THE CODMAN SHOULDER SOCIETY
INAUGURAL MEETING
SATURDAY, JUNE 20, 2015 (4-10PM)

"Give me something that is different, for there is a chance of its being better." EA Codman, 1934

Report of our Second Meeting

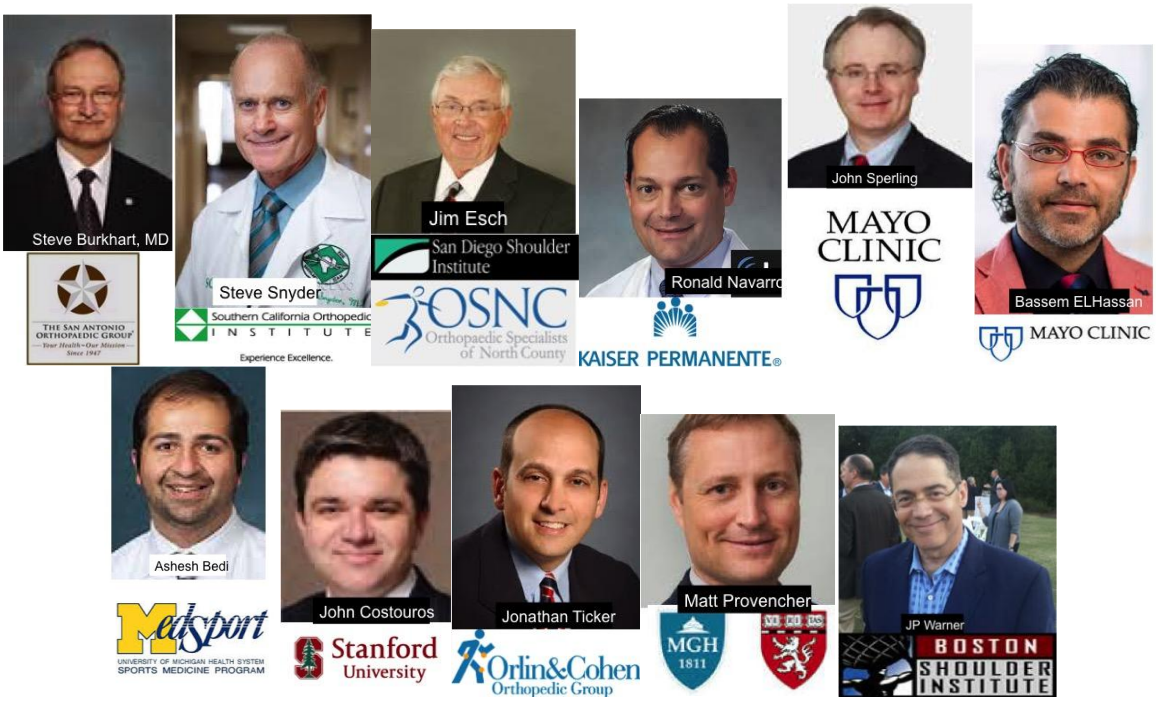
Dear Colleagues:

I would like to thank all of you for attending the second annual Codman Shoulder Society Meeting. For those of you who were unable to attend, I welcome your thoughts as well after you read this report. Enclosed is a brief summary of the topics we covered. I will also share my thoughts with you all about the potential for this organization. As you read this ask yourself what value this might hold for you and your colleagues, and do so taking into account all the other competing educational activities which draw your attention. The real question is does this activity add value in a world already overloaded with CME events, compliance requirements for the ACA, family commitments, etc. Is this just one more thing to do? Should I open this meeting to a broader group of interested shoulder surgeons? Should we keep this small? How will we sustain this endeavor? Please don't be shy with your input.

Please pay particular attention to the end of this document as it considers these issues.

Please consider this thought from my good friend Christian Gerber who is probably one of the most important contributors to innovation in shoulder surgery in my generation: "Education is difficult to pass down to the next generation, but this is not the case for enthusiasm."

This year we were lucky to have esteemed experts speak to us on several topics. This was actually more than lectures. It was a true "think tank" as we discussed and debated important concepts about innovation and treatment of shoulder problems. Our invited guests were:



Codman Shoulder Society Meeting 2015
Group Photo

Back Row (from left to right): John Hoyt, Chris Adams, John Costouros, Rick Hatch, Ed Yian, Lewis Shi, Michael Hollander, Tyler Fox, Danny Goel, Uma Srikumaran, Bill Bragg, Joe Eichinger, Matt Dilisio, Tim Hartshorn, Navid Ghalambor, Anshu Singh.

Front Row (from left to right): Ruth Delaney, Bassem Elhassan, Stephen Burkhart, Jim Esch, Stephen Snyder, Jon JP Warner, Matt Provencher, John Sperling, Asheesh Bedi, Ron Navarro, Jon Ticker, Monica Morman.

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4:00-5:00 Welcome cocktail reception — Hilton Room 202

4:50-5:00 Group Photo

5:00-5:10 **Jon JP Warner**: Welcome and introduction; Recap of last year's meeting

SESSION I: INNOVATING IN SHOULDER CARE

MODERATOR: JON JP WARNER

5:10-5:35 Panel discussion on important questions to ask and answer (Snyder, Burkhart, Elhassan)

5:35-5:45 **AUDIENCE DISCUSSION**

SESSION II: PRACTICE ISSUES & HEALTHCARE REFORM: WHAT WILL I DO? WHAT SHOULD I DO?

MODERATOR: JON TICKER

5:45-5:53 **Ron Navarro:** "The Kaiser Model"

5:53-6:01 **Stephen Burkhart:** "The Private Group Model: View from the Right – Texas"

6:01-6:09 **Stephen Snyder:** "The Private Group Model: View from the Left – California"

6:09-6:17 **Jon JP Warner:** "The Academic Perspective – Practice Plan Model - MGH"

6:17-6:25 **John Sperling:** "The Academic Perspective – Employment Model Mayo"

6:25-6:40 **AUDIENCE DISCUSSION**

SESSION III: DILEMMA #1 – HOW DO I TREAT THE "YOUNG PATIENT" WITH A MASSIVE ROTATOR CUFF TEAR?

