



Center For Advanced Fetal Care Newsletter

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Rays of Hope...

...In creativity. In discovery. In humanity. We constantly seek them in darkness to help navigate towards the light... As humans, we are forever inspired by brilliance and affected by **simple** unique contributions made by the **innovative** and creative mind. From Scott's **Beacon of Hope**, to the latest of medical discoveries of **antibiotics in the dirt**, to the ability of unified humans to widely spread the **virus of hope** throughout our land, amidst the most challenging of times, our lives are replete with **rays of hope**. The brilliant focused mind, exemplified by our **prodigies**, serves as the perpetual instigator refueling the eternal flame of hope. We thus dedicate this issue, commemorating CFAFC's 5th anniversary on February 24, to "Rays of Hope". On our 5th anniversary, we proudly announce the official release of CFAFC's **'A Practical Guide to 3D Ultrasound'** (CRC Press 2015) at the **SMFM 2015**; it is reviewed in this issue by Professor Alfred Z. Abuhamad. We present to you various course overviews: from the **Pregnancy Meeting**, to **ISUOG's** recent **Fetal Anomalies** course, to the **Ob/Gyn Ultrasound Symposium** at Harvard. In addition to our quarterly features, we recommend to you **UOG's** open access issue on the newest in perinatology. We present to you the latest modality for screening for congenital heart defects in the first trimester and share with you **SANA's** accomplishments for 2014. With this issue, we aspire to illuminate various rays of hope in our **medical practice** as well as in the minutest most intricate aspects of our **daily lives**; we look forward to a bright and hopeful future ahead...



Jounieh Bay. Jan 2015. RS Abu-Rustum



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Editor-in-Chief

Reem S. Abu-Rustum, MD
Center For Advanced Fetal Care
rar@cfafc.org

Editorial Board

Khalil Abi-Nader, MD
LAU and UMC-Rizk Hospital
khalil.abinader@lau.edu.lb

Marcel Achkar, PharmD
Nini Hospital
marcelachkar@yahoo.fr

Georges Beyrouthy, MD
geobey1@hotmail.com

Linda Daou, MD
Hotel Dieu de France
lindaadaou@hotmail.com

Assaad Kesrouani, MD
Hotel Dieu de France
kesrouani@doctor.com

Bernard Nasr, MD
nasrbernard@hotmail.com

Malek Nassar, MD
Centre de Diagnostic Prenatal
cdp686@gmail.com

Roland Tannous, MD
Tripoli Perinatal Clinic
tpc2020@gmail.com

A Review of 'A Practical Guide to 3D Ultrasound' by A. Abuhamad, MD

It is with great pleasure that I write a review for **'A Practical Guide to 3D Ultrasound'** edited by Dr. Reem S. Abu-Rustum. I had advance knowledge that this book was in production for the past several months and I have been long waiting to get my hand on a copy. Finally I received one about 3 weeks ago.

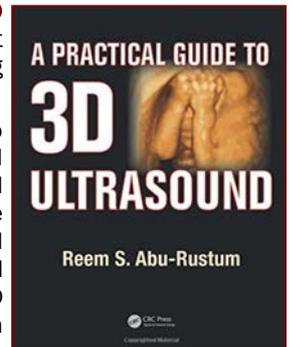
About 15 years ago, three-dimensional (3D) ultrasound was introduced to obstetrical imaging, and within a short period of time, the 3D ultrasound technology became an indispensable tool in the evaluation of fetal structure and function and especially in fetal echocardiography. The ability to image topographic anatomy and acquire volume of fetal organs that can be displayed in multitude of formats expanded our understanding of fetal behavior and allowed for the automation of the ultrasound examination. The future of 3D ultrasound is quite exciting as the technology evolves into vascular imaging, both in structure and function and towards full automation.

Despite these incredible advances, the field of 3D ultrasound is lacking educational resources. This book fills this void beautifully. The book is organized into logical sections starting with the technological aspects that the examiner needs to learn such as terminology and basics, volume acquisition, manipulation, display and the concepts of Spatiotemporal Image Correlation. A chapter on 3D tools introduces all post-processing functions required to manipulate volumes and optimize display. The second section of the book presents 3D clinical applications in various fetal organ systems. Two chapters towards the end of the book summarize the 3D applications in obstetrics and gynecology.

