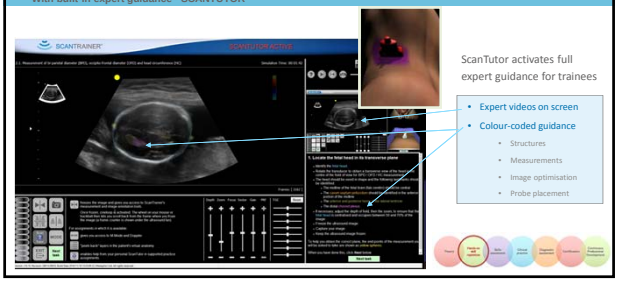
HANDS ON SKILLS REPETITION

With built-in expert guidance - SCANTUTOR



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HANDS ON SKILLS REPETITION

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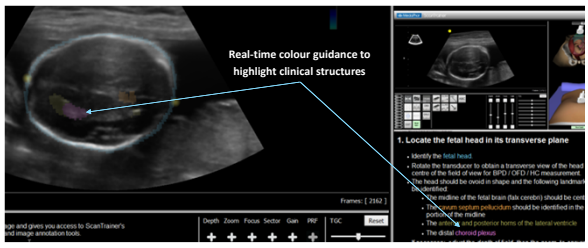

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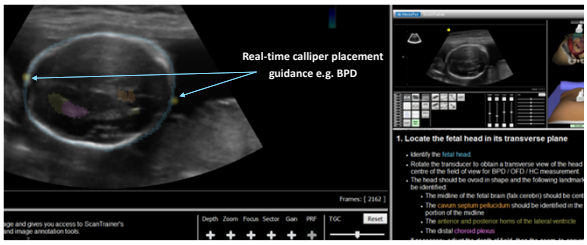
HANDS ON SKILLS REPETITION

With built-in expert guidance - SCANTUTOR



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THE ULTRASOUND LEARNING PATHWAY

Simulation for Ongoing Education and Proficiency

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CURRICULUM AND ASSESSMENT

Structured curriculum and REAL-TIME assessment in all specialities

OBGYN	27	172
GM	3	65
EM	6	78

Simulation for Ongoing Education and Proficiency

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CURRICULUM AND ASSESSMENT

Structured curriculum and REAL-TIME standardised assessment in all specialities

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THE ULTRASOUND LEARNING PATHWAY

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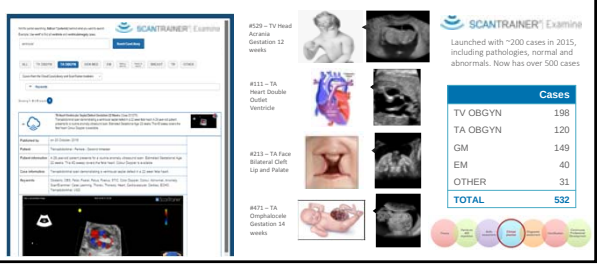
SCANTRAINER® | Examine

CLINICAL PRACTICE

500+ Patient cases – clinical practice in a pre-clinical environment



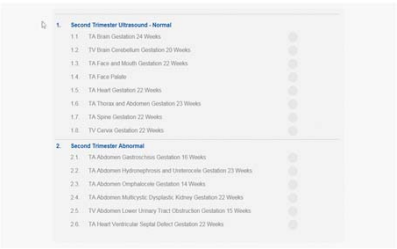
Cases	
TV OBGYN	198
TA OBGYN	120
GM	149
EM	40
OTHER	31
TOTAL	532

Simulation for Ongoing Education and Proficiency

CLINICAL PRACTICE

SCANTRAINER® | Examine

Structured Patient cases



Over 300 structured cases
across a wide range of anomalies and pathologies, specially selected by learning category

	Cases
OBGYN	214
GM	63
EM	33
TOTAL	310

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THE ULTRASOUND LEARNING PATHWAY

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DIAGNOSTIC ASSESSMENT

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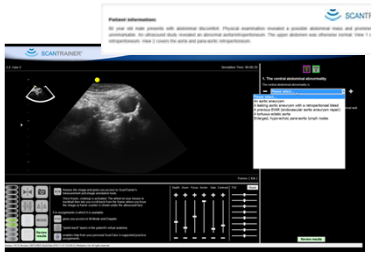
Case Exams