MODERATOR: ASHEESH BEDI

6:40-6:49 **Stephen Burkhart**: "Most are Reparable and Technique is Key"

6:49-6:58 **Bassem Elhassan**: "There are Truly Irreparable Cases where Tendon Transfer is Beneficial"

6:58-7:07 **Jon JP Warner:** "Is Reverse ever indicated for the 'Young' Patient?"

7:07-7:20 **AUDIENCE DISCUSSION**

SESSION IV: DILEMMA #2 – HOW DO I TREAT THE "YOUNG PATIENT" WITH SHOULDER ARTHRITIS?

MODERATOR: MATT PROVENCHER

7:20-7:29 **John Costouros**: "My Experience with Stemless Humeral TSR"

7:29-7:38 **John Sperling**: "What do we expect with TSR in Patients < 50 y/o?"

7:38-7:47 **Stephen Burkhart:** "My Experience with Arthroscopic Solutions"

7:47-8:00 **AUDIENCE DISCUSSION**

SESSION V: WHAT DO WE WANT THIS ORGANIZATION TO BE?

MODERATOR: JON JP WARNER

8:00-8:15 Discussion among former fellows and others who are interested

- What do we want for future meetings?
- What do we want between the meetings?
- Do we want to be a NFP organization – if so, what kind?
- Do we want a Mission, Vision, Strategy statement?

8:00-10:00 Dinner

On behalf of JP Warner and the Alumni group, we would like to formally thank Dr. James Esch, Larky Blunck, and the San Diego Shoulder Institute for their generous support and sponsorship.

Enclosed is a brief summary of our meeting.

I. Innovating in Shoulder Care:

We considered what "Innovation" is; what the barriers are to "innovating"; what the opportunities might be for "innovation"; and what the environment in which we work means to our opportunity to "innovate". Here are some of the observations offered by our invited experts:

1. **Steve Snyder**: He developed many of the tools we now use, and take for granted, in shoulder arthroscopy. Many of the devices we use are based on his original designs including the Spectrum device. His journey started in 1984 when he looked into the shoulder with an arthroscope and saw a partial thickness rotator cuff tear. He wondered if it would be possible to inject contrast into the shoulder and did some experiments on rabbits as well as on himself and wrote a paper on this. He started a Shoulder Arthroscopy study group on the internet in the 90's and videotaped surgical cases to send around and to discuss so as to improve as a group of shoulder surgeons taught one another based on their experiences.
    - "The price of innovation is being charitable." Innovation requires sacrifice of time and income and the payoff may be sporadic. My spin (JPW) is that "intellectual entrepreneurism" is a way of life and it benefits everyone when it is successful. There is also a peer pressure to innovate as it defines you as an expert; so "conflict of ego" may be a good thing as it means you are not comfortable with the status quo and want to create something better.
    - Innovation challenges the status quo so it is "disruptive" and as such, will be resisted. Good contemporary examples of such disruptive technology innovations are the Apple watch (which allows you to put multiple iPhone activities on your wrist)
    - Biology is an important area to innovate as people are aging and methods of augmenting or enhancing tissue healing will be essential in rotator cuff disease and other conditions. Can we affect programmed cell death in cartilage and tendons?
    - If you want to be creative read Walter Isaacson's book, <u>The Innovators</u>, as it makes the point that no person in the world can do something alone but needs to collaborate with others.

2. **JP Warner**: He developed many products we currently use: 3 Shoulder Replacement systems; Tenet Arm Holder and Beach Chair; VuMedi, IMASCAP.
    - Codman was the ultimate "innovator" in shoulder care. He innovated, as did Snyder, in a time when regulatory environment was not as restrictive and there was no IRB. Codman firsts include first to use radiography to analyze joint anatomy (probably led to his sterilization as there was no understanding of side effects and he had no children); first to develop an anesthesia record (with his friend Harvey Cushing); he proposed placing the patient first with his "End-Result" concept (led to his ultimate departure from MGH and his ultimate financial failure [died penniless]). Many other firsts.

    - Innovation is in three forms in healthcare (Herzlinger, R: HBS: "Innovating in Healthcare-Framework…I can provide this to anyone who wants it): Technology-focused, Consumer-focused, Integrator-focused. Technology-focused provides an

innovation which improves care through novel new tech approaches: examples might be patient-specific instrumentation and planning (PSI), etc. Consumer-focused improves care by placing the patient in the center and improving their experience and outcomes; Integrator-focused puts different systems and people together to provide value through coordinated care delivery.

3. **Steve Burkhart**: He developed too many products to count and is still going with his famous and highly productive partnership with Arthrex. His fellows have developed a group called the "Burkhart Research Institute for Orthopaedics" (BRIO):

- Burkhart's philosophy is after Vince Lombardi's statement, "Run to daylight". He makes the point "you never know how you'll meet important people who will change your life personally and professionally." He met Jim Esch through a shoulder case they did together and it defined this relationship for both of them.
- We now continue to have the opportunity to consider surgical solutions which push the envelope. An example is superior capsular reconstruction (see below under dilemma #1) to treat "irreparable" rotator cuff tears.
- Be willing to "be stubborn" and to "develop a group of like-minded friends" with whom you can share ideas. Be willing not to be paid for innovating an idea which insurance does not feel is supported by evidence. Otherwise there is no chance to really innovate.
- "Discovery is seeing things that everyone else has seen and then thinking about those things in a different way." We can then use traditional methods like biomechanics, etc, to prove the validity of a new idea.

4. **Jim Esch**: He has been one of the most important innovators in Shoulder Education and through his more than 30 year experience in running the San Diego Shoulder Institute (SDSI) he has touched the lives of thousands of shoulder surgeons around the world and improved the care of countless shoulder patients as well. He has been our benefactor for the Codman Shoulder Society for the past 2 years.
    - If you want to innovate "you have to look at your own ego". With his early experience learning and developing Arthroscopic Subacromial Decompression (in the 80's) he had to ask the question, what is the indication for this procedure and who will benefit? (Harvard Ellman was the pioneer in this area and he was the 11th president of the ASES).
    - When we learned how to fix SLAP lesions (thank you Dr. Snyder) we had to ask ourselves who needs this and how effective will it be?
    - He bought his first arthroscope in 1976 and at that time knee surgeons were arguing about which was better, arthroscopy or arthrography. Traditional shoulder surgeons (like Charlie Rockwood) were upset when arthroscopy meetings started…"Scope jockeys are messing with our market". Now the same resistors act like they have invented shoulder arthroscopic surgery.