The book is impressive in many aspects: First it provides the reader with a comprehensive review of 3D ultrasound. Second it is filled with beautiful, well illustrated, images and tables that clearly highlight the message. Third, and probably the most important aspect, is that the book is written in a style that is easy to follow and understand, a brilliant production of a complex topic.

The author, Reem S. Abu-Rustum, is recognized internationally for her research in fetal imaging and has contributed substantially to this field. I have known Reem over the past decade, she has become a respected star in the field of fetal imaging. Her determination, dedicated hard work and a bit of obsessiveness produced the perfect 3D ultrasound book.

Whether you are a novice trying to get more training in 3D ultrasound or an expert on this topic - you must add this book to your collection. I have done just that and from my first read, I know that I will refer to it quite frequently.



Highlights from the Annual Pregnancy Meeting of the Society of Maternal Fetal Medicine Recently Held in San Diego, California February 2 - 7, 2015

A most memorable **'Pregnancy Meeting'** was organized by the **SMFM** and just held in warm and bright San Diego with a record number of attendees of roughly 2500 who gathered over the course of the week to an intense and varied program.

The pre-congress courses were comprehensive. For the first time, one of the pre-congresses, 'Ultrasound Challenges for the MFM' was a joint venture between the **SMFM** and **ISUOG**. The course was packed with 230 registrants who were treated to a thorough overview of ultrasound: from the first trimester, to fetal echocardiography, to the prenatal diagnosis of skeletal dysplasias among many others. A distinguished panel of speakers, including Drs. Baschat, Bilardo, Copel, Feltovich, Krakow, Platt and Pretorius, gave up-to-date presentations. This was followed by 'stump the professors' cases presented by fellows from all over the USA. Three other pre-congress courses included a course on controversial topics in obstetrics, another on human genetics, and a third on all aspects of first trimester screening given by the outstanding faculty of **NTQR**.

The scientific forums covered every aspect of maternal fetal medicine. A favorite forum, to which there were more attendees standing lining the walls rather than sitting on chairs, was fetal echocardiography. This was given by the leaders in the field: Drs. Abuhamad, Copel, DeVore, Lee and Sklansky. They showed stunning detailed images of the tiniest hearts and gave decades of experience condensed into the most clinically-applicable pearls.

The scientific sessions and posters helped answer challenging and perplexing questions: no benefit to ST segment analysis as an adjunct to intrapartum fetal heart rate monitoring, no association between induction/augmentation of labor and childhood autism, and it is fetal rather than maternal copy number variants that are associated with spontaneous preterm birth.

The **abstract book** is available as a free open access supplement to **AJOG**. Mark your calendars for next year's Pregnancy Meeting to be held in Atlanta the first week of February 2016.



Highlights from the Fetal Anomalies Course of the International Society of Ultrasound in Obstetrics & Gynecology Held in London January 23 - 24, 2015

An advanced **ISUOG** course was recently held in London attended by 192 delegates from over 33 countries... The 2 day course highlighted **state-of-the-art research** in the evaluation of the fetal head and heart. During the first day, such topics as open and closed NTDs, early ventriculomegaly, early lissencephaly, the thick corpus callosum and cerebellar hypoplasia, among others, were covered. The day culminated with 6 delegates presenting their case unknowns of rare and interesting anomalies.

Day two featured a unique interactive session where Dr. Julene Carvalho demonstrated sonographic cardiac pathology while Dr. Yen Ho showcased the same cardiac lesions on autopsy specimens. This was an amazing live demonstration that helped clarify the most complicated of cardiac pathologies affecting the tiniest fetal hearts.

Challenging daily case unknown quizzes were presented to the delegates who had a chance to formulate their own diagnoses and subsequently detailed discussions of the cases ensued. ISUOG members will get the chance to view the entire course presentations on the new ISUOG CME platform set to launch soon.