Case Exams are selected cases by speciality with in-built multiple choice questions to test a user's diagnostic skills

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EXAMINATION

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Standardised and objective assessment of ultrasound scanning skills

- Create standardised examinations
  - Local, regional or national

1. CREATE EXAM

2. TRAINEE TAKES EXAM ON SCANTRAINER

3. TUTOR MARKS AND PASSES

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THE ULTRASOUND LEARNING PATHWAY

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ONGOING PROFESSIONAL DEVELOPMENT AND EDUCATION

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CPD/CME

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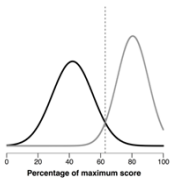
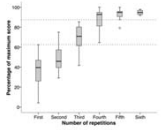
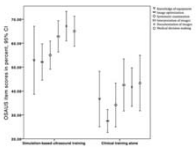
DOES SIMULATION LEAD TO IMPROVED PATIENT CARE?

Sustained effect of simulation-based ultrasound training on clinical performance: A randomized trial

Authors: Martin G. Tolsgaard, Charlotte Ringsted, Eva Dreisler, Lone N. Nørgaard, Jørgen H. Petersen, Mette E. Madsen, Nina LC. Freiesleben, Jette L. Sørensen, Ann Tabor







85.7% of the intervention group participants passed at a pre-established pass/fail level compared to **8.3%** of the controls, $p < 0.001$

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Thank you

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- ZTL Technologies (Beijing)

Presentation by:
Stuart Gall
CEO

BODYWORKS HEARTWORKS SCANTRAINER

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模拟继续教育和能力

演讲人:
Stuart Gall
首席执行官

BODYWORKS HEARTWORKS SCANTRAINER

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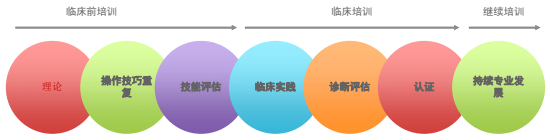
超声学习途径



- 这是理想的超声教育和能力学习的途径
- 但是需要:
  - 专家教导和监督（在适当的时候）
  - 在患者身上学习（在适当的时候）
- 这些都没有办法提供标准化的学习或客观的评估
- 模拟提供了上述所有，并大大提高了医疗机构的构化教育的机会

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改善教育机会

为所有医生提供灵活的超声技能学习

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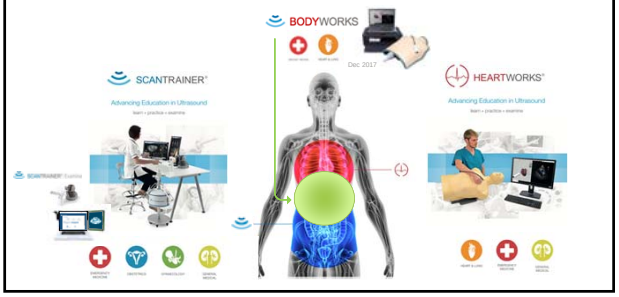
模拟训练与考核：



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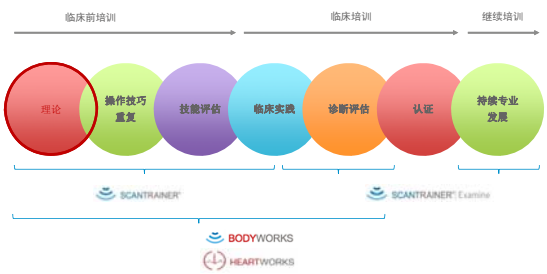
超声学习途径



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理论

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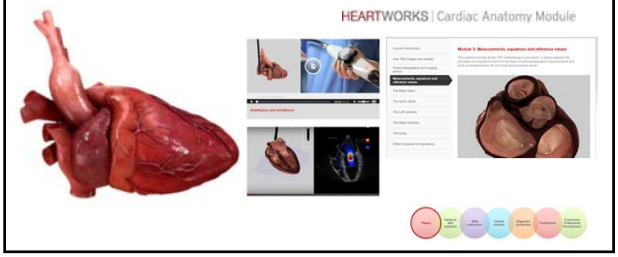
理论