- Once we learned how to become a wiz at arthroscopic labrum repair we had to examine who needs it and how good it is as others made us aware of the importance of bone loss and its treatment in recurrent shoulder instability.
- "You must ask yourself what you are doing and why you are doing it all the time." (JPW: Perhaps this is the greatest value of the SDSI year in and year out…we constantly ask this question for our participants. In so doing, we distinguish our educational product from offerings by AANA, AOSSM, ASES and other organizations.)
- One way to innovate is to try and avoid barriers to the process. For example, avoid having committees in organizations.
- In the future "Shoulder Surgeons" should own shoulder arthroplasty and arthroscopy. (JPW: We should be less fragmented in our expertise as it will enhance outcomes of patient care)

5. **Bassem ELHassan:** Now a professor at Mayo Clinic he has been an innovator in Tendon Transfer techniques to treat muscle insufficiency around the shoulder girdle.
    - To innovate one "must get out of the tradition of what has already been published" and accepted as the status quo for treatment, as many of these approaches are inadequate in providing reliable outcomes for our patients. The essence of clinical innovation is "to improve outcomes" of our patients.

6. **Matt Provencher**: Leader in Sports Medicine and Shoulder Care who has innovated mainly in his biomechanical work providing insights into instability of the shoulder.
    - Your environment and your collaborators are the pathway or barrier to getting things done and innovating (Navy experience vs. MGH experience). The Navy allowed me to look at how to improve things (innovate) the entire process of care delivery for our patients. Examples included EMR and measurement of outcomes with integration into the medical record. The academic environment of a major AMC like MGH places barriers to integration and innovation as it functions with rules for education, and patient care that go contrary to innovation.

7. **Ronald Navarro**: Major innovator in outcomes assessment through the development of the largest shoulder registry in the USA at Kaiser Permanente. This has given us real insights into shoulder arthroplasty outcomes, etc.
    - Innovating is "all about simplicity". "We overthink the process in our systems". Value = Outcome/cost. Innovating value is just about finding ways to provide better outcomes at less cost. An example is technologies of LMR and remote response systems to patients – say to them, we need to follow you forever – you at 10 years will get 2 questions – if questions make it seem like you're doing fine, that's it – follow you at 10 years so we can PROVE that you are doing well – need to follow long term but doctor can't do it – generate X-ray and two questions so doctor can look at this. In other words, innovate the care delivery and measurement process to control costs and prove durability of treatment outcome

8. **Jon Ticker**: Historian for the ASES and active innovator in a private practice specializing in Shoulder Care.

- I never did a subscapularis repair in my training at Columbia, but went on to keep an open mind and learn from others like Burkhart. It is important to keep an open mind and ignore individuals who say otherwise if you think you are doing the right thing.

II. Practice Issues and Healthcare Reform: What will I do? What should I do?:

We considered what impact our environment has on our ability to provide quality care and to innovate for our patients.

1. **JP Warner**: A few questions to consider: What are the barriers to research at your institution or in your environment? Will the Fee for service model survive and should it? Are some models better suited to highly complex tertiary and quaternary care, like The Mayo Clinic? What are the barriers to new products and innovation at your institution? Are you, as a surgeon, a stakeholder in the delivery of care at your institution? Are you a resource or a commodity from the standpoint of your administrators? How can we collect outcomes data necessary to improve when cost and management is a barrier? What is your incentive or disincentive to innovate at your institution?
2. **Ronald Navarro**: 

   "Smooth seas do not a skıllful sailor make" – Unknown sailor (who probably died at sea).

   The Kaiser Permanente model: An ACO before ACO's were proposed: We are a medical group, healthcare plan, and hospital. At KP I have to manage people who don't like to be told what to do: PA's, Podiatrists, PCP's. There is an orthopaedic partnership across 13 different facilities in California.
   KP Core values: affordable, high quality healthcare services, improve the health of our members and communities we share
   KP Organization: Teamwork – our business - all of us in together – fewer silos = one KP deal – NOT fee for service, so no fee for service conflict – epic EMR – "HealthConnect" crosses geo barriers much like in the military system

   I am the Regional lead of KP – over 3 million patients – over 56,000 square miles – over 13 ortho departments – chair of largest

   Medical department – have 5 meetings a year; must make people swim in same direction

   787,875 – number of clinic visits in the last year

   Over 43,000 ortho cases in SoCal last year

   Kaiser made ships for America not Germany and Garfield (surgeon), who said let's integrate this system

   Bernard Tyson is our CEO – "Healthcare companies need to focus on driving down costs"

   Paul Minardi – KP anticipates a 30% increase in Medicare patients – Medicare gives reduced revenue – many ACA customers have not previously had coverage – this will cost us money

   What is our competition? How can we collaborate with others to improve our position in

the market?: CVS and Target relationships.

What is Value?

- Warren Buffet - "Price is what you pay, value is what you get."
- Karl Marx – "Nothing can have value without being an object of utility."
- Thomas Paine – "What we obtain too cheap, we esteem too lightly."
- Michael Porter - Outcomes relative to cost…this encompasses efficiency of your system of care delivery.

Collecting outcomes data will allow us to change physician behavior and improve value of the care we deliver

KP Shoulder Registry: allows us to look at implant longevity and give our patients durable value

- Now the largest of its kind in the USA
- Covers all regions of KP
- Data drives use of implants with best outcomes – world best low revision rates
- NQF and joint commission award for S&Q
- Value – Allows us to track and give feedback thus decreasing revisions, increasing quality, and decreasing OR return for revision surgery

KP National product council – independent subset of a bigger group – ortho core group – essentially supply formulary – contract to focus and limit suppliers at increased discounts

NCAL (Northern) and SCAL (Southern) ortho – decrease knee MRI in patients over 50

- Decrease knee scope in people over 50 with mx tear and DJD
- Shared decision making videos for TJA patients
- Have submitted these to the academy

Our (My) strategy is to satisfy Porter's Value Equation by providing evidence of best practices in order to change behavior and provide increased value to our patients.