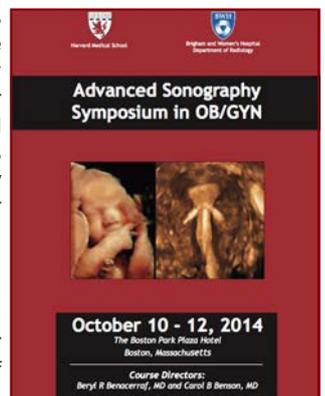
ISUOG is planning **'Doppler in Clinical Obstetrics'** on Saturday, April 24, 2015 in London. Delegates may register for the course at **ISUOG**, at reduced fees for ISUOG members. There is also the option of registering for live-streaming to "virtually-attend" the course from home/office.



Highlights from Harvard's Advanced Sonography Symposium in Obstetrics And Gynecology Held in Boston, MA October 10 - 12, 2014. By Fadi Mirza, MD

The **Advanced Sonography Symposium** in OB/GYN offered by Harvard University and Brigham and Women's Hospital Department of Radiology was held in Boston, MA, USA on October 10-12, 2014. The course directors Beryl Benacerraf and Carol Benson realized that the rapid and ongoing development of new ultrasound techniques and equipment in areas of 2-D, 3-D, 4-D ultrasound has made it challenging for practitioners to keep up to date and current in all aspects of ultrasound imaging. Thus, this advanced sonography course was designed to provide obstetrical and gynecologic ultrasound practitioners with insights and new skills with an in-depth focus on fetal and obstetrical abnormalities, and gynecologic imaging. They key topics were new ways to evaluate endometriosis, update on fetal echocardiography, Doppler imaging for the evaluation of fetal well being, fetal anomalies, and prenatal diagnosis of aneuploidy.

Esteemed faculty included world-experts in obstetrics/gynecologic ultrasound such as Drs. Alfred Abuhamad, Joshua Copel, Steven Goldstein, and Ilan Timor-Tritsch in addition to the local faculty from Harvard Medical School. An important theme that was stressed by a number of faculty, particularly Drs. Beryl Benacerraf and Steven Goldstein, relates to the growing role of 3-D gynecologic ultrasound. Dr. Benacerraf expressed her opinion that it is now the time for innovations in gynecologic rather than obstetric ultrasound. A number of lectures focused on aneuploidy screening and the growing role of non invasive prenatal testing (NIPT), including an excellent review by Dr. Louise Wilkins-Haug of the Brigham and Women's. Fetal echocardiography and the first trimester morphology scan were again hot topics presented by Drs. Alfred Abuhamad and Bryann Bromley.



CFAFC Recommends: UOG Open Access January Issue on NIPT

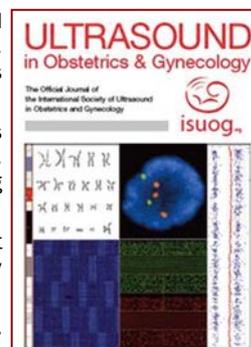
A special issue of the **Ultrasound in Obstetrics and Gynecology** was just released in January dedicated to new and emerging technologies in perinatology. The issue is open access and is available for download to all at the **UOG Website**. This special issue contains a wealth of review articles, opinions and original research by the world leaders in the field as well as comprehensive systemic reviews.

One such review by Akolekar et al demonstrates that the procedure-related risk of miscarriage following invasive testing is lower than previously quoted. They evaluated 42716 women who had had an amnio, and 8899 who had undergone a CVS. Their miscarriage rates in comparison to a control group prior to 24 weeks were 0.81% versus 0.67% for the group having an amnio, and 2.18% versus 1.79% after a CVS.

Another original paper by Kagan et al evaluated the performance of first trimester screening using NT and DV-PIV as a first line screening modality, followed by cfDNA in those with an intermediate risk of 1/11 to 1/3000. This contingent policy detects 96% of trisomy 21 fetuses, 95% of trisomy 18 fetuses and 91% of trisomy 13 fetuses at a FPR of 0.8%.