全面解剖



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超声学习途径

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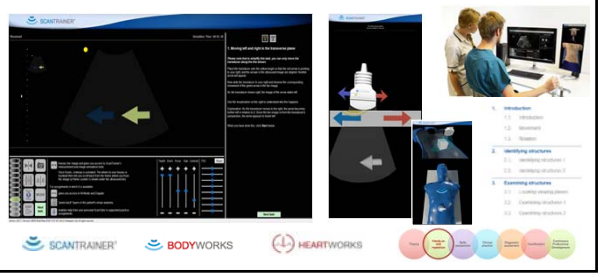
操作技巧重复

探针操作—使用3D模型学习关键精神运动技能



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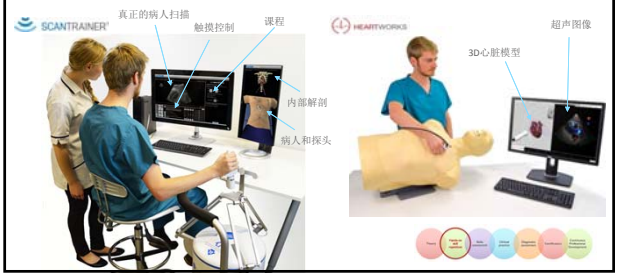
操作技巧重复

核心和先进超声扫描技能专业



Simulation for Ongoing Education and Proficiency

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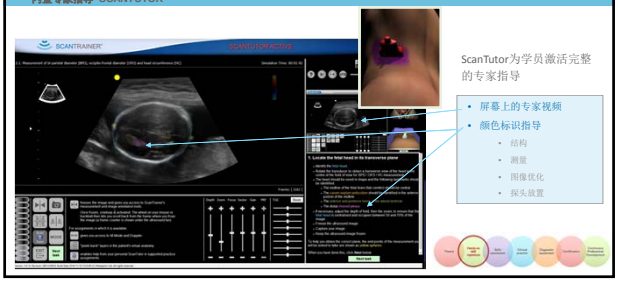
操作技巧重复

内置专家指导- SCANTUTOR



Simulation for Ongoing Education and Proficiency

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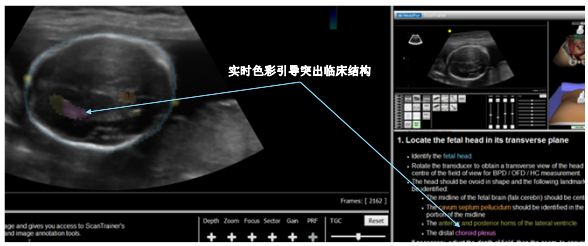
操作技巧重复

内置专家指导- SCANTUTOR



Simulation for Ongoing Education and Proficiency

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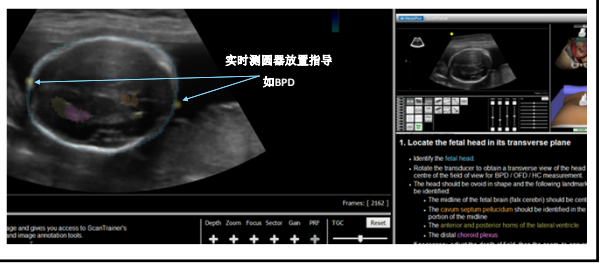
操作技巧重复

内置专家指导- SCANTRAINER



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超声学习途径

Simulation for Ongoing Education and Proficiency

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课程及评估

各专业的结构化课程与实时评估

Simulation for Ongoing Education and Proficiency

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课程及评估

各专业的结构化课程与实时评估

Simulation for Ongoing Education and Proficiency

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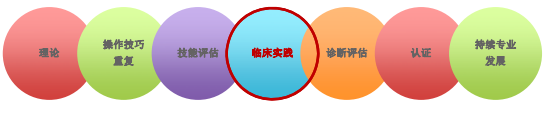
超声学习途径