Sir Arthur Conan Doyle – "It is a capital mistake to theorize before one has data."

…metrics (unblended data) is POWERFUL and drives performance.

How does KP Handle the introduction of new technology?:

- KP and new tech – is the value of longevity more important than newness?
- Should you charge more for track record than unproven tech?
- Your R&D is your problem! Won't pay until have proven track record
- Australian Report – what is the benefit of introducing new hip and knee prosthesis, JBJS Dec 2011
    - None of these prostheses had lower revision rate than established

There is a rocky course ahead: milieu we are in – increasing complexity in health care – decreasing reimbursement – more onerous government oversight

KP Disclaimer: we do not have it all figured out – closed HMO – not all points applicable – you may have knowledge I can use – parts can be morphed for any value stream

"We would accomplish many more things if we did not think of them as impossible." – Vince Lombardi

Herb Brooks: "Great moments are born of great opportunity."

"A leader is best when people barely know he exists" – Ron Navarro

Challenging healthcare milieu driving change – value is sought – data can help explain need for physician acceptance of change – better decision making – quality driven – want to work with all of you to solve the value equation

We should root for shoulder icons – want all to be successful in free market economy – if you improve your value stream, they'll value me in my system – I want private, academic, all of us to succeed so continue to value me

3. **Steve Burkhart**: Private Practice Orthopaedic Group in San Antonio, TX.

We are productivity based ("Eat what you kill") and we share in ancillaries (MRI, CT, etc)
I am the Manager of our group which consists of:

- 25 ortho surgeons – adding 2 more spine surgeons to bring that up to 27
- 7 clinics
- Own surgery center with 8 OR's
- 2 MRI scanners, CT scanner, PT

We appreciate the external threats and are looking for alliances, i.e. NOSA (National Orthopaedic and Spine Alliance, www.nationalorthospine.com/about-us/). NOSA takes a Wal-Mart approach.
We believe in a hospital Management contract: partnering with your hospital because you have what they need (maintains your control)…this allows for vertical integration while allowing for control
Develop a Center of Excellence in Orthopaedic Care
Bundling will be the key: All groups have capacity for bundled payment models – quality surgeons and facilities

Collect data which you can use to drive outcomes (BRIO, See above)
Other Clinics with similar make-ups to ours: Steadman-Philippon, Rothman Inst., HOAG, Rush Presbyterian
Chicago – only remaining large practice group is Midwest Ortho at Rush – "All of our competitors have been bought by hospitals and the surgeons are now hospital employees."
Over 70% of newly trained ortho surgeons are now taking salaried positions
What's going to happen – we have some enemies – Deval Patrick, governor of MA – ***"I am happy to sign this bill because it represents the end of private practice."***
Who are our friends?
To succeed, you must now think outside the *rules* (rather than outside the box)
"To forget everything about the way things had been done, think about how you would do it if there were no rules."
What would you do if no rules existed?
Thinking outside the rules example: hospital management contract / new ortho hospital

- Ortho center of excellence with Baptist – get % of revenues
- Vertical integration
- Ancillary ownership and control

STRATEGY – must neutralize competition – hospitals, lobbyists, insurance companies

- Hospitals – partnership w/ Baptist- can leverage financial position by means of tenet's
- Think about Lobbyists – utilize hospital lobbying resources – (MD lobbyists efforts will be best)
- Piggyback surgery center contracts onto Baptist w/ Blue Cross Blue Shield
- Think about package pricing, show quality outcomes – appeal to concierge group that will be 5-10% of population
- Ortho insurance company…form one
- BRIO (Burkhart Research Institute for Orthopaedics) – funding by monthly payments from each partner
- Private practices will have to show proof of excellence – utilize to reach higher form of research
- Money for fellowship training
- MUST provide value to attract patients
- We are TOTALLY IN CONTROL of our surgery center – comprehensive care – same day MRI and CT – low complication rate must be documented
- Reasonable cost – package pricing
- Our big advantage – progress in government is linear – in medicine it is exponential – we can outthink the politicians
- Ammunition for survival: ancillary revenue, strong patient demand, neutralize enemy, alliances with other private groups
- "Glory is fleeting, obscurity is forever."

4. **Steve Snyder**: Private Practice Group in Van Noyes, CA.

Southern California Orthopedic INSTITUTE

"SOCAL" ortho institute – back in 1978, was founded by Jim Fox – called "SMOG" (Sports Medicine Orthopaedic Group)

- Added 2-3 people each year
- Strictly private practice group – 31 partners – most of them are ortho surgeons, also physiatrist and sports medicine medical guys
- Everyone in group except Dr. Snyder is fellowship trained – did his training with Jim Fox when he met him
- Good and bad – medical care in CA is getting rough – have wonderful competition from Kaiser (strongest big group in CA) – that model will be important around the country
- Our group is unique – when started, research education innovation were required of everyone who came onboard – Mark Friedman
- Every one of us had specialty area of interest – required by peer pressure to be part of arthroscopy association NOT by contract
- Wouldn't hire a person if he/she wasn't going to contribute to innovation
- Had fellows from first day opened practice – started with 1 and now have 5
- Have trained 160 fellows
- True sports fellows – shoulder, knee, hip, and foot and ankle

- Who pays for the fellowship? We pay for it ourselves – we do NOT have big grants – have little grants, but most comes from royalties
    - Have a formula that extracts a portion of royalty to support fellows – very fair
- Entire group pays a tax – everyone gets benefit from SCOI being well-known name around the country/world
    - Tax goes to support the research department
- Everybody has the same culture – everybody likes to be a part of the group – those who don't are generally people who come from places where you haven't had an opportunity to interact with them
- 5 young people who have joined since he got there who they asked to leave - did not stay in because they did not fit the culture – wanted to do more cases faster than Snyder, scope more knees than Fox
- We are about (our culture) making a good living, teaching fellows, and trying to survive in a hostile environment
- I don't know how long we will be independent – eyes open approach to the future
- What we have:
    - 4 operating rooms – Bakersfield to Westlake and Van Nuys – northern LA area
    - 6 offices with PT and MRI
- We had lots of bad investments – tried to start pharmacy and lab – went broke
- When get paycheck at end of year – we get more money from ancillaries than from practice
- I believe "the price of innovation is being charitable"
- If I have a good idea, I am only one who will believe it until I prove it
- If I were coming into practice right now, would be looking around – not sure if building a group like I did will be possible in future