Bevilacqua et al evaluated cfDNA testing in 515 twin pregnancies at 10-28 weeks and compared them to 1847 singletons. The fetal fraction was lower in twins than in singletons (median of 8.7% versus 11.7%). The authors conclude that though cfDNA testing is feasible in twins, the failure rate is higher and the detection may be lower in twin gestations in comparison to the rate in singletons. There were several papers evaluating the cost-effectiveness of cfDNA. Evans et al concluded that currently cfDNA is not cost effective in the USA. On the other hand, Teitelbaum et al concluded that cfDNA testing is cost effective as a targeted antenatal anti-RhD prophylaxis program.

CFAFC highly recommends this comprehensive open access issue to all clinicians incorporating cfDNA into their daily clinical practice.



Upcoming AIUM/WFUMB



The countdown has started for the upcoming annual **AIUM** annual convention hosting **WFUMB** in Orlando March 21-25, 2015. An exciting comprehensive program spanning all continents, with simultaneous sessions in English, French and Spanish is planned. The meeting will cover every imaginable aspect of ultrasound: from the bedside, to the outreach setting, to medical education, in addition to the wealth of its clinical applicability across disciplines. This shall be an unforgettable global event and further information is available at the **AIUM website**.

ISUOG Abstract Submission



ISUOG will be celebrating its 25th anniversary in Montreal! Mark your calendars for a unique **World Congress** October 11-14 and an enlightening pre-congress program. Abstract submission is now open through April 1, 2015. Further information can be obtained at the **ISUOG Website**.

Upcoming FMF



The **World Congress** of the Fetal Medicine Foundation will be held June 21-25, 2015 in Crete, Greece. Abstract submission is now open. Congress details will post closer to the congress but attendees can rest assured that Prof. Nicolaides will host a stimulating cutting-edge congress yet again! For further details on abstract submission, registration and accommodations, please visit the **FMF Website**.

ISUOG Outreach



ISUOG Outreach is expanding its online resources with constant new additions. CFAFC's highly recommends the latest addition to the outreach resources, a video entitled '**Plan Your Movement and Improve Your Image**' by ISUOG Ambassador Dr. Hisham Mirghani. The video is open access to all and may be viewed at the **ISUOG YouTube Channel**.

CFAFC News



CFAFC proudly celebrates a 30% increase in unique visitors to its website: 3719 visitors from 92 countries in 2014, up from 2856 in 2013. CFAFC's Reem S. Abu-Rustum was an invited speaker at the Ian-Donald course at the annual meeting of **LSOG** where she presented 'Fetal Echocardiography: Beyond the 4 Chamber View'. In addition, she was invited by the **Lebanese Order of Physicians, Tripoli** to present 'NIPT: What the Clinician Needs to Know'. Her membership on the Advisory Editorial Board of **JUM** was renewed till 2018, and for the 4th consecutive year, she was recognized as a "Top Reviewer" by the **BJOG** for 2014...

Hot-Off-The-Press

Original Research

Fetal Cardiac Axis and Congenital Heart Defects in Early Gestation

Elena S. Sinkovskaya, MD, PhD, Rabih Chaoui, MD, Katrin Karl, MD, Elena Andreeva, MD, PhD, Ludmila Zhuchenko, MD, PhD, and Alfred Z. Abuhamad

An outstanding paper was just published by Sinkovskaya et al in the February issue of the **Green Journal** on a powerful new first trimester/early second trimester marker for the early screening of congenital heart defects (CHD). In early gestation, and with proper training, the feasibility of measuring the fetal CAx is 80-100%.

In this case-control study, the authors evaluated the CAx in 197 fetuses with CHD at 11w0d-14w6d, and in 394 controls. The mean CAx in the control group was 44.5 degrees and did not change significantly in early gestation. In the fetuses with CHD, 25.9% had a normal CAx. In the remaining 74.1%, the CAx was abnormal with left deviation (>97.5th centile) in 110 (55.8%), there was right deviation (< 2.5th centile) in 19 (9.6%), and a non-identifiable cardiac axis in 17 (8.6%). When compared with NT, TR, and reversed A-wave in the DV, CAx seemed to perform significantly better where it was abnormal in 2/3 fetuses with CHD. The authors used a CAx of <30 or >60 degrees as abnormal. Of particular significance is the fact that when the fetuses with CHD were stratified, the CAx was abnormal in 81.6% of fetuses with conotruncal abnormalities, whereas the NT in those fetuses was >95th centile in only 30.6%, a statistically significant difference.