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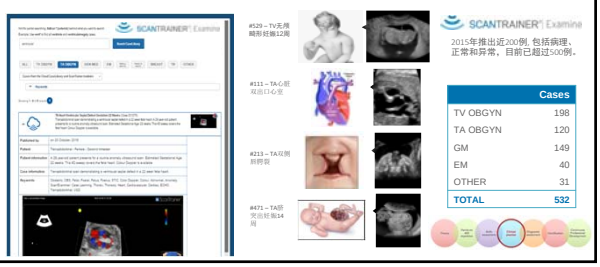
临床实践

500 多病人案例-临床前环境的临床实践

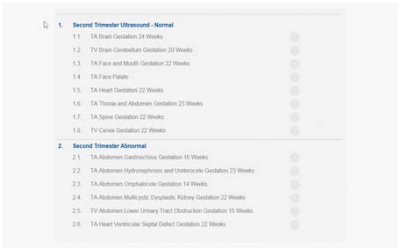


Simulation for Ongoing Education and Proficiency

SCANTRAINER® | Examine

临床实践

结构化的病例



超过300个结构化病例

涵盖广泛的异常病例，尤其可以根据学习类别进行挑选

	Cases
OBGYN	214
GM	63
EM	33
TOTAL	310

Simulation for Ongoing Education and Proficiency

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超声学习途径

Simulation for Ongoing Education and Proficiency

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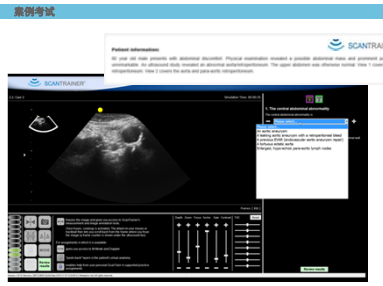
诊断评估

案例考试



案例考试的题目根据专业来选择，内置的多项选择题测试用户的诊断技巧

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考试

超声扫描技术标准、客观的评估

- 创建标准化考试
  - 地区、区域或国家

1. 创建考试

2.学员在扫描器上参加考试

3. 指导评分和效果

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超声学习途径

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持续专业发展与教育

CPD/CME

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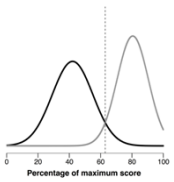
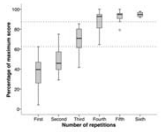
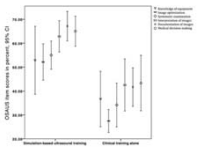
模拟能改善病人护理吗？

模拟超声训练对临床疗效的持续影响：一项随机试验

Authors: Martin G. Tolsgaard, Charlotte Ringsted, Eva Dreisler, Lone N. Nørgaard, Jørgen H. Petersen, Mette E. Madsen, Nina LC. Freiesleben, Jette L. Sørensen, Ann Tabor







85.7% 的干预组参与者通过预先确定的通过/失败水平，和对照组8.3% 相比，，p < 0.001

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Presentation by:
Stuart Gall
CEO

BODYWORKS HEARTWORKS SCANTRAINER

认证的价值

结合认证，富士胶片索诺声超声如何提升病人关护

Value of Certification

How FUJIFILM SonoSite Ultrasound Improving Patient Care, when Combined with Certification

王鹏程
Pengcheng WANG

富士胶片中国索诺声超声事业部 副事业部长
Deputy General Manager
SonoSite Ultrasound Business Unit
FUJIFILM China

2017.06 Beijing 北京

FUJIFILM SonoSite

0. 提纲 Content

- 富士胶片索诺声超声简介
  About FUJIFILM SonoSite Ultrasound
- 认证提升病人关护
  Certification Improving Patient Care

FUJIFILM SonoSite

1. 富士胶片索诺声超声简介 About FUJIFILM SonoSite Ultrasound

- 索诺声SonoSite品牌前身为ATL Inc.便携超声，成立伊始获得美国国防部先进技术研究局（DARPA）资金支持，为美军研发适应严苛战地环境的便携式彩超；
- 2010年，索诺声超声收购全球超高频超声领导品牌VisualSonics，丰富了索诺声超声产品线；
- 2012年，索诺声超声成为富士胶片FUJIFILM全资子公司，加入富士胶片医疗解决方案大家庭。