5. **John Sperling**: Mayo Clinic Academic Practice Model
    - "The best interest of the patient is the only interest to be considered." – William Mayo
    - Mayo in 2015 – largest employer in state of MN
    - Structure of salary model
        - Step up in salary over first 5 years
        - After 5 years, same salary across a specialty regardless of productivity, RVUs, or specialty
        - NO productivity bonus
    - Benefits: allows development of very specialized practice with support of partners and institution
        - Fosters collegiality and referrals among partners – focus on patient care
        - Divorced from economic aspects of practice
    - Background – scale and integration of the institution facilitates surgical practice

        - 160 cardiologists and 140 radiologists in the building
        - Patient seen in ortho surgery – 3 pm decide on surgery, 4 pm see cardiologist, have surgery the next day
        - Benefits research - can do that and administrative work without salary impact
    - How to mitigate risks – NO specific rewards for improved financial productivity
        - High volume surgeons have been given increased OR resources
    - How to prevent lack of physician productivity
        - 3 year tenure process
        - Understanding of the culture is crucial
    - RISKS – rising tide lifts all boats – however, lowering tide sinks all boats as well
        - 2008 financial crisis – when such a crisis, do all specialties reduce expenses/benefits equally?
        - Should a spine surgeon and a pediatrician get the same travel allowance and have it cut the same in financial downturn?
    - Integration of health system
        - Interesting talking to John Costouros from Stanford and Jon Ticker from LIJ – integrate different health systems, how does that happen
        - Major issue going forward for numerous academic medical centers
        - Pyramid of care - which cases should be sent to Mayo or kept in Iowa
    - Reimbursement: health system on productivity (higher pay) and academic center on salary (lower pay)
    - Interactions can be challenging due to cherry picking of more lucrative and easier cases in health system – at Mayo, different call schedules – we've gotten to point, have hip and knee call – get so many sent in
    - Academic salary model – each model clearly has benefits and drawbacks – open discussion and learning

6. **JP Warner**: An Academic Practice Plan Model:
    - An AMC may not be the best place to innovate due to so many factors you don't control
    - MGH has a gross revenue of 5 billion dollars - ortho is 1/3 of surgical volume
    - Partners healthcare is 40% of all healthcare delivery in MA – It may not be good to work for monopoly because you are commoditized; however, your institution may have leverage with insurance companies to command premium prices. Question is if reference pricing and domestic tourism will draw business away as the MGH is the most expensive care provider in Massachusetts.
    - Mass General Orthopaedic Associates (MGOA) is a separate practice plan within the MGH and it is revenue minus expenses model where each physician is responsible for his own overhead (Direct & Indirect) and there is no value given to time spent doing research, teaching or administrating. This leads to competition and fragmentation and a culture which does not value collaboration (my opinion)
    - All members of the MGOA pay a Department tax and an administrative tax.

- We own our own billing office which functions in collaboration with the MGPO (Mass General Physician's Organization). We manage the front end and the back end of the billing process and this includes all appeals. The MGPO negotiates contracts for all physicians and it is a requirement to work at MGH to be a participant in the MGPO.
- All physicians receive a monthly P & L statement and salary is based on historical collections with overage or underage determined each six months as a basis for bonus or for adjustment of monthly salary. Bonuses are given q 6 months at 95% of overage (5% tax to the Department) and then salary can be adjusted upwards at 50% of the overage for the past 6 months.
- Payer mix varies for each physician and makes big difference to bottom line
    - High payers – Workers comp and international – individual physician negotiates his own rates in advance of care
    - Low payers – Medicaid, Medicare
    - Some Physicians are proactive in marketing and management of their practice
    - Some physicians avoid complex cases and lower paying insurance
    - Collection amounts vary as much as 10 times among 40 MGOA members
- How do we deal with growing population of failed treatments that are more complex and require more resources and time but don't pay as well as primary cases?
- Will see a large number of medical refugees in this country – number of failure and revision surgery is going up – no plan as to how to manage these – important to innovate how to manage that
- The Orthopaedic Forum - why ortho surgeons leave full time academic positions for private practice – think we do not need to value what we do, private practice models going to go away
- #1 reason people leave academics is leadership – people who lead us are people that keep us grounded and happy – satisfied with what we do – give us chance to innovate if it is important to us
    - Get a lot of turnover - leaders are middle managers, not true leaders – does NOT apply to academic centers much - financial compensation is down on the list
- Happiness by Design by Paul Dolan – a book on behavioral economics
    - Cuts to question of innovation – how many feel good when they innovate something – contribute something – balance that against dollars that you make – satisfaction out of life
    - Looked at who was happiest: florist and gardeners at the TOP – constantly getting feedback about what they did and how beautiful
    - Doctors and dentists are in the middle – NOT getting that type of feedback
    - Bankers are at the very bottom – get a lot of the opposite

i. **Participants comments**:
- James Esch: What motivates the Mayo guys? It is likely different than the others
- Bassem ELHassan:
    - Best part about Mayo – I am not there for the money – love what I do, and we have a

great system – lots of support – at Mayo, everyone embraces you early on and tries to help you (rather than starting at bottom somewhere else)
    - In hallway, have lots of partners
    - Very supportive system, research and patient oriented. I and Dr. Sperling have highest volume but are treated like someone with lowest volume
- John Sperling – I don't live in MN for taxes and weather – can build specialized practice and get those resources – clinic has adapted in that higher volume surgeons are getting more resources and residents

