WAIS 2022 CONFERENCE – Consolidated Abstracts

Sunday, September 25th, 2022

TIME	ACTIVITY / SESSION	MODERATOR / SPEAKER
7:30-9:00 am	**SESSION 1: PIPE DREAMS**	**Dr. Mike Dake and Dr. Brooke Spencer**

7:30 am - 7:45 am	**2020 Vision: Looking Back, Looking Ahead**	Isabel Newton
7:45 am - 8:00 am	Looking back: history of angioplasty, stenting, and stent-grafting	Michael Dake (SIR 2020 President)
8:00 am - 8:15 am	Advanced Access for PAD	Richard Saxon
8:15 am - 8:30 am	Venous Reconstruction for the Masses	Brooke Spencer (WAIS Past President)
8:30 am - 8:45 am	EVAR for the Bold	Andy Barleben
8:45 am - 9:00 am	Carotids: when to watch, stent, and operate	Jim Benenati
9:00 am - 9:30 am	Looking ahead: future of arterial and venous interventions	Brooke Spencer

Name: Isabel Newton, MD, PhD
Organization: VA Medical Center, San Diego
Email: isabel@westernangio.org
Presentation Title: 2020 Vision: Looking Back, Looking Ahead
Abstract:

As we open this celebration of the 50th anniversary of WAIS, we will set the stage for a meeting that will reflect this moment in time: Interventional Radiology is at a crossroads. IR was born on January 16, 1964, catalyzing a minimally invasive revolution that not only gave way to new specialties but also touched nearly every field of medicine. The early days were characterized by the exponential creation of new tools, procedures and applications. The decades to follow saw IR become a critical part of patient care in so many ways. Recently, IR has became its own specialty, with its own residency program and a shifting focus towards patient-centered care. Meanwhile, IR-scientists are pushing the frontiers of minimally invasive medicine through preclinical and clinical research. At this historic meeting, we will draw on the experiences and lessons from the past, told by the luminaries themselves, and look towards the future of our field, through the eyes of the luminaries in the making.

Name: Michael Dake, MD
Organization: University of Arizona
Email: mddake@email.arizona.edu
Presentation Title: Looking back: history of angioplasty, stenting, and stent-grafting
Objectives:

1. Review the history of how the most common endovascular techniques were developed.
2. Discuss the evolution of endovascular devices over the last 50 years.
3. Understand the limitations and complications of endovascular procedures and what technical advances have been made to mitigate the risks.

Name: Richard Saxon, MD
Organization: San Diego Imaging
Email: rsaxon5@gmail.com
Presentation Title: Advanced Access for PAD
Objectives:

1. To review the latest techniques, news, controversies, and devices used for advanced and alternative access in complicated PAD interventions
2. Data and techniques for radial, tibial, trans-stent, antegrade, contra-lateral and direct puncture access for PAD will be presented and discussed

Name: Brooke Spencer, MD
Organization: MIPS Center
Email: ebsrad@gmail.com
Presentation Title: Venous Reconstruction for the Masses
Abstract:

We will discuss the scope of where we are with venous reconstruction with learning objectives of understanding venous stenting for chronic venous occlusions. We will discuss femoral and popliteal recanalization and the relationship between the deep and superficial venous system.

Name: Andy Barleben, MD
Organization: University of San Diego
Email: abarleben@health.ucsd.edu
Presentation Title: EVAR for the Bold
Abstract:

Endovascular aneurysm repair has evolved from modified open surgical tube grafts purpose built grafts with sophisticated deployment systems and in some cases the use of polymer technology. Maintaining a minimally invasive approach is ideal in many older patients who have aortic disease. However, there still remains several anatomic situations where there are no endografts that can treat them on IFU. This presentation will provide an updated review of where these gaps are and some technologies that may work in order to address these patients. This presentation will review our personal experience and outcomes. We will demonstrate case examples where these techniques work and where they should be avoided.

Name: Jim Benenati, MD
Organization: MCVI (IR), Penumbra (CMO)
Email: JamesB@baptisthealth.net
Presentation Title: Carotids, when to watch, stent and operate
Objectives:

1. Review History of carotid stenting trials
2. Provide update on current status of data
3. Present new techniques for carotid stenting
4. Discuss techniques and pitfalls with current technology
5. Provide information on alternative therapy to carotid stenting including medical management and carotid endarterectomy

Name: Brooke Spencer, MD
Organization: MIPS Center
Email: ebsrad@gmail.com
Presentation Title: Looking ahead: future of arterial and venous interventions
Abstract:

This session will discuss the current models for treatment of venous and arterial disease as well as the direction that we are moving in. We will discuss efforts being made by various societies to support continued reimbursement and support the outpatient treatment of these disease processes. We will address the state of the data for each service line and examine area at risk and areas ripe for advancement.

10:15 am - 12:15 pm	Session 2: IR-ts & crafts: Beads, Bling and Glue	Moderator: Dr. Kieran Murphy and Dr. Martin Radvany
10:15 am - 10:30 am	Looking back: history of embolics	Kieran Murphy
10:30 am - 10:45 am	Balloon-directed locoregional therapies	Steve Rose (WAIS Past President)
10:45 am - 11:00 am	Is there an ideal embolic for PVE?	David Madoff
11:00 am - 11:15 am	Advanced Imaging Technologies to Facilitate Embolotherapies	Aravind Arepally
11:15 am - 11:30 am	Secrets Learned from Treating Dural AVFs, CC Fistula and the trans orbital technique	Scott Olson
11:30 am - 11:45 am	When to Treat AVMs and How	Hamed Aryafar
11:45 am - 12:00 pm	Looking ahead: What's next in embolics	Martin Radvany
12:00 pm - 12:15 pm	Panel Discussion	Including Charlie Nutting (WAIS Past President)

Name: Kieran Murphy, MD
Organization: University of Toronto
Email: Kieran.Murphy@uhn.ca
Presentation Title: The Murphy Innovation Equation
Abstract:

$$\text{Innovation} = \frac{\%\ \text{of Inventors} \times [\text{Funding}] \times \text{Cultural Alignment}}{\text{Timing}}$$

Innovation is a manifestation of the concentration of inventors in society. The greater the percentage of the inventors the greater the level of new ideation and creativity. Inventiveness is similar to eccentricity and is a barometer of intellectual health of the Society.
A critical element in enabling inventors produce their idea is the availability of funding. This may be local national or global funding. The funding may be small initially and then grow over time. The first funding that goes into a project is the most critical this is where academic institutions play a key role with small amounts of seed funding to enable prototype development and proof of principle. Most inventors funded projects themselves. This is evidence of their commitment, their skin in the game.

I divide the world into inventors and adopters. Adopters may be early middle or late. They represent the market for the inventor's idea. Early adopters are risk tolerant and live on the bleeding edge of medicine. Middle stage adopters follow when there is reimbursement and regulatory approval as now, they get paid for doing the new procedure are using the new device. Late adopters come on board when they have no alternative. None-adopters have essentially determined the shelf life of their career. We are defined by what we decide not to do as this determines our professional obsolescence. Procedures that are approved and reimbursed are adopted earlier. The more an idea aligns a pre-existing belief systems pre-existing reimbursement of five 10K approval from the FDA the more rapidly adoption occurs the less original the idea is. Really novel ideas without approval pathways or reimbursement take 10 to 15 years to be adopted and often fail along the way.
Of all these elements the most critical thing for the inventor's timing. The introduction of a new idea or device at a point where society needs just that solution ensures rapid adoption. This is a random event beyond the control of the inventor. For example, I had to shut down my online education company Medlantis for lack of funding three months before Covid change the world of medical education.

The most important element in this equation is the presence of the inventor. Recruitment of talented inventive people is the critical initiating instigating event in the creation of an innovative society. Inventors Talent is like a rare earth element that is much talked about, elusive, dizzy enzyme which catalyzes the rest of this equation. Talent is mobile and searches the world for opportunity which enables their brains. Recruitment of talent is the most difficult task but without it societies become mediocre.

Name: Steve Rose, MD
Organization: University of San Diego
Email: scrose@ucsd.edu
Presentation Title: Balloon-directed locoregional therapies
Abstract:
As experts in the minimally invasive treatment of vascular disease, we Interventional Radiologists have long understood that a blockage in an artery causes the blood pressure downstream to be lower than that on the inflow or upstream side. If the difference between the blood pressure above and below the blockage was on the order of 20 mmHg (millimeters mercury), a narrowing in an artery could be sufficient to cause distress in the served organ, whether that organ was the heart, the kidney, or a leg. Stretching the artery open again with balloon angioplasty or a metallic stent could eliminate the blood pressure differential and restore that organ to health.

Imagine using the analogy of water flowing from the city's high pressure main on the street into the pipe feeding your house. If one were to install a valve in the inflow line and tighten it so that the cross-sectional area was reduced by approximately 75%, and then some of the faucets in the house were opened, the water pressure inside the house's system would be appreciably lower than the water pressure in the city's main line. Fast forward a couple decades from the early days of my academic practice, and my focus had shifted from treating arterial blockages to treating liver cancers. One of the more common techniques used involved delivering a multitude of small particles into the arteries that nourished the cancers. Sometimes we administered lots of these very small particles, termed embolics, to choke off the blood supply to the tumors. More often we would add chemotherapies or special ionizing radioisotopes to amplify the cancer killing properties of the embolic particles. The devices we used to deliver the embolics to the target were very narrow, long, specially shaped plastic tubes called catheters. These catheters are introduced into the body's arterial system through the femoral artery in the leg, then threaded through the large aorta in the abdomen, then into one of the arteries that supplied the liver, and finally steered selectively into the specific artery that fed the cancer. When delivering the embolic agents, we assessed our progression using fluoroscopy, a real-time X-ray, to monitor the velocity of blood flowing forward past our catheter.

When the tumor vessels were almost thoroughly plugged up with the embolics, blood flow would slow appreciably. The challenge, though, was that as this endpoint of slowing the blood flow to the tumor was being approached, the normally predictable arterial blood flow could become chaotic. Our cancer killing agents could then flow backwards and reflux into other critical circulations. Arteries to the stomach, small bowel, and noncancerous portions of the liver live nearby, so the complications could be severe, especially if chemotherapeutic or radioactive agents were to go off course. Collateral damage was something to avoid at all costs.