FUJIFILM SonoSite

1. 富士胶片索诺声超声简介 About FUJIFILM SonoSite Ultrasound

FUJIFILM
Value from Innovation
富士胶片超声产品

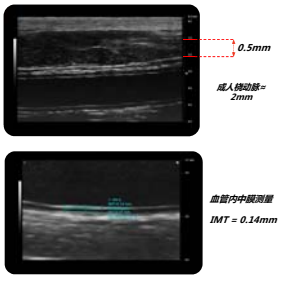
SonoSite **索诺声超声产品**	VISUALSONICS **VS超高频超声产品**
✓全球便携式彩超领导品牌； ✓专注床旁**POC**超声应用； ✓军用级产品品质，适应各种严苛环境；	✓全球超高频超声（**20-70MHz**）领导品牌； ✓专注实验室、科研超声应用； ✓首台FDA许可超高频电子超声，开拓全新应用；

FUJIFILM SonoSite

1. 富士胶片索诺声超声简介 About FUJIFILM SonoSite Ultrasound

SonoSite
索诺声超声产品

VISUALSONICS
VS超高频超声产品



FUJIFILM SonoSite

2. 认证提升病人关护 Certification Improving Patient Care

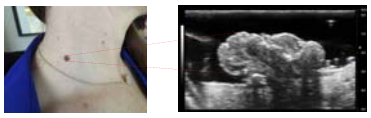
如今超声使用者遇到的挑战之一：Anytime, Anywhere, Any patient

由于各种不确定性，超声使用者更需要统一的标准化的培训及认证，使诊断结果更准确统一

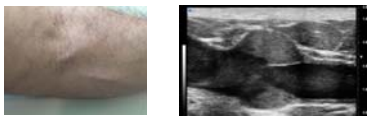
FUJIFILM SonoSite

2. 认证提升病人关护 Certification Improving Patient Care

如今超声使用者遇到的挑战之二：技术和知识的飞速发展



黑色素瘤



<4mm 静脉瓣

新技术、新知识催生新的应用领域，培训与认证使得新技术、新知识有效推广

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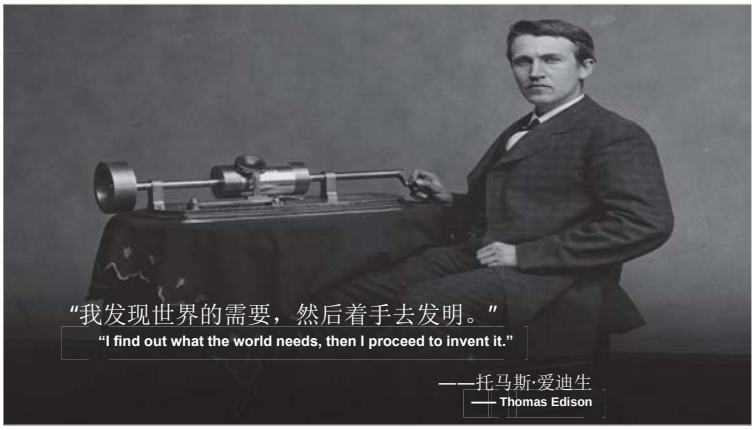
FUJIFILM
Value from Innovation
SonoSite

GE Ultrasound Point of Care
GE临床超声市场部

张雪涛 Zhang Xuetao
June 10, 2017

Imagination at work.



Extending the reach of care
将超声技术带给每一个患者,带到每一个角落

Therefore··· as we daily unlock more of ultrasound's potential, we can see a day when almost **every qualified clinician** in almost **every care setting** almost **anywhere in the world** can use ultrasound to the clear benefit of patients and those that pay for their care.