III. DILEMMA #1 - HOW DO I TREAT THE "YOUNG PATIENT" WITH A MASSIVE ROTATOR CUFF TEAR?

1. **Steve Burkhart:** ***Almost all Massive RCT are Repairable and Technique is the Key***
    - Talk about repair technique and burden of craft in treating massive cuff tears
    - We've got good to excellent results with 78% - 91% patient satisfaction
    - Seems double row gives even better results than single row
    - Ugliest cuff tears – pseudoparalysis – reversed in 90% of patients (Denard PJ, Lädermann A, Jiwani AZ, **Burkhart** SS: Functional outcome after arthroscopic repair of massive **rotator cuff** tears in individuals with pseudoparalysis. Arthroscopy. 2012 Sep;28(9):1214-9.)
    - What about subscapularis? It is an important component of massive tears.
    - Understanding tear patterns – U-shaped, interval slides, anterior interval slide
    - What if the tissue is deficient? Reinforcement of repair for short poor-quality tendon – load sharing, stress shielding of sutures
    - Load sharing rip stop
    - What if the tear is NOT repairable??? Partial repair, consider augmentation w/ dermal allograft (Dr. Snyder)
    - Dr. Mihata (Mihata T, Lee TQ, Watanabe C, Fukunishi K, Ohue M, Tsujimura T, Kinoshita M.: Clinical results of arthroscopic superior capsule reconstruction for irreparable rotator cuff tears. Arthroscopy. 2013 Mar;29(3):459-70) – superior capsular reconstruction (SCR) – couldn't imagine it could work, have to go in lab and do biomechanics studies –proved biomechanically that it is a good construct – he has only done 11 so far, all with less than a year follow-up – but all good so far
    - Re-centering humerus on glenoid – establishing stable fulcrum - enables cuff muscle that is there to be stronger
    - Technological advancement in surgery – the more technically advanced surgery becomes, the more it requires craftsmanship
    - Surgeons must become more of a craftsman with higher levels of technology
    - Burden of Craft – attention to detail/patience
    - Skill at working in virtual space
    - Not everyone has these, but if you're going to try to do it, you have to learn these
    - "It is a poor carpenter who blames his tools." – 18th century English proverb
    - Surgeon's burden and obligation to accept the challenge and responsibility
    - Today's arthroscopic cuff repair challenge – ***"Cowboy up!"***

2. **Bassem ElHassan**: ***There are Truly Irreparable Cases where Tendon Transfer is Beneficial***
    - Deltoid paralysis – rotator cuff normal, problem is fatigue
    - Main problem is cosmetic
    - Infraspinatus musculotendinous tear – very painful, weak
    - Supraspinatus plus infraspinatus – start to behave like pseudoparalysis – don't want fusion, but there's no muscle
    - Management of irreparable RCT – what do you mean by irreparable??
        - (1) Advanced fatty atrophy
        - (2) Proximal migration
        - Tendon transfer options: latissimus dorsi, teres major, lower trapezius
    - Massive rotator cuff tear – can use any of these options, but outcomes of lat dorsi tendon transfers in his practice were NOT good
        - Can we apply lower trap in pt with MRCT? I did and it was rewarding (Elhassan B: Lower trapezius transfer for shoulder external rotation in patients with paralytic shoulder. J Hand Surg Am. 2014 Mar;39(3):556-62)
        - Did biomechanical study – comparing moment arm of rotation of different tendon transfers (Hartzler RU, Barlow JD, An KN, Elhassan BT.: Biomechanical effectiveness of different types of tendon transfers to the shoulder for external rotation. J Shoulder Elbow Surg. 2012 Oct;21(10):1370-6.; Elhassan BT, Wagner ER, Bishop AT: Feasibility of contralateral trapezius transfer to restore shoulder external rotation: part I. J Shoulder Elbow Surg. 2012 Oct;21(10):1363-9.)
        - Found bigger moment arm of ER – trapezius much better, then teres major, lat dorsi is smallest moment arm
        - Biomechanical study done by Omid – compare lower trap to latissimus – lower trap is superior at restoring native glenohumeral kinematics (Omid R, Heckmann N, Wang L, McGarry MH, Vangsness CT Jr, Lee TQ.: Biomechanical comparison between the trapezius transfer and latissimus transfer for irreparable posterosuperior rotator cuff tears. J Shoulder Elbow Surg. 2015 Apr 3)
    - Tendon transfer – joint stability
        - Latissimus may dislocate shoulder – very powerful muscle if have weak deltoid and subscapularis is not there
        - With lower trapezius – will NOT get subluxation
            - Lower trapezius becomes infraspinatus if you lateralize it a little
        - To restore force couple – want line of pull that lower trap can restore
            - Get enough excursion to get it up to subscap
        - Latissimus is very thin – cannot attach remaining supraspinatus to latissimus – will not work
            - Better to repair bone to bone
        - Case example: Construction worker with MRCT – limited motion – proximal migration, small tendon remaining – a lot of fatty atrophy – did lower trap transfer – augment, pass, attach proximally – 23 months post-op great motion

- Teres Major can also be done – but he prefers the lower trapezius
- SUBSCAP – what do you do for massive subscap tear – pt had no subscap, it's fat – pec minor superficial to conjoint tendon – pec major deep to conjoint tendon
  - Teres major transfer – easy – also posterior, same as subscap – rather than taking anterior and moving it posterior
  - MUST abduct to get internal rotation behind your back – pec major becomes a puller – pulling on humerus more anteriorly – if use teres major on back, would assist
- Pt has no subscap – very frail – can take lat with small piece of bone – transfer proximally – attach bone to bone – stronger contact point
- RC deficiency secondary to infraspinatus musculotendinous tear – repair group 73% satisfied, non-op 68%
  - Transfer options are the same – lat dorsi, teres major, lower trap – lower trap will best replicate line of pull
  - Gain ER
- Case example #2: Infected TSA with chronic axillary nerve palsy – no deltoid, already had reverse – use pectoralis pedicle muscle – pass muscle from back to the front – reconstruct the deltoid – maintain pedicle
  - Once muscle in front, reattach
- Pectoralis pedicle muscle transfer - excellent for deltoid – cosmetically not appealing, but is a way to do it
  - Flip the muscle over the pedicle and attach to acromion
  - No pain and has rotation back – not excellent but able to flex, happy about the result
  - This is if NO other solution
- Latissimus passed from back to front for woman who had no shoulder function for 20 years – 4 months post-op for first time could reach hand to mouth and top of head

3. **JP Warner:** ***Is Reverse ever indicated for the young patient (<65yo?):***