Small start-up medical device companies have always been at the forefront of making innovations so central to our minimally invasive specialty, including providing miniaturized tools to perform complex tasks within the constraints of blood vessels or other narrow spaces deep within the body. One such company had just developed a fascinating catheter with a deployable umbrella-like attachment near the tip that was designed to let blood flow in only one direction: forward. During cardiac systole when the force of ventricular contraction propelled blood forcefully foreword, the fabric shell of the "umbrella" would partially collapse letting blood pass. During diastole, as the heart's ventricle relaxed and blood flow slowed, the fabric shell would open fully, stopping blood from reversing, or reflux. Since blood could only flow forward with this device, we operators should then be free from the risk of our embolic agents refluxing into non-targeted territories. And, since reversal of blood flow was not possible, we should also be able to safely deliver more embolic cancer killing agents. Both increased safety and increased efficacy. What is not to like about that picture?

As a thought leader and an early advocate for the use of Yttrium-90 microspheres, the radioactive embolic agent used to kill selected blood vessel rich liver tumors, I was among the initial group of Interventional Radiologists allowed to use the new anti-reflux catheter. Based on my prior experience treating blood vessel blockages and the fact that this device would either partially or fully obstruct arteries depending on the phase of the cardiac cycle, I hypothesized that these devices should reduce the blood pressure downstream after deployment. So, I tested that hypothesis. While using this anti-reflux device on a handful of appropriate patients, I measured the blood pressure in the leg femoral artery and the liver artery feeding the tumor at the same time. Before the umbrella-like attachment was opened, and blood could freely flow around the catheter tip, the blood pressures were identical. After the anti-reflux attachment was deployed, the blood pressure measured through the anti-reflux catheter lumen dropped by approximately 20 mmHg. Every time in every patient. Hypothesis confirmed.

Enter Mr. Lopez (not his real name). His liver had been severely damaged by chronic hepatitis C like so many of my patients with liver cancer. His liver had been markedly shrunken by cirrhosis and harbored two aggressive cancers called hepatocellular carcinomas, abbreviated to HCCs. One tumor measured two centimeters, the other 2.8 centimeters in diameter. These tumors could not be removed surgically because Mr. Lopez would not be left with enough liver to survive. And even if they could be removed, the inflammation from his chronic hepatitis C and the cirrhotic scarring throughout the rest of his liver would simply give rise to more HCCs. He needed a new liver. That would simultaneously address both his liver cancers and his cirrhosis. Patients like him who received a liver transplant suddenly had the outlook of a normal life expectancy. That Holy Grail of a cancer cure was within reach.

The fly in the ointment was the hard cold fact that the supply of donor livers was far short of the need. And for patients in need of a liver, the clock was ticking. They had failing livers, often with very aggressive liver cancers, or were bleeding to death, or all the above. So that these precious organs would go to the most deserving patients, a traffic cop system was set up. In the U.S., this organization is called the United Network for Organ Sharing, UNOS for short. UNOS has strict guidelines. For patients like Mr. Lopez with cirrhosis and HCCs, the criteria would allow a single tumor, maximum diameter five centimeters, or two to three tumors, none greater than three centimeters. Excellent. Mr. Lopez fell within UNOS guidelines, although just barely. Sign him up. However, in Southern California the average wait time for a patient to receive a liver was two-and-a-half to three years. Given the expected growth dynamics of this type of cancer, that 2.8-centimeter tumor would almost certainly exceed three centimeters within a couple months. Mr. Lopez would then be ineligible for a life-saving transplant. No cure. Life expectancy probably in the order of three to six months. Something radical was needed. A Hail Mary pass.

The multidisciplinary Liver Cancer Tumor Board weighed the range of Mr. Lopez's options and tapped me to treat these tumors with the embolic particles armed with chemotherapy: a TACE procedure (transcatheter arterial chemoembolization). The endgame was possible liver transplantation. At the time, TACE was the accepted standard treatment for keeping these tumors suppressed in order to buy the time necessary to obtain a donor liver. Mission: kill the cancer as best you can, but do not damage the liver too badly. That was the needle I had to thread. This seemed to be the perfect application for this new anti-reflux device. Keep the embolic agents confined only to that portion of the liver that housed the cancer and at the same time aggressively pack that territory with as many chemotherapy-loaded particles as possible. I knew I would be skating the edge, but thought it was doable.

The day of the procedure arrived. Things went smoothly. The relevant vascular anatomy was typical. The anti-reflux catheter was negotiated into the liver artery that supplied both cancers. I estimated that between one-third and one-half of his liver fell within the vascular territory needed to treat both cancers. That should leave one-half to two-thirds of his liver untouched. Since most patients with cirrhosis can have two-thirds of their liver removed and survive, the risk seemed acceptable for the chance for a potential cure.

Prior to deployment of the anti-reflux device, the blood pressure in the femoral artery exactly matched the blood pressure measured in the tumor-feeding liver artery, as expected. After the anti-reflux device was deployed, the blood pressure measured downstream from the device dropped by approximately 20 mmHg, as expected. It was time to deliver the chemotherapy-armed embolics, using fluoroscopy to monitor blood flow characteristics. The blood flow velocity was slower than usual but expected given the nature of the anti-reflux device. Since I could now administer the embolics without fear of them travelling to undesirable locations, I packed them in until there was no more forward blood flow. Out of curiosity, I repeated the blood pressure measurements with the anti-reflux device still deployed. Quite unexpectedly, the blood pressure as measured through the anti-reflux catheter was exactly the same as that taken from the femoral artery. The gradient had fallen to zero. What on Earth did that mean? What was that old saying? "If you don't want to hear the answer, don't ask the question". At any rate, there was nothing I could do to un-ring that bell. I removed our arterial catheters and plugged the hole in the groin artery access site. It was now time to support, watch, and wait.

The daily blood tests initially indicated significant injury to patient's liver. That was to be expected since some of his diseased liver was within the tumors' shared vascular territory. By day four, his liver function tests stabilized, then slowly improved. It appeared that we had scraped by. A week after his TACE procedure, he was ready to go home with his family. Huge sigh of relief. A week later, sh*t hit the fan. Royally. He was admitted through the Emergency Room in shock, with a fever. Blood tests indicated severe damage to his liver. His kidneys were failing, and he was placed on dialysis. His lungs started filling up with fluid and he was placed on a ventilator. After a couple days in the Intensive Care Unit, he slipped into coma. Then his heart began to give out. It was time to have that difficult discussion with his family about designating their loved one as DNR (Do not resuscitate). All his physicians, I included, met with his very extensive family in his ICU room. Typical of many supportive Hispanic families, there must have been at least 40 persons crowded around. Men, women, old and young, all styles of dress, but all were somber. The ICU room was standing room only and the crowd spilled out into the adjacent corridor. Each of us physicians spoke in turn. The family was silent as they took all this in. They blankly stared at us. Then at him in his bed with countless tubes and lines running in and out of his body, then again back at us. Horror and shock. Tears flowed. They touched their respective crucifixes or rosaries. Ultimately, there was some degree of acceptance and the family consented to making Mr. Lopez DNR. As I watched this scene, I made a silent promise to his family. I swore that I would figure out what had happened and do everything in my power TO NEVER, EVER LET THIS HAPPEN AGAIN TO ANYONE ELSE. His death would not be in vain.

Over the years, I have learned that the most valuable lessons learned in life were usually preceded by "What just happened here?" That statement is a clear indication that whatever knowledge base, assumptions, or conceptual constructs we were operating under were mistaken in some serious fashion. I ruminated endlessly on Mr. Lopez's case. I turned things over and over again in my mind. I solicited opinions from anyone I thought might be able to shed light on the disaster that had just unfolded. If any doctor being sued takes the stand and tells the jury that he or she did not speak to anyone else about the case in question, then that doctor must be either perjuring himself or committing gross malpractice. As physicians, we inevitably will make mistakes. It is our duty to learn from these errors so as to never repeat them. We must do better.

Ultimately, I came back to those pressure measurements that I had done out of academic curiosity. To the best of my knowledge, no other physician on the planet was performing these pressure measurements. That measurement following the delivery of embolics where the pressure downstream from the anti-reflux catheter was no longer lower than that in the femoral artery was an indication that I had packed in far too many particles. Going back to the analogy of the water line into one's house. If, after the valve in the inflow line had been tightened, all the faucets and spigots in the house were turned off, then the water pressure on both sides of the valve would be equal. The equilibration of the blood pressures in the femoral artery and the anti-reflux catheter had to mean that virtually all the blood vessels in that artery had been plugged. There was nowhere for blood or particles to go. Sure, the cancers were almost certainly dead, but so was that portion of the liver and in turn the patient. I had won the battle but lost the war, big time. But why did I not realize at the time that I had been overtreating?

When I replayed the tapes in my mind, it came to me that our usual visual cues were worthless when it came to using the anti-reflux devices. Usually, when we watch fluoroscopically, as we inject more particles, the small caliber blood vessels become progressively plugged up. Resistance to forward blood flow increases that in turn causes slowing and potentially reversal of blood flow in that feeding artery. What we see fluoroscopically tells us when to stop. Alternatively, when the anti-reflux devices have been deployed, the arterial channel is largely blocked by the presence of the device, so blood flow has already been slowed, even before we begin to administer the embolic agents. Furthermore, with these anti-reflux devices, it is impossible to make blood flow backwards. The only clue left must be the pressure gradient, that is, the difference between the blood pressure measured from the femoral artery and that measured through the anti-reflux catheter. But if we only measure that gradient after we have finished, then the horse has already left the barn. The solution, then, must be to do repeated pressure measurements while we are actively doing the delivery. Bingo, a new hypothesis. From that time onwards, when using the anti-reflux devices, I would routinely stop after delivering each aliquot, or measured portion of embolics, containing approximately 10% of the projected dose, then repeat those paired measurements. When the downstream pressure rose noticeably and the gradient dropped, it was time to stop the delivery. That was the new endpoint.