Point of Care Market Segments
临床超声客户及临床应用

麻醉Anesthesia/PM
- Regional Anesthesia
- TEE Applications
- Chronic Pain Management
- PICC/Central Line Access

急诊Emergency
- FAST
- AAA Assessment
- Vascular Access

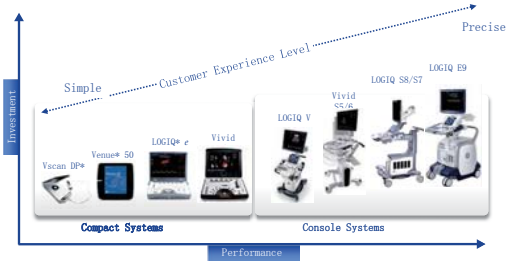
重症 Critical care
- Vascular Access
- Physical Exams
- Cardiac Evaluation
- ICU/CCU/SICU/NICU
- Trauma Surgery

肌骨超声 Rheumatology
- Sports Medicine
- Physiatry
- Rheumatology
- Orthopedics

外科Urology
- Vein Closure and Vascular Surgery
- Soft Tissue Evaluation
- Breast
- Thyroid
- Urology

介入引导穿刺
- Breast
- Thyroid
- ENT
- Kidney

GE Healthcare Point of Care
提供全面的临床超声解决方案



GE超声学院
GE Ultrasound academy

专业的超声应用团队
Application team
- 一遍布全国各省，彻底实现应用服务本地化
- 一全程跟踪超声应用教育、售前展示、安装培训到阶段回访

多个领域，多种形式的超声培训
On/off line seminar with Kols
- 与协会合作的网上教育培训课程
- 临床领域百场超声工作坊
- 超声远程资讯系统
- 超声远程应用支持系统
- 互动式新媒体教学应用程序

An introduction for ultrasound capacity building in China

中国超声专业能力建设情况介绍

国家卫生计生委能力建设和继续教育中心

NATIONAL HEALTH AND FAMILY PLANNING COMMISSION

CAPACITY BUILDING AND CONTINUING EDUCATION CENTER

Background 背景

1.Ultrasound capacity building is the need of deepening medical reform and health care.

（一）超声专业能力建设是深化医药卫生事业改革的需要。

The planning outline of "healthy China 2030" will give priority to the development of people's health. Medical professionals are the most important support and guarantee for the construction of healthy China.

《“健康中国2030”规划纲要》 将人民健康放在优先发展的战略地位。卫生技术人才是健康中国建设的最重要支撑和保障。

2.Ultrasound capacity building is the need of national health professionals development.

（二）超声专业能力建设是落实全国卫生人才发展的需要。

The basic principles of “The 13th Five-Year national health professionals development plan” are service demands, innovating mechanism, optimizing structure and improving quality.

《“十三五”全国卫生计生人才发展规划》基本原则是：服务需求、创新机制、优化结构、提升质量。

(1) Pay attention to basic-level personnel training

注重基层人才培养

(2) Pay attention to the cultivation of innovative talents

注重创新人才培养

Among them, service demands are to focus on outstanding issues and obvious short board. Pay more attention to talent team construction of basic level, public health , badly needed and health service. Pay more attention to the cultivation of top-ranking innovative talents, the improvement of medical innovation ability and the adaptation of the new health demands.

其中，服务需求就是要“聚焦突出问题和明显短板，更加注重基层、公共卫生、急需紧缺和健康服务人才队伍建设，更加注重一流创新人才培养，提高医学科技创新能力，适应新的健康服务需求”；

Improving quality is to deepen comprehensive reform for medical education, enhance the quality of personnel training, strengthen the on-the-job training for various types of talents and improve the level of technology and service capabilities in order to meet the rapidly growing demands for health services.

提升质量就是要“深化医学教育综合改革，提高人才培养质量，强化各类卫生计生人才在岗培训，提高技术水平和服务能力，满足快速增长的医疗卫生服务需求”。

3.Ultrasound medicine is a very emerging discipline, and talent team construction has been highly valued.

(三)超声医学作为非常年轻的新兴学科，人才队伍能力建设得到高度重视。

Present situation 现状

1.The rapid development of ultrasound medicine

（一）超声医学发展迅猛

It has been developed into one of the most remarkable subjects in modern medicine.