The authors conclude that the fetal CAx is an invaluable new tool of tremendous value if incorporated into routine first trimester screening to select the high risk subgroup of fetuses and refer them for early fetal echocardiography. All the more convincing evidence in support of the critical role of the first trimester anomaly scan in the era of cfDNA: the first trimester scan remains an absolute must!



Center For Advanced Fetal Care

Najah Center 1st Floor
Aasheer Al Dayeh Street
Tripoli - Lebanon
Cell +96170236648

CF AFC expresses its sincerest appreciation to Drs. Alfred Abuhamad, Fadi Mirza and ISUOG Secretariat for their contributions to this issue.

*"However bad life may seem,
while there's life, there is hope..."*
Stephen Hawking

For any interesting case reports, comments, suggestions or announcements to be included in our newsletter, please send an e-mail to rar@cfafc.org.

Upcoming Congresses

COURSE TITLE	DATES	LOCATION	WEBSITE ADDRESS
Joint Advanced Ultrasound Course	March 2 - 4, 2015	Cairo, Egypt	www.erc-rcog.com/node/84
11-13 Wks Fetal Echocardiography Course	March 21 - 22, 2015	London, UK	www.youtu.be/JWgA2gsDubM
Annual Convention of AIUM Hosting WFUMB	March 21 - 25, 2015	Orlando, FL	www.aium.org/annualConvention
Obs-Gyne Exhibition & Congress	March 29 - 31, 2015	Dubai, UAE	www.obs-gyne.com
Ian Donald Advanced Ultrasound Course	April 11 - 12, 2015	Adana, Turkey	www.iandonald2015.org/en/program.php
6th Annual Fetal Cardiology Symposium	April 14 - 18, 2015	Phoenix, AZ	www.fetalcardio.com
Doppler in Clinical Obstetrics	April 24, 2015	London, UK	www.isuog.org/Events/ISUOG+Organised+courses/2015_Apr_Doppler.htm
11th ISUOG International Symposium	May 1 - 3, 2015	New Delhi, India	www.iis2015.in
3rd Global Congress of Ian Donald Schools	June 19 - 21, 2015	Sardinia, Italy	www.iandonaldschool.org
14th World Congress of the Fetal Medicine Foundation	June 21 - 25, 2015	Crete, Greece	www.fetalmedicine.org/fmf-world-congress

SANA Medical NGO's Year in Review

Despite many cancellations due to safety concerns in 2014, SANA had one of its busiest years with 32 total missions. There were a total of 19 medical missions arranged with our partners:

Doctors without Borders, World Vision International, UNHCR, in addition to various local charities and NGO's. During the medical missions, comprehensive obstetrical care, blood work and ultrasound screening was carried out on 260 patients. Even though SANA had no new graduates this year since the training in Wadi Khaled was disrupted by safety concerns, SANA carried out a total of 13 educational missions. Those were continued sonographic training at the Governmental Hospital of Seer Al Dinnieh and Wadi Khaled. In addition, SANA completed training in prenatal/intrapartum/postnatal care at Hanan Hospital in Tripoli, Lebanon.

Internationally, SANA presented its experience at both the Annual Convention of the **AIUM** and the World Congress of **ISUOG**. SANA's team is proud to have translated **ISUOG's Guideline** for scanning in the mid trimester to Arabic. This is the first Arabic translation of various other guidelines that SANA hopes to complete. In addition, SANA's Reem S. Abu-Rustum is honored to have been invited to write a **post** for the **Global Girls Project**. SANA has put its field-collected data to good use in comparing the findings in the Lebanese outreach setting between the underserved Lebanese as well as the Syrian refugees, data to be shared with SANA's partners. SANA is extremely proud to be an officially recognized partner of the new campaign **I am Wo(Man)** which was launched by **UN Women Empower Women** on 5 Feb 2015 and where SANA was **featured** under 'Health & Safety'. SANA expresses its gratitude to all its supporters at the forefront of which is **ISUOG Outreach** and looks forward to an impactful 2015 with much hope...



Translated Guideline



GHS



Wadi Khaled



MSF



I am Wo(Man)