From that time onwards, I meticulously recorded the pressure measurements and followed the patients' outcomes, both regarding tumor responses and liver toxicities. Over time, it became apparent that this approach resulted in tumor responses that were at least equal to and often better than when not using the anti-reflux devices. More unexpectedly, the degree of liver toxicity was significantly less than expected. That was when I came to the realization that causing the blood pressure to be lower in that portion of the tumor-containing liver resulted in blood flowing in from adjacent body parts to feed the nontumorous liver, affording it a degree of added protection. We return to the analogy of the lower water pressure within one's house due to the valve in the inflow line combined with some of the faucets being turned on. If there were pipes running between your house and your neighbor's house (who does not have an inflow valve and therefore has a higher water pressure equal to that in the city's main line), water would flow from his or her house into the system in your house. The cancers, having not been present in utero as the body was creating the vascular system, did not have those same blood vessel connections, and so did not benefit. Once again, we have arrived back to the paradigm of simultaneously achieving both improved tumor destruction and patient safety. Usually, those needles move in opposite directions.

It was now time to bring this information out of the dark. I dedicated my efforts to furthering the understanding and disseminating the knowledge of the power of this technology to make major modifications in how we can more effectively treat liver cancers. The next eight years until retirement were tightly focused on sweating the details and promoting this technology. As an opening gambit, I revealed to audiences how this new technology was a double-edged sword, that if not carefully used could cause major damage. The small device company that developed the anti-reflux catheter was horrified and initially attempted to stifle me. I think that I used the images of napalm to drive home the point. Later, when I had the opportunity to sit down with their CEO, an ethical and intellectually inquisitive engineer, and explain in depth the details of my discoveries on pressure measurements and how they could be used to make their product even safer and more effective, he brought me in as a consultant. The principles were expanded to the use of miniaturized balloon-mounted catheters to accomplish the same purpose but at a fraction of the cost.

Nine publications on this topic in peer-reviewed medical journals, six abstracts and five posters at scientific meetings, 14 invited presentations at national and international conventions followed. Basic bench research was performed on anesthetized pigs to test hypothesized concepts and mechanisms that were not ethical in humans. The use of these principles of altering blood flow while treating liver cancers has expanded geographically to include other centers in the US, in western Europe, and especially in Japan. The applications for temporarily redirecting blood flow during embolization procedures has also expanded to use in embolization of other organs with complex arterial connections to surrounding critical structures, including the prostate, the spleen, and the stomach. All of this had occurred because of one unmitigated disaster and a silent promise to a grieving family. I sincerely wish that Mr. Lopez's family know how important his sacrifice was and how many patients have benefitted. The practice of medicine in general and loco-regional treatment of liver cancers in particular is just a bit better than it was the morning before his procedure.

Name: David Madoff, MD
Organization: Yale University
Email: david.madoff@yale.edu
Presentation Title: Is there an ideal embolic for PVE?
Objectives:

Not Received

Name: Aravind Arepally, MD
Organization: Piedmont Radiology
Email: aarepal@gmail.com
Presentation Title: Advanced Imaging Technologies to Facilitate Embolotherapies
Abstract:

The clinical use of embolotherapy has significantly advanced over the past two decades with new indications, novel therapeutic agents and the refinement of imaging techniques. As we further understand the interplay between the delivery of targeted therapeutics and its impact on oncological and non-oncological applications, the role of imaging has become more central to enable these procedures. In this session, we will discuss novel imaging strategies that can be implemented clincially to simplify and enhance these procedures. Topics will include adjunctive use of conebeam CT, 3D navigational tools as well as new emerging software applications to validate and quantify emboltherapies.

Name: Scott Olson, MD
Organization: UCSD
Email: seolson@ucsd.edu
Presentation Title: Secrets Learned from Treating Dural AVFs, CC Fistula and the trans orbital technique
Abstract:

High flow vascular lesions (arteriovenous malformations and fistulas) can be effectively treated via endovascular techniques. Onxy™ is a liquid embolic that differs in physical properties and mechanism of action compared to purely flow directed polymerizing cyanoacrylate liquid embolics. This presentation reviews the physical properties of this agent and technical tips, tricks, and pitfalls. The focus is on cerebral dural arteriovenous fistuals, but the principles are broadly applicable.

Name: Hamed Aryafar, MD
Organization: San Diego Imaging
Email: hamed.aryafar@sandiegoimaging.com
Presentation Title: When to Treat AVMs and How
Objectives:

Vascular malformations are complex and often difficult to treat entities that have found solace in Interventional Radiology for treatment. Arteriovenous malformations are some of the most difficult entities to treat and carry a high risk of complications. Objectives:

- Understand the correct terminology for vascular malformations and teach your diagnostic colleagues.
- Know when to treat AV malformations and when to phone a friend.
- Be prepared for treating complications of AVM's, no matter how good you think you are. Tips and tricks on post embolization care.

Name: Martin Radvany, MD
Organization: Intellirad Imaging, Inc.
Email: Dr.Radvany@gmail.com
Presentation Title: Looking ahead: What's next in embolics
Abstract:

Endovascular embolization is used to treat a variety of disease processes. As technologic advances have occurred there have been improvements in the way we treat medcial diseases and new applications have evolved. This presentation will review existing embolic technologies that have been employed in new ways as well as developing technologies with the potential to make the leap from "bench to bedside".

1:15 pm - 3:15 pm	Session 3: Frontiers (Pack your Tools!) – SAM SESSION	Moderator: Sean Tutton and Chris Friend
1:15 pm - 1:30 pm	Looking back: early devices in IR	Sean Tutton
1:30 pm - 1:45 pm	Fixation in the Pelvis: Looking back at my Struggles, Looking Ahead to your Successes	Steve Yevich
1:45 pm - 2:00 pm	Geniculate Artery Embolization and the Future of Joint Embolization	Sid Padia
2:00 pm - 2:15 pm	Building a Palliative IR Practice (nerve ablation and pain management)	Sean Tutton
2:15 pm - 2:30 pm	Raid the Neuro Cart: NeuroIR Tools for Body IR	David Kumpe (WAIS Past President)
2:30 pm - 2:45 pm	Botox Beyond Aesthetics	Jonas Redmond
2:45 pm - 3:00 pm	Looking ahead	Chris Friend

SESSION 3 is a SAM Session.

Monday, September 26th, 2022

7:30 am - 9:30 am	Session 4: Growing Pains	Moderator: John Abele and Eric Keller (Hal Coons backup)
7:30 am - 7:45 am	Looking back: a field in evolution	John Abele (Founder BSCI, formerly MediTech)
7:45 am - 8:00 am	Defining the IR Value Proposition	Frank Facchini
8:00 am - 8:15 am	IR Revolution -> Evolution -> Evidence	Jeremy Durack
8:15 am - 8:30 am	Leadership and Moral Mazes	Robert Ryu
8:30 am - 8:45 am	Physician Wellness For The Practicing Interventionist	Stephen Johnson (WAIS Past President)
8:45 am - 9:00 am	Ethics in IR: What would you do next? (Audience Participation)	Eric Keller
9:00 am - 9:15 am	Looking ahead: Applied Ethics in IR	Eric Keller
9:15 am - 9:30 am	Panel Discussion	Including Sean Tutton, Chris Friend

Name: John Abele, MD
Organization: Retired (Founder, Boston Scientific)
Email: abelej@meachcovefarms.org
Presentation Title: Looking back: a field in evolution
Abstract:

Professional societies evolve, particularly in medicine and science. As technology advances, as science continues to improve its understanding of the human mind and body, as the structure of health care continues to adapt to changing needs in society and new diseases emerge, societies need to adapt. When evolution isn't enough, New Societies are formed, usually by "Young Turks". Although not necessarily young, that was the case with SIR and its predecessors. And less invasive medicine has prompted new societies in many other fields. New Societies need to develop many new skills to serve an ambitious agenda. In addition to changing its name several times, SIR and its predecessors, gradually evolved from a diagnostic service for surgeons and other clinicians to a technically, educationally, business and clinically savvy Professional Society. Dotter would be pleased.

Name: Frank Facchini, MD
Organization: VIR Chicago (IR), Varian (CEO)
Email: ffacchini@
Presentation Title: Defining the IR Value Proposition
Abstract:

NOT RECEIVED

Name: Jeremy Durack
Organization: Ajax Health
Email: jdurack@ajaxhealth.com
Presentation Title: IR Revolution -> Evolution -> Evidence
Abstract:

Now 50 years since the beginning of the Interventional Radiology revolution, we have an opportunity to celebrate the pioneers that engrained the spirit of innovation that is the hallmark of our specialty. Many intervening years of growth empowered the evolution from "special procedures" to a competitive primary medical specialty. Now, IR faces intense scrutiny in the evidence-based and value-conscious world of medicine. To lead the way with front-line, first-choice image-guided interventions as well as justify our practices today, we need unity, evidence and perhaps even more ingenuity than ever before. Opportunities for high quality data collection, practice pattern innovation, and success in resource constrained environments will be discussed.

Name: Robert Ryu, MD
Organization: University of Southern California
Email: robert.ryu@usc.edu
Presentation Title: Leadership & Moral Mazes
Abstrat:

NOT RECEIVED

Name: Stephen Johnson, MD
Organization: Colorado Permanente
Email: johnsonstephen@mac.com
Presentation Title: Lung Cancer Interventions & Practical Tips
Abstract:

Physician wellness has become a hot topic of concern in the interventional community. Physician burnout has become a recognized clinical syndrome. It can lead to medical mistakes, patient dissatisfaction, and increased malpractice claims. It can impact a

provider's mental and physical well being, lead to depression, occasionally suicide, or an early exit from the medicine. It is critical to recognize the signs and symptoms in ourselves and colleagues.
It is important for our patients, our providers, and our specialty to pro-actively address the current crisis.

Objective Statement:
The current incidence of burnout in IR and the signs and symptoms will be discussed. The lecture will focus on proactive techniques to improve sleep, improve focus, manage stress, increase exercise, improve work environment, improve diet, and enhance creativity.

Objectives:
1. Know the incidence, signs, and symptoms of burnout
2. Know specific techniques to improve the quality of sleep
3. Know specific techniques to manage stress

Name: Eric Keller, MD
Organization: Stanford University
Email: ejkeller607@gmail.com
Presentation Title: Ethics in IR & Looking Ahead: Applied Ethics in IR (Two Part Abstract)
Abstract:

As IR matures as a specialty, it will become increasingly important to clarify our collective values regarding challenging situations we face, that is, the ethics of IR. The first part of this presentation will feature a brief overview of different approaches to ethics followed by a series of cases featuring salient ethical issues in the specialty, including futility, social media ethics, conflicts of interest, consent, and medical business ethics. Each case will allow the audience to respond anonymously followed by a brief discussion of the underlying ethical issue. The second part will be more didactic in nature discussing how to better engage clinicians via an applied approach to ethics with specific examples.