已经发展成为现代医学发展中最令人瞩目的学科之一。

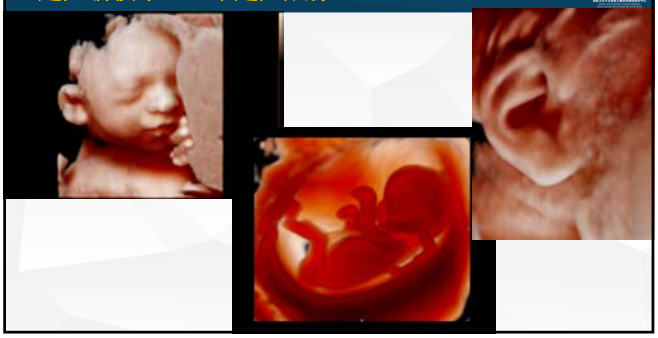
(1)The application of ultrasound medicine is becoming more and more widespread.

应用越来越广泛。

(2) New knowledge,new technology and new methods are emerging.

新知识、新技术、新方法不断涌现。

超声新技术—三维超声成像



2.The practitioners of ultrasound medicine are in complicated conditions.

（二）超声医学执业人员情况复杂

(1) At present, the number of ultrasound practitioners who have registered in China has been more than one hundred thousand.

目前中国注册超声执业人员已超过十万。

(2) Geographical distribution and medical institutions exist obvious difference.

地域分布及所在医疗机构差别明显。

(3) Most of the basic-level practitioners have not underwent systematic standardized training.

大部分基层执业人员未经过系统规范培训。

(4) Some advanced fields keep the pace with the international standards.

先进领域与国际接轨

They have been keeping up with international development, and playing an more important role in the world stage.

已经跟上国际发展，并在超声世界舞台发挥越来越大的作用 。

3.There are high requirements and difficult training for practitioners in ultrasound medicine.

（三）超声医学对执业人员的要求高、培训难度大。

(1)The high requirements for operation

技术操作水平要求高

(2) Correct diagnosis needs encyclopedical medical professional basis

正确诊断需要广博的医学专业基础

(3) Update knowledge in time has been needed because of the rapid development in ultrasound medicine

行业发展迅速需要及时更新知识

(4) High requirements for independent diagnostic ability

对独立诊断能力要求高

Ultrasound diagnosis relies largely on real-time dynamic imaging. Consultants and clinicians have difficulties in reading images.

超声诊断很大程度上依靠实时动态成像，会诊和临床医师读图困难。

Measures 措施

In face of so many ultrasound practitioners who have different professional levels, it is necessary to not only solve current outstanding problems and filled basic-level short board, but also improve comprehensive ability of ultrasound practitioners in China.

面对如此众多水平悬殊的超声执业人员，既要解决事关当前的突出问题，补齐基层短板，又要兼顾未来，以需求为导向，以提升岗位胜任能力为核心，全面提升中国超声专业执业人员综合能力。

The discussions from experts in ultrasound medicine in China were organized by National Health and Family Planing Commission Capacity Building and Continuing Education Center. Finally, the book “Chinese Continuing Medical Education Ultrasound Guideline” has been made.

国家卫生计生委能力建设和继续教育中心组织中国超声医学各专业的专家们经过反复讨论制定了《中国继续医学教育超声专科指南》。

The purpose is to improve medical education system of the professional medical practitioners. So, we can realize standardization, normalization and homogenization of continuing medical education in ultrasound medicine.

旨在通过健全分级分专业的在岗卫生计生专业技术人员医学教育体系，实现超声医学继续医学教育的标准化、规范化和同质化。

1.The development of Chinese Continuing Medical Education Ultrasound Guideline. To establish the national standards for continuing medical education in the primary, intermediate and advanced levels.

（一）制定《中国继续医学教育超声专科指南》。分初级、中级、高级制定国家级继续医学教育标准。

(1)Primary training standards 初级培训标准

Equivalent to the training before practicing physicians training abroad.

相当于国外执业医师前培训

focus on basic skills and basic knowledge training, cultivate the ability to deal with the common problems independently and correctly and standardize the performance of practice behaviors.

着重加强基本实践技能和相关基本知识培训，培养独立正确处理本专业常见问题的能力，规范履职行为。

In fact, the shortage of basic technical personnel and the low service ability have become the severe bottleneck of deepening medical system reform and implementing the classified medical treatment in China. Ultrasound medicine is particularly prominent.