- Hot button in terms of what is young and what should we do
- Appropriate to quote EA Codman, "Give me something different, for there is a chance of its being better."
- Define young? Define condition?
- Age and activity level have a lot to do with that – define success of surgery based on quality of life they have
  - Case #1 – 56 y/o woman – conservative fracture treatment – poor function and pain - muscle not so terrific – problem with geometry of joint and rotator cuff
    - What to do – reverse – can function quite well and pain is dramatically better – not perfect but dramatic improvement – no pain, SSV 95%
- Case #2 – 59 y/o male – dislocated shoulder while in navy, had Putti-Platt – painful stiff shoulder – would you do a routine TSR or not?
  - Get CT scan – do 3D planning – with 24 degrees retroversion – limited in ability

to use conventional – what to do to solve? Should we consider reverse when the patient has an intact cuff? Did bone graft reconstruction w/ prosthesis
    - No pain and SSV of 90%
- Articles – 1 by Gerber – 1 by Nicholson – 1 by Eric Black – all describing outcomes of reverse in young patients
    - Ek ET, Neukom L, Catanzaro S, Gerber C: Reverse total shoulder arthroplasty for massive irreparable rotator cuff tears in patients younger than 65 years old: results after five to fifteen years. J Shoulder Elbow Surg. 2013 Sep;22(9):1199-208
    - Sershon RA, Van Thiel GS, Lin EC, McGill KC, Cole BJ, Verma NN, Romeo AA, Nicholson GP.: Clinical outcomes of reverse total shoulder arthroplasty in patients aged younger than 60 years. J Shoulder Elbow Surg. 2014 Mar;23(3):395-400.
    - Black EM1, Roberts SM2, Siegel E3, Yannopoulos P2, Higgins LD3, Warner JJ4.: Reverse shoulder arthroplasty as salvage for failed prior arthroplasty in patients 65 years of age or younger. J Shoulder Elbow Surg. 2014 Jul;23(7):1036-42

4. **Ashesh Bedi:** ***Participant Discussion:***

- **Q**: One question for Dr. Burkhart – unbelievable skill set to repair massive tears that people feel are irreparable – maybe it reflects skill set and a learning curve – when look in literature – look at ability to repair versus literature that suggests that after a bit these are re-torn and can't get them to heal – Gerber's article: if can repair, can halt it but not reverse it. How can I reconcile this part of it?
- **A:** Dr. Burkhart response: interplay of factors – cost constraints of medicine now – can't get MRI on everyone to prove – suspect massive tears have partial, perhaps significant partial healing – longevity to results – not just good at 2 years, when look at massive, better at 5-8 years than they were at 1 year – does it really matter if not healed if strength remains and they are feeling better? I don't care if they have a small defect if they're looking good
- **Q:** Asheesh Bedi – Bassem, your concern about proximal migration and how it is difficult to reverse – Dr. Burkhart are there any parameters that you are looking at to say this is one that likely won't do well – drive you towards arthroplasty or something else?
- **A:** Dr. Burkhart response:
    - With or without arthritis, if they have rounding of greater tuberosity
    - ER lag sign is also one that does not bode well
    - Those that have failed attempted cuff repair that have pseudoparalysis
    - Reporting results as a group – fellows results are just as good as his – it can be taught
- **Q:** Asheesh Bedi – Bassem you have done this innovative work – you've focused on importance of muscle and factor of pull – muscle side. How do you set that tension? Resting position to optimize mechanics. JP when you are doing reverses – how do we set tension to optimize capture for Blix curve?
- **A:** Bassem Elhassan response – most of muscle in IR – everything goes with the shoulder in IR. With lower trapezius transfer you must put in the arm in max ER. I Now – try to repair and augment the repair with tendon transfer – if fatty atrophy in the rotator cuff I use, lower trap at same time

- **A.** Dr. Warner - deltoid tensioning? Reverse is a whole separate story – try to put it in with what system will allow us to do – soft tissues keep stability
- **A.:** Dr. Warner: With reverse there is a fulcrum for stability so the tendon transfer can be done as Boileau described it from the front.

IV. DILEMMA # 2: HOW DO I TREAT THE "YOUNG PATIENT" WITH SHOULDER ARTHRITIS?

1. **John Costouros:** ***My Experience with Stemless Total Shoulder Replacement*****:**
   - Dr. Costouros has the largest experience with the Arthrex Eclipse in the US
   - John Charnley – pioneer in hip surgery
   - Charles Neer – shoulder – concepts for implants were an extrapolation of what worked in the hip – this led us down the wrong road
   - Shoulder arthroplasty volume: fastest growing segment – revisions are growing
   - Looking at less invasive, bone preserving options
   - Evolution of shoulder prosthesis
     - 1st generation – Neer I
     - 2nd generation – modular, separate head and stem
     - 3rd generation – early 1990's – 2 dimensional modularity
     - 4th generation – 2000's
     - In 2013, 4 IDEs were started in the US for stemless implants – 1 has been completed (Simpliciti)
   - Allows glenoid access and bone preserving
   - NOT the same as humeral resurfacing
   - Article by Drs. Warner and Delaney – shows results of partial humeral head resurfacing (Delaney RA, Freehill MT, Higgins LD, Warner JJ.: Durability of partial humeral head resurfacing. Shoulder Elbow Surg. 2014 Jan;23(1):e14-22)
   - STEMLESS – more than 10,000 implanted worldwide since 2004
     - Cage versus fin systems
     - Design rationale – center of rotation of head independent of axis of shaft – ideal for deformity cases
     - Anatomic, bone preserving, revisions easy in concept
   - Eclipse™ (Arthrex) FDA IDE clinical trial at Stanford started in Sept 2013 – cementless – hollow screw fixation
     - Glenoid – same as for traditional TSA – keeled and pegged
   - Advantages relative to traditional stemmed prosthesis
     - Varus positioning of stem can overstuff joint
     - Stem height too high limits ROM and leads to RCT
     - Version
     - Stress rise distally
   - Experience in Austria, Canada, Germany – improved clinical outcomes scores
     - In Germany did have complications
   - USA experience at Stanford
     - Mean age 63 years old
     - For IDE clinical criteria are quite strict – excluded if had previous surgery on the

other shoulder – clinical evaluation
    - Patients did well with respect to constant scores – did experience less post-operative pain
    - First eclipse done in Sept 2013 – male with primary OA – good initial fixation with this device
    - Conclusion – traditional TSR provides pain relief and functional improvement
    - Stemless currently under investigation; easy operation, good results so far