10:00 am - 12:00 pm	**Session 5: gIRls (and guys) -**	**Moderator: Anne Roberts & Gloria Salazar**
10:00 am-10:10 am	Looking back: how UAE became a thing	Anne Roberts (WAIS Past President)
10:10 am-10:20 am	The "theory" of Pelvic Congestion Syndrome	Yilun Koethe
10:20 am-10:30 am	Obstetrical Emergencies	Rahul Patel
10:30 am-10:40 am	Breast Cryoablation Primer	Yolanda Bryce
10:40 am-10:50 am	How to Start a PAE Practice	Ryan Kohlbrenner
10:50 am-11:00 am	Uterine AVF's and Liquid Embolics	Evan Lehrman
11:00 am-11:10 am	Management of Symptomatic Varicoceles	Sailendra Naidu
11:10 am-11:20 am	Machine Learning and (wo)men's health	Andrew Taylor
11:20 am -11:30 am	Looking ahead: emerging roles for IR in (wo)men's health	Gloria Salazar
11:30 am -11:40 am	Panel Discussion	Including Quinn Meisinger & Brooke Spencer

Name: Anne Roberts, MD
Organization: UCSD
Email: acroberts@ucsd.edu
Presentation Title: Looking back: how UAE became a thing
Abstract:

Uterine artery embolization had been performed for postpartum bleeding. This was first described in the late 1970's. Embolization of the uterine arteries had also been described for trophoblastic disease, AVF/AVM of the uterus, and for treatment of cervical or uterine cancer. The procedure of uterine artery embolization for fibroids was first described in 1995 by Ravina, et al. With in a year there was a rapid expansion of uterine artery embolization as a therapy for symptomatic uterine fibroids. Early in the development of this technique there was significant issues with reimbursement. However, with enormous efforts on the part of many interventional radiologists, the SIR, and patients, reimbursement began to be obtained. There was the development of a Quality of Life score for evaluating patient's response to embolization, there was the development of a registry to track patients undergoing UAE. All of these measures were crucial for showing UAE was a viable method for treating women with symptomatic uterine fibroids.

Name: Yilun Koethe, MD
Organization: OHSU
Email: yilun.koethe@gmail.com
Presentation Title: The "theory" of Pelvic Congestion Syndrome
Abstract:

Pelvic venous disorder (PeVD), previously known as pelvic congestion syndrome, is a source of chronic pelvic pain for many women, with prevalence ranging from 6-27%. It leads to significant decreases in quality of life, and it goes frequently undiagnosed for years.

Objectives Statement:

In 2021, the American Vein and Lymphatic Society recognized a group of disease with different historical nomenclature but interconnected pathophysiology including May-Thurner, pelvic congestion and nutcracker syndromes. This set of pathologies is reclassified as pelvic venous disorders (PeVD). We will discuss updates in classification of PeVD and review diagnosis and treatment options for PeVD.

Objectives:

- Discuss updates in terminology and classification of PeVD
- Review the pathophysiology, risk factors, and symptoms of PeVD
- Discuss the diagnosis, treatment and management of PeVD
- Review data behind treatment of PeVD

Name: Rahul Patel, MD
Organization:
Email: patelr516@gmail.com
Presentation Title: Obstetrical Emergencies
Abstract:

The US maternal mortality rate is 17.4 per 100,000 pregnancies which ranks last among industrialized countries. Infection, hemorrhage, blood clots, and stroke represent about 40% of the cause of pregnancy related deaths where IR can potentially have a life saving role. For some patients, prevention may be the best therapy for them, such as balloon occlusion catheter placement or IVC filter placement. In others early identification and rapid triage is crucial. We will review the potnetial therapies IR has to offer and the appropriate work up of these patients. I will also discuss the role of team based approach in prevention of catastrophic outcomes.

Name: Yolanda Bryce, MD
Organization: Memorial Sloan Kettering
Email: yolibryce@gmail.com
Presentation Title: Breast Cryoablation Primer
Abstract:

The justification for percutaneous cryoablation of breast cancer comes from population-based screening resulting in higher incidences of breast cancer, making ablation with less morbidity, mortality, and better cosmesis more feasible. In addition, many patients are not eligible for surgery due to comorbidities. The ACOSOG-1072 trial showed that there is 100% ablation when ablating lesions less than 1 cm. With a multiprobe approach, lager lesions can be ablated Littrup, et al 2009). When ablation is performed choose a course and distance where the ice ball can be fully under the skin and use hydrodissection to protect the skin. There are studies that are evaluating the efficacy of combining cryoablation with immunotherapy to decrease recurrence.

Name: Ryan Kohlbrenner, MD
Organization: UCSF
Email: ryan.kohlbrenner@ucsf.edu
Presentation Title: How to Start a PAE Practice
Abstract:

PAE has become an increasingly popular management option for BPH patients. While today's graduating IR fellows often receive exposure to PAE during training, established IR physicians may be unfamiliar with the procedural intricacies and strategies to obtain PAE patient referrals. This presentation will provide a starting point for those looking build a PAE practice at their home institutions.

Objectives:
-Create a toolbox of base catheters, microcatheters, embolics, and wires to maximize the likelihood of technical and clinical success.
-Discuss procedural basics along with common intraprocedural dilemmas and pitfalls.
-Develop a strategy to build your practice and work with (not against) your urology colleagues.

Name: Evan Lehrman, MD
Organization: UCSF
Email: evan.lehrman@ucsf.edu
Presentation Title: Uterine AVF's and Liquid Embolics
Abstract:

Acquired uterine arteriovenous fistula is a rare condition that may cause life threatening hemorrhage in young women that desire future fertility. Providing a minimally invasive treatment option alternative to hysterectomy can be an incredibly impactful action to an individual patient and her family. Traditional particulate uterine artery embolization may not be effective or safe in women with this pathophysiology since the particulate material can pass right through the large arteriovenous connection and into the systemic venous return to the lungs.

Objectives:

• Understand the pathophysiology of Enhanced Myometrial Vascularity and how this plays a role in the development of uterine arteriovenous fistulae
• Learn tips and tricks to embolize/obliterate uterine arteriovenous fistulae by direct puncture and injection of liquid embolic

Name: Sailendra Naidu, MD
Organization: Mayo Clinic Phoenix
Email: naidu.sailen@mayo.edu
Presentation Title: Management of Symptomatic Varicoceles
Objective Statement:

The incidence of varicoceles in the general population ranges from 15-20% with 2-10% of these men experiencing orchalgia. Treatment options include surgery or endovascular embolization of the internal spermatic vein. Embolization offers advantages of being less invasive, allows visualization of venous variants and has fewer potential complications. The efficacy of internal spermatic vein embolization is excellent, comparable to surgical varicocelectomy.
Objectives:

- Know the pre and post procedure evaluation of a symptomatic varicocele patient and indications for intervention
- Gain an understanding of technical aspects of spermatic vein embolization and how to safely perform the procedure
- Describe the expected outcomes following spermatic vein embolization with an understanding of the potential risks

Name: Andrew Taylor, MD
Organization: UCSF
Email: andrew.taylor@ucsf.edu
Presentation Title: Machine Learning and (wo)men's health
Abstract:

Artificial Intelligence (AI) in its many forms has become an everyday presence in nearly all aspects of life over the last decade, with both positive and negative effects. The use of AI in medicine, despite tremendous progress in the last decade, is still relatively nascent, but has seen some terrific successes as well as the inevitable disappointments that occur when any new technology arrives with great hype, and then requires more time than expected to mature.

Radiology has been a particularly ripe area of development for machine learning in medicine, due in large part to quantum leaps forward in the fields of Deep Learning and computer vision that have produced staggering results in tasks of image analysis. Interventional Radiology, however, stands to benefit to some degree from improved image analysis as a diagnostic tool, but in our field the opportunities (and challenges) for meaningful application of AI are substantially broader. Current research to apply machine learning techniques in IR aim to increase diagnostic accuracy for specific conditions, to improve pre-procedural patient assessment and stratification for more accurate prognostication of outcomes, and to provide clinical decision support both in and out of the IR suite.

This presentation will focus on highlighting the current state of artificial intelligence research and implementation in Interventional Radiology, with a focus on Women's Health. Results of research from the current literature will be discussed, as well as future opportunities and challenges for meaningful integration of this revolutionary technology into the practice of Interventional Radiology.

Name: Gloria Salazar, MD
Organization: University of North Carolina
Email: gloria_salazar@med.unc.edu
Presentation Title: Looking ahead: emerging roles for IR in (wo)men's health
Abstract:

As our specialty evolves, we continue to observe multifactorial gaps in IR care delivery. There are several roles in which IR physicians can lead in innovation and in closing gaps in disparities. In this presentation, an overview of different aspects of our specialty will be presented focusing on 3 pillars: research, emerging procedures, and leadership roles, and how physicians can introduce precision medicine and equitable care to our patients; irrespective of sex and gender, race and ethnicity, geographic location, or socioeconomic status.