事实上，基层卫生技术人员的短缺和服务能力的低下，已经成为我国制约深化医疗体制改革、实施分级医疗的最严重瓶颈。超声医学表现的尤为突出。

Therefore, strengthening on-the-job training and continuing education for medical workers in our country, and improving the ability of basic-level medical service have become the most urgent and difficult task for the implement of "healthy China Construction". It is also the focus of medical education in China in the near future.

因此，强化对我国医务工作者的岗位培训和继续教育，提升基层医疗服务能力已经成为落实“健康中国建设”的最迫切和最艰巨任务。也是我国近期医学教育工作重点。

(2)Intermediate training standards 中级培训标准

from practicing physician to specialist training

职业医师到专科医师间培训

focus on the learning of new theory, new knowledge, new technologies and new methods, and strengthen knowledge and skills training about teaching and research

着重加强新理论、新知识、新技术、新方法的学习，加强教学科研相关知识技能培训

Consolidate and improve the professional technical ability to deal with complex and difficult problems, and strengthen the targeted training of the potential innovative talents and discipline leading talents.

巩固和提高正确处理复杂疑难问题的专业技术能力，对其中的潜在创新人才和潜在学科领军人才强化针对性培养培训。

Emphasis on precision learning, what short of what make up for.

强调精准供给侧学习，缺什么补什么。

(3) Advanced training standards 高级培训标准

Specialist above 专科以上

Focus on the training for forefront and development trend of professional field. Promoting interdisciplinary integration and cultivation of compound talents. To be in line with international standards.

重点培训本专业前沿动态和发展趋势。推进学科交叉融合和复合型人才培养。要与国际接轨。

2.The production for high quality training programs

（二）组织生产优质培训内容：

According to the guideline, call on the national authoritative experts to produce high-quality continuing medical education programs.

根据《指南》要求号召全国权威专家生产高质量的继续医学教育内容。

3.Make full use of modern training pattern:

（三）充分利用现代化培训形式：

On the basis of the original training, explore the continuing medical education pattern actively by the way of the online and offline organic combination, the project and the base combination.

在原有培训的基础上积极探索线上、线下有机结合、项目和基地相铺相成的继续医学教育模式。

4.Standardized management and examination mechanism

（四）规范管理、考核机制

The establishment of a reasonable regulatory mechanism, scientific assessment methods and certification system can ensure the effectiveness and homogeneity of training.

建立合理的监管机制、科学的考核方法和认证制度，充分保证培训的有效性和同质性。

5.Implementation of “Construction of ultrasound medical specialty ability” project.

（五）实施“超声医学专科能力建设”工程

One hundred thousand of qualified ultrasound technicians will be cultured for basic level especially in the midwest poverty regions in China with 5 years.

力争用5年左右的时间，为基层特别是中国中西部贫困地区培养10万名合格的超声技术人员）。

6.Keep up with the development trend of the big data in the ultrasound medicine.

(六）跟上超声医疗大数据发展趋势

To make full use of China's abundant ultrasound medical data resources for medical education, deep learning and assisted diagnosis.

充分利用中国丰富的超声医学大数据资源，用于医学教育，深度学习及辅助诊断。

Adhering to forge ahead and keep the innovative spirit,through the practical construction of the professional ability of ultrasound, we will strive to improve the professional capacity of the national ultrasound practitioners.

秉承锐意进取、开拓创新的精神，通过扎实务实的超声专业能力建设工作，努力提高全国超声执业人员的岗位胜任能力。

Through the ways of “going out, bringing in” and learning advanced international experience actively， we keep up with the international level of ultrasound medicine.

通过“走出去，引进来”等多种方式，积极学习国际先进经验，跟上国际超声医学水平。

At the same time we will take the opportunity to invite experts and scholars in the ultrasound field to China and teach advanced medical knowledge. I hope we can jointly contribute to human health career.

同时借此机会邀请超声领域的专家学者们到中国传授先进的医学知识。共同为人类健康贡献力量。

Thanks !

谢谢！