7:30 am - 9:30 am	**Session 6: What is IR?**	**Moderator: Tom Sos and Elizabeth Hosselkus**
7:30 am - 7:45 am	"Those who cannot remember the past are condemned to repeat it."	Tom Sos
7:45 am - 8:00 am	IR's Identity Crisis & the History of Specialization	Eric Keller
8:00 am - 8:15 am	IR and DR - Happy Marriage or Headed for Divorce?	Rob Suh
8:15 am - 8:30 am	Who are the Irs of Tomorrow?	Helena Rockwell, Dane Alzate, Abhi Jairam
8:30 am - 8:45 am	INNOVATION and RESEARCH are the Foundations of IR	Kieran Murphy
8:45 am - 9:00 am	Looking ahead: where do we go from here?	Elizabeth Hosselkus
9:00 am - 9:15 am	Panel Discussion	Includes Nadine Abi-Jaodeh, Agnes Solberg

Name: Tom Sos, MD

Organization: Weill Cornell Medicine
Email: drtomsos@gmail.com
Presentation Title: "Those who cannot remember the past are condemned to repeat it."
Abstract:

IR has evolved and substantially changed over the past decades. At its foundation in the 1960's by Charles Dotter, it was primarily a diagnostic cardiac and vascular specialty and included very few and experimental interventions: treatment of GI bleeding and the beginnings of angioplasty and lytic therapy. As IR developed, evolved, and became accepted, new vascular and nonvascular interventions were added to its armamentarium. In fact, IR launched minimally invasive therapies. IRs quickly learned the clinical and diagnostic challenges of their patients, however, IR was primarily dependent on referrals by "original clinical specialists" for procedures. After initial skepticism and even hostility, seeing the successful results of these alternative treatments, the same specialists realized that ironically, they now had to learn and apply these therapies to preserve their practices. Soon turf wars broke out over many procedures; peripheral vascular disease (PVD) being prototypical of such battles. The IR independent residency was a major step in training for establishing clinical practices and integrating control of patients on an equal footing with the "clinicians". As the PVD volume in IR decreased, IRs became more involved in other procedures, most notably and successfully in Interventional Oncology.

There are opportunities and dangers in the constant changes in IR practice, which will be discussed in more detail in my lecture.

Objectives Statement:
To understand the evolution of current IR practice and to consider possible paths to preserve and grow IR.
Objectives:

- Know the history and evolution of IR.
- Know and understand the past and prepare for future turf wars.
- Understand the importance of excellence in clinical practice and procedural techniques.
- Understand the importance of clinical trials to validate IR practices and practitioners.
- Understand the roles of invention and innovation to become and remain leaders in treating patients and disease.
- Know, understand, and influence political and scientific efforts to improve, grow and preserve IR and to appreciate the important role SIR (SCVIR) has had from almost the beginning.

Name: Eric Keller, MD
Organization: Stanford University
Email: ejkeller607@gmail.com
Presentation Title: IR's Identity Crisis & the History of Specialization
Abstract:

All medical specialties tend to go through a period of identity crisis where they struggle to differentiate themselves from other specialties and illustrate their unique value. As the newest primary medical specialty, many of the current debates and concerns in IR are well mirrored in the history of other specialties such as what relationship they should have with their parent specialty, diagnostic radiology. This presentation will briefly discuss the history of medical specialization in the U.S. as a backdrop to discuss previous work characterizing the evolving professional identity of IR. We will then conclude looking forward about what this may mean for the future of our specialty.

Name: Rob Suh, MD
Organization: UCLA
Email: RSuh@mednet.ucla.edu
Presentation Title: IR and DR - Happy Marriage or Headed for Divorce?
Objectives Statement:

The path to becoming an interventional radiologist dramatically changed in 2014 with the inception of 2-year interventional radiology training through both integrated and independent interventional radiology residencies. During and since this time, new and existing competitive forces have similarly and no less dramatically changed the landscape of radiology, leading to multifaceted discussion on whether the practice of interventional and diagnostic radiology can co-exist under radiology.

Objectives:

- Realize differences between training pathways for diagnostic and interventional radiology.
- Recognize difference practice patterns in interventional radiology.
- Grasp various practical, economic and other competitive forces driving interventional and diagnostic radiology.

Name: Helena Rockwell, MD, Dane Alzate, MD, Abhi Jairam, MD
Organization: UCSD
Email: hdrockwe@health.ucsd.edu
Presentation Title: Who are the IRs of Tomorrow?
Objective Statement:

The prospect of perpetual growth and discovery to maximize patients' lives through minimally invasive means makes Interventional Radiology (IR) a compelling pursuit among medical trainees. The purpose of this session is to provide the perspectives of three trainees (senior resident, junior resident, and a medical student) on their unique inspirations, challenges, and hopes for the future of the field. This will be a mixture of question and answer (Q&A) and presentation.

Objectives:

- Gain perspective on the range of inspiration for IR across trainees
- Recognize unique pathways for trainees to gain exposure to the field
- Understand current challenges trainees may face and potential solutions for improvement
- Learn the "dream" practice types that interest the trainees of tomorrow

Name: Kieran Murphy, MD
Organization: University of Toronto
Email: Kieran.Murphy@uhn.ca
Presentation Title: INNOVATION and RESEARCH are the Foundations of IR
Abstract:

Innovation = $\frac{\%\ \text{of Inventors x [Funding] x Cultural Alignment}}{\text{Timing}}$

Innovation is a manifestation of the concentration of inventors in society. The greater the percentage of the inventors the greater the level of new ideation and creativity. Inventiveness is similar to eccentricity and is a barometer of intellectual health of the Society.

A critical element in enabling inventors produce their idea is the availability of funding. This may be local national or global funding. The funding may be small initially and then grow over time. The first funding that goes into a project is the most critical this is where academic institutions play a key role with small amounts of seed funding to enable prototype development and proof of principle. Most inventors funded projects themselves. This is evidence of their commitment, their skin in the game.

I divide the world into inventors and adopters. Adopters may be early middle or late. They represent the market for the inventor's idea. Early adopters are risk tolerant and live on the bleeding edge of medicine. Middle stage adopters follow when there is reimbursement and regulatory approval as now, they get paid for doing the new procedure are using the new device. Late adopters come on board when they have no alternative. None-adopters have essentially determined the shelf life of their career. We are defined by what we decide not to do as this determines our professional obsolescence. Procedures that are approved and reimbursed are adopted earlier. The more an idea aligns a pre-existing belief systems pre-existing reimbursement of five 10K approval from the FDA the more rapidly adoption occurs the less original the idea is. Really novel ideas without approval pathways or reimbursement take 10 to 15 years to be adopted and often fail along the way.

Of all these elements the most critical thing for the inventor's timing. The introduction of a new idea or device at a point where society needs just that solution ensures rapid adoption. This is a random event beyond the control of the inventor. For example, I had to shut down my online education company Medlantis for lack of funding three months before Covid change the world of medical education.

The most important element in this equation is the presence of the inventor. Recruitment of talented inventive people is the critical initiating instigating event in the creation of an innovative society. Inventors Talent is like a rare earth element that is much talked about, elusive, dizzy enzyme which catalyzes the rest of this equation. Talent is mobile and searches the world for opportunity which enables their brains. Recruitment of talent is the most difficult task but without it societies become mediocre.

Name: Elizabeth Hosselkus, MD
Organization: UCSD
Email: ehosselkus@gmail.com
Presentation Title: Looking ahead: where do we go from here?
Abstract:

The path of interventional radiology as a specialty has been long and winding, with many side paths and branches, and preserving this history is important. Looking forward, it is time to turn our sights from academic centers and tertiary care hospitals to rural and community hospitals. The challenges in expanding access to IR services for rural populations are undeniable, but they can be overcome by employing IR's strengths. Additionally, we need to continue exploring innovations to treat more common, less critical disease states. Our goal for the future of IR should be widespread access to care for a wider variety of patients.

10:30 am - 12:00 pm	SAM Session 7: Data Schemata: Separating Fact from Fiction	Ziv Haskal and Sarah White
10:30 am-10:45 am	Looking Back: Data in IR	Ziv Haskal
10:45 am-11:00 am	Ablation vs. Resection for a 2.5 cm HCC	Alda Tam (WAIS Past President)
11:00 am-11:15 am	TACE vs. TARE for a patient within Milan	Nick Fidelman
11:15 am-11:30 am	Minimally invasive therapy for PE	Akhi Sista
11:30 am-11:45 am	Drug-eluting balloons and stents, Atherectomy devices	Jim Benenati
11:45 am - 12:00 pm	Looking ahead: Better IR Data	Sarah White

SESSION 7 is a SAM Session.

1:15 pm - 2:15 pm	Session 8: Rapid Fire Rundown	Moderator: David Kumpe and Justin McWilliams
1:15 pm - 1:25 pm	Venous	Akhi Sista
1:25 pm - 1:35 pm	Arterial	Kumar Madassery
1:35 pm - 1:45 pm	IO: What did I miss during the pandemic?	John Louie
1:45 pm - 1:55 pm	Potpourri	Claire Kaufman
1:55 pm - 2:05 pm	Meds (SIR guidelines updates: antibiotics & anticoagulation)	Sarah Kahn
2:05 pm - 2:15 pm	Neuro	Chris Dowd

Name: Akhi Sista, MD
Organization: NYU Langone Health
Email: asista@gmail.com
Presentation Title: Venous
Abstract:

Deep and superficial venous disease have seen a flurry of important studies and developments over the past 5-7 years, headlined by the primary and secondary publications of the landmark ATTRACT trial. Numerous venous-specific stents have entered (and some have exited) the market, and another landmark trial, the C-TRACT trial, is underway to determine whether post-thrombotic patients benefit from iliofemoral vein stenting. This talk will explore the current state of deep and superficial minimally invasive venous therapies; where we are and where we are headed.

Name: Kumar Madassery, MD
Organization: Rush University
Email: kmadassery@gmail.com
Presentation Title: Arterial
Abstract:

NOT RECEIVED

Name: John Louie, MD
Organization: Stanford University
Email: jdlouie@standford.edu
Presentation Title: IO
Abstract:

On January 21, 2020 the CDC confirmed the first known case of coronavirus in the US. In the years since then we have sheltered in place and canceled many meetings including this one. Although in person events have been postponed, discoveries in interventional oncology have continued to advance. This session will give a rapid-fire rundown on what you have missed during the pandemic.

Objectives

- Know the Legacy trial results
- Know the positive results of the IMBRAVE-150 trial
- Learn the changes in the BCLC strategy
- Know how Y90 fits in with metastatic colorectal cancer

Name: Claire Kaufman, MD
Organization: University of Utah
Email: Claire.kaufman@gmail.com
Presentation Title: Potpourri
Abstract:

Interventional radiology has been growing with leaps and bounds since the days of Charles Dotter tinkering with tools in his garage. This session will serve as a rapid-fire rundown covering multiple different studies highlighting the advances and breadth of our exciting field.

Name: Sarah Kahn, MD
Organization: Marina Del Rey Hospital
Email: sarahnkhan@gmail.com
Presentation Title: MEDS
Objectives Statement:

Interventional radiology has rapidly expanded over the years with the addition of many exciting new procedures. The use of periprocedural medications such as antibiotics and anticoagulation has also evolved with newer agents and indications. Antibiotic agents are integral to the periprocedural management and the 2018 SIR practice parameters for the prophylactic use of antibiotics will be summarized. The 2019 SIR consensus guidelines for the periprocedural management of thrombotic and bleeding risk in patients undergoing percutaneous image guided interventions will be discussed, including review of agents, clinical considerations and recommendations.

Objectives:

- Review antibiotic prophylaxis regimens for IR procedures
- Review anticoagulation/antiplatelet agents
- Discuss clinical considerations in special populations
- Understand procedure risk stratification and pre procedure laboratory testing
- Manage anticoagulation/antiplatelet agents before and after a procedure

Name: Chris Dowd, MD
Organization: UCSF
Email: chris.dowd@ucsf.edu
Presentation Title: Interventional Neuroradiology State of the Art: Acute Stroke and Intracranial
Abstract:

Since 2015, as thrombectomy has become the primary method of acute stoke therapy, thrombectomy volumes have increased tremendously. Initially buoyed by the MR CLEAN and similar trials, the DAWN and DEFUSE 3 trials have extended the time window for treatment. We will summarize current indications and treatment strategies, and will consider the evolution of stroke therapy in the upcoming years.

As intracranial aneurysm therapy has gradually morphed from open craniotomy to endovascular, so are endovascular techniques evolving from direct aneurysm therapy to endoluminal strategies. We will examine the current techniques of endoluminal and intrasaccular flow diversion, along with their benefits and drawbacks, and we will envision the future of intracranial aneurysm therapy.

7:30 am - 9:30 am	**Session 9: New Roads**	**Moderator: Ernie Ring and Alex Vezeridis**
7:30 am - 7:45 am	Looking back: The History of IR in Portal Hypertension	Ernie Ring (WAIS Past President)
7:45 am - 8:00 am	Acute and Chronic Porto-Mesenteric Thrombosis	Pallav Kolli
8:00 am - 8:15 am	Advanced Biliary Decompression: Baskets, Lasers and lithotripsy	Jonathan Susman
8:15 am - 8:30 am	Congenital Atresias	Shellie Josephs (WAIS Past President)
8:30 am - 8:45 am	The Blind Side: Confessions of a Retired Interventional Radiologist	Jeffrey Dieden
8:45 am - 9:00 am	Looking ahead: biodegradable stents and more?	Alex Vezeridis
9:00 am - 9:30 am	Panel Discussion	To include Jen Berumen (Transplant Surgeon)

Name: Ernie Ring, MD
Organization: UCSF Emeritus
Email: Ernie.Ring@ucsf.edu
Presentation Title: Looking back: The History of IR in Portal Hypertension
Abstract:

1960s

IV Posterior Pituitary Extract (Pitressin/Vasopressin)
Dose - 20 units given over 20 minutes
Potent Splanchnic vasoconstrictor
Reduced portal pressure by 50%
Tachyphylaxis developed
Rebleeding required increased doses
Cardiac side effects

Sengstaken-Blakemore Tube
Minnesota Tube
Attach with weight and pulley
Anchor to face mask of football helmet

Portal-Caval Shunt
End to side
Side to side

Rosch conceives of shunt between portal vein and hepatic vein. Perform in dogs

1970s
Stanley Baum (Radiologist) and Morry Nusbaum (Surgeon)
introduce low dose (0.2 iu/min) vasopressin directly into SMA. Portal pressure <50%/ no tachyphylaxis

Rosch and Portland lab show same reduction in portal pressure with systemic at constant low dose without tachyphylaxis. IR cath SMA no longer used.

Lunderquist develops transhepatic portal vein catheterization method and directly embolizes varices
High mortality. High incidence of Portal Vein thrombosis.
Procedure largely abandoned

1980s
IR out of portal hypertension management.
Experimental TIPS/(TIPPS) continues
Burgener and Guiterrez balloon track in dogs.
Colapinto performs in 6 humans using balloon to create track.
Rosch and Uchida Gianturco stens in pigs
Palmaz stented track in dog

1990s
Richter and Palmaz first stented TIPS in 3 patients in Germany
First in US at MVI

UCSF modifies transhepatic biliary drainage techniques to perform "transhepatic from the top" using Colapinto biopsy needle for access and Wallstent to support the track.

Widespread investigation into role of TIPS

Large Single Center Series
UCSF-250 Patients
Multicenter Trials
11 Randomized Controlled Trials

UCSF/TIPS *(n=250)*
Clinical Information

Male/Female	161/89
Age	51.6 (5-84)
Ascites	197
Encephalopathy	74

Clnical Outcome

TECH SUCCESS	242 (97%)
30 D AY MORT	33 (13%)
TRANSPLANTED	51 (20%)

TIPS *(n=250) Hemodynamic Outcome*

Pressures (*mmHg)*	Pre	Post
IVC	13	16
PORTAL V.	36	26
GRADIENT	23	10

	1 Year
SURVIVAL	60%
CHILD'S CLASS A	75%
B	68%
C	49%
REBLEEDING	26%
ENCEPHALOPATHY	25%

TIPS 1 Year Patency
Fanelli et al. 2003 SIR

	Viatorr	*Wallstent*
Patients	53	57
1^0 Patency (14mo)	79%	48%
Portal Vein Stenosis	7%	0%
In Stent Stenosis	0%	88%
Hepatic vein stenosis	13%	9%

2010s
Balloon occluded retrograde transvenous obliteration

Name: Pallav Kolli, MD
Organization: UCSF
Email: Kanti.Kolli@ucsf.edu
Presentation Title: Acute and Chronic Porto-Mesenteric Thrombosis

Objectives Statement:
Porto-mesenteric thrombosis can be an asymptomatic imaging finding. Alternatively, patients with this condition may present with symptoms and portal hypertensive complications of varying severity. A limited literature supports a role for percutaneous interventions in highly selected patients. Successful treatment can improve quality of life, prevent life-threatening complications, and facilitate subsequent liver transplantation in patients with underlying liver disease. The overall objective of this lecture is to prepare interventional radiologists to care for patients with acute and chronic porto-mesenteric thrombosis.

Objectives:
- Understand the natural anatomic and clinical history of porto-mesenteric thrombosis
- Understand indications for percutaneous intervention in patients with acute or chronic porto-mesenteric thrombosis
- Learn tips and tricks to facilitate successful percutaneous interventions and minimize risks in patients with porto-mesenteric thrombosis

Name: Jonathan Susman, MD
Organization: Columbia University
Email: js1138@columbia.edu
Presentation Title: Advanced Biliary Decompression: Baskets, Lasers and lithotripsy
Abstract:

Transhepatic fluoroscopic guided biliary decompression has become a mainstay of interventional radiology practices. More recently, advances in cholangioscopic devices has facilitated a broadening of therapeutic options for the diagnosis and treatment of malignant and benign biliary disease. Smaller, affordable and higher quality devices including cholangioscopes, lithotripters, and baskets have facilitated a myriad of options for stone disease, malignant obstruction, and infectious etiologies of biliary obstruction. These options will be reviewed and examples of cases demonstrating their uses in various clinical situations will be demonstrated.

Name: Shellie Josephs, MD
Organization: Lucile Packard Children's Hospital
Email: sjosephs@stanford.edu
Presentation Title: Congenital Atresias
Abstract:

NOT RECEIVED

Name: Jeffrey Dieden, MD
Organization: Kaiser Oakland - Retired
Email: diedenjd@gmail.com
Presentation Title: The Blind Side: Confessions of a Retired Interventional Radiologist
Abstract:

As a quarterback drops back into the pocket and scans his receiver options downfield, by necessity he must ignore his blindside and relies on his tackle to protect him. As practicing interventional radiologists address the routine obligations of patient care, maintaining knowledge and procedural expertise, etc., it is easy to ignore other aspects of a medical practice. After I retired six years ago, I reflected on how I handled these "blindsides" of my IR career and who I relied upon to "have my back". Overall, I enjoy a sense of pride and satisfaction, but I also know that I could have done more. As a boy I was raised Catholic, so I assemble my thoughts as a set of confessions.

- Cost of Health Care. I will document the high cost of health care in the US, and that this does not translate into improved health. We in IR have many options in the devices, equipment, embolics, etc. we use. How often do our decisions include cost and what can we do in terms of policy at an institutional level to make our procedures more affordable?
- Quality Assurance. We all have QA programs, but how actively to we work to design those that will have the greatest impact on patient outcomes and safety?

- "Innovate but Validate". IR has been a disruptive medical specialty, establishing new treatment methods that reduce morbidity and prolong life, but how good are we at acknowledging when a procedure isn't an improvement? How critically do we evaluate the literature? Do we act based on studies that call conventional wisdom and practice into question?
- Using our colleagues. We pride ourselves in our technical expertise and knowledge, but are we quick enough to seek help when a procedure isn't going well or in handling a challenging patient? Similarly, how well do we collaborate with our non-MD colleagues to build an effective team.
- Bias. How closely to we examine our decisions for bias and acknowledge conflicts of interest?
- Wellness. Burnout is high. What can we physicians do to promote a healthier and more joyful practice for ourselves and our staff?
- Volunteerism. We are so emotionally and physically consumed with our IR practice and home life, but there is a great big world of volunteer opportunities available to us.
- Global Health. Part of volunteerism, there are many outlets in other countries to contribute with our knowledge and expertise.
- Climate Change. We use lots of disposable products and energy. How can we make our departments and hospitals greener?

Objectives Statement:
There are many aspects of an Interventional Radiology practice other than the performance of procedures. This session will explore issues that affect our therapeutic choices, the cost of health care, patient safety, staff wellness, climate change, and opportunities to contribute outside of an IR practice.

Objectives:

- Challenge our assumptions about how we decide on procedural options.
- Consider health care cost impacts of our choices in Interventional Radiology.
- Consider ways to improve the emotional well-being of ourselves, partners and staff.

Name: Alex Vezeridis, MD
Organization: Stanford
Email: alexvez@stanford.edu
Presentation Title: Looking ahead: biodegradable stents and more.
Abstract:

Exciting new developments in IR treatment of biliary and gallbladder disease may expand the already critical role that IR plays in diagnosis and treatment of patients affected by these conditions. In this presentation, we will review the current status and future of gallbladder ablation, benign and malignant biliary disease management including biodegradable stents, and biliary endoscopy.

10:00 am - 12:00 pm	Session 10: Let's Get Together	Moderator: Barry Katzen and Dan Sze
10:00 am - 10:15 am	WAIS lecture: The History of WAIS	Hal Coons (WAIS Officer)
10:15 am - 10:30 am	Societies Driving Standards and Innovation	Alda Tam
10:30 am - 10:45 am	Rad Onc, the Original Radiology Spinoff	Frank Facchini
10:45 am - 11:00 am	Tips from the Land of the Rising Sun	Yasuaki Arai (Japan)
11:00 am - 11:15 am	Each IR Must Contribute	Dan Sze (WAIS Past President)
11:15 am - 11:30 am	Panel Discussion	Speakers, plus Gregory Makris (CIRSE RFS), Jeremy Durack

Name: Harold Coons, MD
Organization: WAIS
Email:
Presentation Title: WAIS lecture: The History of WAIS
Abstract:

The presentation will include a review of the 50 year history of the Western Angiographic & Interventional Society and its role in furthering the subspecialty. It will include a description of the state of the art in 1970 and a look at how far we have come. There will be a final encouragement to continue innovating even in the face of resistance and skepticism.

Name: Alda Tam, MD, MBA
Organization: MD Anderson
Email: alda.tam@mdanderson.org
Presentation Title: Societies Driving Standards and Innovation
Objectives Statement:

Clinical practice guidelines (CPGs) are public health tools. CPGs developed by specialty societies were, and continue to be, the subject of general criticisms and concerns on the national stage, so much so that the National Academy of Medicine stepped in to define criteria in 2011. As we begin our tenure as an independent specialty, our history with guidelines as a society, the current state, and the future state will be reviewed.

Objectives:

- Define the meaning of a clinical practice guideline.
- Understand how scientific evidence is evaluated, graded, and assigned a level of evidence.
- Be able to identify a trustworthy clinical practice guideline and use the information therein.

Name: Frank Facchini, MD
Organization: VIR Chicago, Varian Medical
Email: ffacchini@virchicago.com
Presentation Title: Rad Onc, the Original Radiology Spinoff
Abstract:

NOT RECEIVED

Name: Yasuaki Arai
Organization: National Cancer Center, Japan
Email: arai-y3111@mvh.biglobe.ne.jp
Presentation Title: Tips from the Land of the Rising Sun
Abstract:

Our learning from the past
1) Around 1980, we have developed TACE with lipiodol (cTACE) for HCC and various techniques of hepatic arterial infusion chemotherapy (HAIC) for liver mets. However, the IRs were not taken as an interest by the Western countries, since HCC was far less common back then, and HAIC had been performed as a surgical procedure. From this we learned that the evolution of IR was much influenced by the different backgrounds of countries. 2) The discussions with medical oncologists who have not readily recognized TACE for HCC or HAIC for liver mets were always very tough, making it difficult to secure IR's position in some fields of medicine. We learned that clinical trials and making evidence are essential to secure IR's position in medicine. 3) Angio-CT system, developed for the diagnosis of liver tumors in 1992, is now not only being used for diagnosis, but for sophisticated IRs. The implantable port was initially developed for HAIC, but now widely used for systemic chemotherapy. For the progress of new IR, it is essential that more IRists use it and become accustomed to using it.

For the future IR progress
1) Knowing and utilizing different IRs created through different background is the driving force for IR advancement. The development of communication tools such as the internet has lead to great strides as information sharing methods. Yet, information is basically accessed based strongly on interest. Due to COVID-19, we have now become accustomed to information sharing on the Web. But face-to-face meetings are full of useful information (even considering its efficiencies) that can only be obtained in person. 2) Evidence is a common language both for establishing standard IR within IR and for establishing IR status within all fields of medical care. We need to continue to keep track of evidence to keep the progress of IR going and to push up the status of IR in medicine. 3) There are many countries where IR is not yet available, many, economically poor. IR precision leading to increase in cost is unavoidable, but enabling IR by making "cheaper IR" is also an important role of IR developed countries. We should remember that IR has the potential to evolve if it is used more countries, not just from the perspective of enlightenment.

From the perspective of Europe, Japan is a far eastern country, but from Japan, the United States is an eastern country, and Europe is in the further east. Our earth is round. For the future development of IR, it is important to share the information of IR, use it, and evolve it, not from the perspective of a country or region, but from the perspective of the entire earth.

Name: Dan Sze, MD, PhD
Organization: Stanford University, JVIR Editor
Email: dansze@stanford.edu
Presentation Title: Each IR must Contribute
Objectives statement:

The field of interventional radiology can no longer rely on the security offered by the parental aegis of diagnostic radiology. In many ways, the other occupants in the house of radiology are increasingly functioning as rivals rather than siblings, and the world outside of the house is full of predators and scavengers. To perpetuate the success and growth of our nascent specialty, we need to evoke JFK's appeal to the country at his inauguration ("Ask not what your country can do for you – ask what you can do for your country.") and determine what each interventional radiologist can do to contribute to the field to allow us as a community to achieve our potential.

Objectives: at the end of the presentation, participants should:

1. Understand how publishing the top research in IR in the JVIR benefits the field and the practitioners of IR.
2. Recognize how joining the VIRTEX registry, especially for private practitioners, is necessary to ensure the financial and scientific survival of IR.
3. Comprehend how the SIR Foundation and the political action committee SIRPAC operate independently to advance the science of IR and to promote to viability of IR.
4. Appreciate the value of public awareness of IR, and how it can be developed through the Interventional Initiative, lay media, and social media.

7:30 am - 9:30 am	Session 11: M&M Case Presentations	Moderator: Sue Hanks and Zachary Berman
7:30 am - 7:45 am	University of Colorado Case Presentation	George Zlotchenko
7:45 am - 8:00 am	Univ of Southern CA Case Presentation	Jenanan Vairavamurthy
8:00 am - 8:15 am	Stanford Case Presentation	Nishita Kothary
8:15 am - 8:30 am	Banner Health Phoenix Case Presentation	Steve Chen
8:30 am - 8:45 am	Swedish Medical Case Presentation	Sanjiv Parikh
8:45 am - 9:00 am	Kaiser LA Case Presentation	Tina Hardley
9:00 am - 9:15 am	UCSD Case Presentation	Zach Berman
9:15 am - 9:30 am	Panel Discussion	Panel

Name: Sue Hanks, MD (& All Presentations)
Organization: USC
Email: sehanks@usc.edu
Presentation Title: All M&M Sessions
Abstract:

A commitment to ongoing learning is one of the important things that separates a profession from a job. Despite many very useful and indeed laudable efforts to create core curricula and standardized continuing education programs for various medical specialties, the nature of medical practice mandates that the educational experience, much like our daily work experience, must also allow us to adapt and change to the unique combination of people and events that we encounter on a daily basis. Indeed, this ability to adapt is critical even when dealing with tasks we often regard as routine or repetitive, since even routine tasks in medical practice are sufficiently nuanced that these patients and procedures often present with important differences and lessons that need to be learned to ensure a high quality outcome.

Furthermore, no matter how experienced we may be, a major challenge of medical practice is that the unexpected and unique occur with remarkable frequency. Thus, at least for the foreseeable future, we must, like generations before us, seek to benefit from the experiences, both good and bad, of others in our profession as well as what we can learn from their discussions of our experiences. This is the reason why Mortality and Morbidity Rounds are still a basic and remarkably valuable feature of continuing medical education. As is so often said, the best experience is gained from bad experience. To the extent it is gained from the bad experience of others it allows us to enhance our understanding of what we do and improve our outcomes when we eventually encounter similar situations ourselves. This session expands on the usual Mortality and Morbidity concept to include "great saves" and "wow, I certainly learned a valuable lesson from that" presentations in addition to the usual discussion of procedural complications so as to maximize the learning value of both the good and bad experiences of our colleagues.

10:00 am - 12:00 pm	Session 12: Trend-setters	Moderator: Lindsay Machan and Stephen Hunt
10:00 am - 10:15 am	Looking back: what is old is new again	Lindsay Machan (WAIS Past President)
10:15 am - 10:30 am	Precision Medicine in IR	Christine Boone
10:30 am - 10:45 am	Immuno-oncology in IR	Tyler Mandt
10:45 am - 11:00 am	Histotripsy	Fred Lee
11:00 am - 11:15 am	Augmented Reality in IR	Chuck Martin
11:15 am - 11:30 am	AI in IR	Rajesh Shah
11:30 am - 11:45 am	Looking ahead: what's on the horizon	Stephen Hunt
11:45 am - 12:00 pm	Panel Discussion	Moderators and Speakers

Name: Lindsay Machan, MD
Organization: University of British Columbia
Email: lindsay.machan@vch.ca
Presentation Title: Looking back: what is old is new again
Abstract:

Interventional radiology has always been a nimble specialty, addressing clinical problems big and small. At our core is a variation of House of God Rule #6 (There is no body cavity that cannot be reached with a #14G needle and a good strong arm.) Newer methods of guidance of that arm, variations on the 14 G needle and the payloads they deliver have allowed us to continually reinvent our specialty.

Objectives:

- Know some of the procedures continue to frustrate us in new ways
- Know how persistence as much as ingenuity defines our consistent reinvention.
- Learn some practical aspects of (re)innovation.

Name: Christine Boone, MD
Organization: UCSD
Email: ceboone@health.ucsd.edu
Presentation Title: Precision Medicine in IR
Abstract:

Modern medicine is undergoing a transformation in which patients' genetic, environmental, psychosocial, and lifestyle factors are utilized in the diagnosis and treatment of disease. This emerging paradigm shift, described as "precision medicine", is enabling improved disease detection, treatment, and mitigation strategies, with minimization of treatment-related morbidities. Interventional radiology has resided at the frontier of precision medicine, implementing targeted, minimally invasive image-guided diagnostic and therapeutic approaches. On-going advancements in molecular medicine, radiogenomics, nanotechnology and theragnostics, and immunotherapy offer unprecedented opportunities to further increase the resolution of precision medicine to cellular- and molecular-levels. Discussion will summarize relevant preclinical, translational, and clinical research and potential impacts on providing interventional radiology patients with precision health care.

Name: Tyler Mandt, MD
Organization: UCSD
Email: tmandt@health.ucsd.edu
Presentation Title: Immuno-oncology in IR
Abstract:

The sophistication and breadth of application of immunotherapy in the treatment of malignancy are on an accelerating course. In 2020 alone, there were 4,400 concurrent clinical trials evaluating checkpoint inhibitors, a singular class of immunotherapeutic. As the role of the intervention oncologist expands, so will their use of various immunotherapies in the treatment of cancer. We will explain why interventional radiologists should maintain a basic understanding of immunology and immunotherapy platforms. Fundamental principles in immunology and immuno-oncology will be discussed including the elementary mechanisms pertaining to how these technologies allow the immune system to detect otherwise immunologically silent tumors. A brief review of current and future immunotherapy platforms will be discussed. Finally, we will explain how these technologies in combination with seemingly basic techniques in interventional radiology have the potential to markedly improve the efficacy of current therapies and unlock new treatment pathways.

Name: Fred Lee, MD
Organization: University of Wisconsin
Email: ftlee@wisc.edu
Presentation Title: Histotripsy
Abstract:

Histotripsy is a new non-invasive, non-thermal, non-ionizing treatment modality discovered at the University of Michigan. The treatment is based on high-intensity low duty-cycle focused ultrasound pulses that create focal tissue cavitation. The focal point is swept through the targeted tissue, and this results in a slurry comprised of water and cellular debris. Notably, no viable cells are typically seen in the treatment zone which rapidly involutes over the course of months. Tissues containing large amounts of collagen such as large blood vessels, bile ducts, and urothelial structures appear more resistant to damage than cellular structures such as parenchymal organs and most tumors. There is extensive research underway on the non-target immune (abscopal) effects that have been observed in animal models and some patients post-treatment. To date, small and large animal studies have been completed which have confirmed many of the original concepts supporting histotripsy, and small proof-of-concept human clinical trials have been completed in prostate and liver. A larger human trial (#HOPE4LIVER) has met accrual goals, and studies in the kidney and pancreas are scheduled to begin within the next 18 months. This talk will focus on describing the mechanism of action of histotripsy, summarizing animal studies, and updating the audience on the latest human trial clinical results.

Name: Chuck Martin, MD
Organization: Cleveland Clinic
Email: chuckmartin3@yahoo.com
Presentation Title: Augmented Reality in IR
Abstract:

NOT RECEIVED

Name: Rajesh Shah, MD
Organization: Artificial Intelligence in IR: The Next Big Wave or an Ocean Away from Reality?
Email: rajshah@stanford.edu
Presentation Title: Artificial Intelligence in IR: The Next Big Wave or an Ocean Away from Reality?
Abstract:

Artificial Intelligence (AI) is seemingly everywhere these days – from sorting out your spam emails to driving your car. But how has AI been impacting medicine, and what is its future in Interventional Radiology? This session will seek to answer that question and provide a peek into where AI currently fits in the IR world. The session will review the definitions of commonly heard terms like machine learning and deep learning, review the basic underpinnings of AI particularly as it relates to imaging, and review current implementations in the field of Radiology with an emphasis on IR. Current challenges and future directions will be discussed, and a possible roadmap for the future of AI in IR will be summarized.

Name: Stephen Hunt, MD
Organization: University of Pennsylvania
Email: Stephen.Hunt@pennmedicine.upenn.edu
Presentation Title: Looking ahead: what's on the horizon
Abstract:

Interventional radiology is characterized by innovators that have invented or adapted new medical technologies to disrupt the existing paradigms of medical practice. As we look forward toward a future of ever-rapid medical disruption, the integration of advances in artificial intelligence, robotics, procedural guidance systems, augmented reality, precision medicine, and molecular therapeutics will further change the evolution of interventional radiology. This session will highlight some of the ways the convergence of these fast moving technologies will cause the reinvention of interventional practice.

1:00-3:00 pm	**Early IR Session**	**Moderator: Quinn Meisinger & Helena Rockwell**
1:00 - 1:15	Innovations in IR Poster Winner Presentations	Bridget Killbride, Victor Ekuta, Madhavi Duvvuri
1:15 - 1:30	IR in Evolution	David Kumpe (Past WAIS President)
1:30 - 1:45	My top pearls for the Early IR	Sanjiv Parikh (Past WAIS President)
1:45 - 2:00	IR Training Globally	Gregory Makris (CIRSE RFS)
2:00 - 2:15	IR Research Primer	Nadine Abi Jaoudeh
2:15 - 2:30	Standardization in IR: streamlining pre and post op management	Minette Pineda
2:30 - 2:45	Transplant: The Ultimate Team Sport	Jennifer Berumen
2:45 - 3:00	IR is my Religion (IVUS, tPA, Pedal Access & other rants)	Gregg Alzate
2:45 - 3:00	IR Training	Quinn Meisinger

Name: Bridget Killbride, Victor Ekuta, Madhavi Duvvuri
Presentation Title: WAIS 2020 Innovations in IR Poster Contest Winners
Abstract:

Three IRs in Training presented virtual posters in 2020 and won Grand and Runners up. They will each have 5 minutes to present their research on a historical innovation that has impacted the field of IR.

1. **Disentangling The Gordian Knot: The Birth, Father, and Future of Balloon Embolization** - Victor Ekuta, MD – MIT, Boston, MA
2. **TIPS Catalyst: Next-generation TIPS Prosthesis coated with Carbamoyl Phosphate Synthetase 1 to Mediate Ammonia Breakdown** - Bridget Kilbride, MD - UCSF, San Francisco, CA

Name: David Kumpe, MD
Organization: University of Colorado Emeritus
Email: DAVID.KUMPE@cuanschutz.edu
Presentation Title: **IR in Evolution**
Abstract:

IR as a specific specialty had its origin in 1978 in the US, when it was possible to purchase a balloon catheter. I was closer to the events leading to this than most. The presentation will cover the events around that time and the early evolution of IR, comparing these with the IR of today.

Name: Sanjiv Parikh, MD
Organization: Swedish Medical Center
Email: sparikh787@gmail.com
Presentation Title: IR in Evolution
Objective Statement:

IR as a subspeciality is innovative, challenging and focuses on clinical problem solving on a case-by-case basis. There are times you have to transcend literature or come up with innovative ideas that can be translocated from other subspecialities. Speaking from experience of 30 years in IR practice, I wanted to share some important tips with you guys, the future of IR specialty.

Learning objectives:
1. Zen in IR - Practice this philosophy while doing cases: "You, the needle (instrument) and the target become one' an inner calm and mindfulness ensues.
2. Collaborate: Nurture multidisciplinary team approach to complex cases - "Teamwork is dreamwork".
3. Keep your passion for IR alive - Transcend your training biases and stay open to learning as you go along.

Name: Gregory Makris, MD
Organization: Swedish Medical Center
Email: g.makris09@doctors.org.uk
Presentation Title: IR Training Globally

Objectives Statement:

Interventional radiology training is changing at a different pace globally with an obvious impact on the provided IR services and growth of the specialty. This presentation aims to:

Objectives:

- Describe the main changes and trends
- Present results of recent global IR training survey focusing on quality of training and diversity
- Discuss the opportunities and challenges that lay ahead of us.
- Propose future steps for a more homogenous approach to training.

Name: Nadine Abi-Jaoudeh, MD
Organization: University of California, Irvine
Email: nadine@hs.uci.edu
Presentation Title: IR Research Primer
Abstract:

Career growth in both academic and even private practice settings is predicate on research accomplishments. Physicians are interested in research however training during medical school or residency is limited. We will review basic concepts in clinical and translational research. Tips and tricks to start and grow a research career will be provided. We will provide attendees with simple actionable items to improve their research knowledge and skills. For example, several professional societies provide courses on how to write a grant or protocol…moreover, the importance of mentorship to navigate the process will be detailed.

Name: Minette Pineda
Organization: UCSD
Email: mmpineda@health.ucsd.edu
Presentation Title: Standardization in IR: streamlining pre and post op management

Objectives statement:

Interventional Radiology (IR) is a fast growing medical specialty which offers a wide array of procedures. These procedures range from vascular port placements to complex angiography with intravascular intervention. Due to the numerous procedures offered in IR, standardization is imperative in delivering highly efficient, reliable patient care. According to Leotsakos et al. 2014, "standardization is the process of developing, agreeing upon and implementing uniform technical specifications, criteria, methods, processes, designs or practices that can increase compatibility, interoperability, safety, repeatability, and quality." Standardization can come in many forms, and the focus of this presentation is on streamlining IR processes, specifically in the areas of pre and post-operative management.

Objectives:

- Learn how to take a multi-disciplinary approach to standardize department guidelines, protocols, and order sets
- Learn tips in how to gain buy in from key players (nursing and tech staff, providers, advanced practice providers, administration)
- Learn how to integrate the role of clinic in pre- and post-operative management of IR patients

Name: Jennifer Berumen, MD
Organization: UCSD
Email: jberumen@health.ucsd.edu
Presentation Title: Transplant: The Ultimate Team Sport
Objectives Statement:

Abdominal transplant surgery is truly a multidisciplinary endeavour. Advancements in interventional radiology have brought new and innovative treatments for transplant patients that make transplant more successful. Interventionalists provide new techniques that can change the course of transplant for patients. This talk will discuss the significant integration of interventional radiology with transplant surgery . In particular we will look deeper at liver cancer treatment, the management of portal vein thrombosis, and the importance of IR in living donor liver transplant.

Objectives:

- Know the major indications for IR treatment of liver cancer around the time of transplant
- Understand the mechanisim behind splenic artery embolization and how it can affect liver transplant
- Evaluate the importance of TIPS thrombolysis

Name: Gregg Alzate, MD
Organization: Sharp Memorial Hospital
Email: galzate@aol.com
Presentation Title: IR is my Religion (IVUS, tPA, Pedal Access & other rants)

FULL PRESENTATION UPLOADED

Name: Quinn Meisinger, MD
Organization: VA Health, San Diego
Email: qmeisinger@ucsd.edu
Presentation Title: IR Training
Objectives Statement:

Conduct a question and answer session with the early IR participants

Objectives:

- Discuss strategies for IR match and recruitment
- Discuss IR residency structure and education challenges
- Engage participants