2. **John Sperling:** ***What do we expect with TSR in patients < 50yo?***
    - Young people with very bad problems - how to manage?
    - Case example #1: 31 y/o female – instability when playing volleyball
        - Thermal treatment of cartilage and capsule – glenoid erosion and was infected – had to put in spacer and arthroplasty
    - If you see anyone less than 50 years old with end stage arthritis – 90% of the time it is due to instability surgery gone wrong - almost all iatrogenic
    - Case example #2: End stage arthritis at 19 years old – due to anchors put into joint by previous surgeon
    - Etiology – due to prior instability surgery, OA, inflammatory arthritis, post-traumatic arthritis, AVN
    - Lots of reports on hip and knee in young patients
    - Case example #3: 20 y/o female – surgeon did open SLAP repair – put anchors in the joint – failed debridement – what to do with her?
    - Results of shoulder arthroplasty – few long term results
    - Quantifiable issues: pain relief, motion, rates of revisions
    - TSA in young pts – Burroughs et al – young patients – overall did very well
    - Revisions for painful glenoid arthritis after hemi
    - TSA revisions – infection and loose components
    - Survival at Mayo – the total shoulder in younger patient has better survival than hemi
    - Looked at patients who had hemi for OA - improved in terms of abduction and ER, but post-op pain all over the place – 20% came back at 6 wk 1 yr 2 yr and said I am no better, pain no better with hemi… Hemi has fallen out of favor!!
    - Biconcavity – if have biconcave glenoid, will do terribly with hemi – 6/9 people who had biconcave glenoid were corrected, 5/6 did terrible
        - If left uncorrected, did very well
        - In rare hemi he does, does NOT attempt to ream it
    - Difficult problem with no good solution – understand demands on patient
        - Patient expectations and goals are crucial

3. **Steve Burkhart:** ***My Experience with Arthroscopic Solutions for Arthritis in the Young Patient***
    - Arthroscopic glenoid resurfacing with acellular dermal allograft
    - Problem: 49 y/o man contractor – will not accept restrictions, pain 7/10
        - Options: hemi, TSA, RSA, arthroscopic debridement, something arthroscopic?
    - Comprehensive Arthroscopic Management (CAM) procedure – described by Peter Millett – debridement type procedure where you do a capsular release – 20% revision to arthroplasty and short term follow-up – greatest risk for arthroplasty are patients with less

than 2 mm joint space (Millett PJ, Horan MP, Pennock AT, Rios D.: Comprehensive Arthroscopic Management (CAM) procedure: clinical results of a joint-preserving arthroscopic treatment for young, active patients with advanced shoulder osteoarthritis. Arthroscopy. 2013 Mar;29(3):440-8.)

- Historical techniques for glenoid resurfacing – what he's doing
- Dr. Savoie – AGR - so thin you can see through it – 22% revision to arthroplasty but significant pain improvements (Savoie FH 3rd, Brislin KJ, Argo D: Arthroscopic glenoid resurfacing as a surgical treatment for glenohumeral arthritis in the young patient: midterm results. Arthroscopy. 2009 Aug;25(8):864-71)
- Dr. de Beer – thin dermal grafts – double it over - complications due to delamination after folding graft – revision rate under 20% - age much older (50's) – (de Beer JF, Bhatia DN, van Rooyen KS, Du Toit DF.: Arthroscopic debridement and biological resurfacing of the glenoid in glenohumeral arthritis. Knee Surg Sports Traumatol Arthrosc. 2010 Dec;18(12):1767-73.) ***gave up on this***
- Both Drs. Savoie and de Beer took biopsies and saw evidence of metaplasia – might be encouraging for what might be possible
- Burkhart technique: Looked at pain relief for symptomatic advanced OA in young/active patients
- Arthroscopic glenoid resurfacing
- Release the rotator interval tissues in front, go around back posterior capsular release – can improve their motion
- Get down to axillary notch area – pencil tip cautery
- 270 release – just not releasing straight superior
- Have 3-4 anchors to have firm fixation points
- 3.5 mm thick graft – pad the joint
- Do all in lateral decubitus position
- Capsular release – arm adducted over axillary bump
- Glenoid prep – debride and micro fracture – remove ridge in biconcave glenoid
- Biconcave glenoid? Re-centering of humeral head – function of the release – get rid of ridge as much as possible
- Uses Mulberry knots
- Pre-pass sutures through allograft –pass sutures outside the body
- Recommend minimum of 6 fixation points
- Graft trimming – use mega Biter
- Post-op rehab – ones that have done best are ones that move right away – strengthening starts at 3 months
- Does roughly one per year
- Significant improvements in pain at almost 5 year follow up

4. **Matt Provencher: *Participant Discussion*:**
   - Matt Provencher – young navy population – see a lot of bench press shoulder – huge population with very bad arthritis of shoulder – 35-38% post-surgical arthropathy
   - Comment and question about chondrolysis – experience with young arthritis
     - John Costouros – devastating problem and a different beast – when look at arthroplasty – chemical component destroys cartilage and damages the capsule in different way than see in arthritic population

- Matt Provencher to John Sperling – your age under 50 article gets a lot of press – what can you tell us about 48 y/o who walks in with B2 glenoid – what to do with patient? (Owens CJ, Sperling JW, Cofield RH.: Long-stemmed humeral components in primary shoulder arthroplasty. J Shoulder Elbow Surg. 2014 Oct;23(10):1492-8; Allen B, Schoch B, Sperling JW, Cofield RH.: Shoulder arthroplasty for osteoarthritis secondary to glenoid dysplasia: an update. J Shoulder Elbow Surg. 2014 Feb;23(2):214-20)
    - John Sperling – I give patient options and let them choose – desire for pain relief versus desire for activity – do they listen to you? NO!!!
- JP Warner – John I mentioned this before, Mayo has wonderful data with endpoint for survival being revision – Joe Eichinger has looked at our cases in pts under age of 50 and found survival for revision to be 92% at 10 years, but survival of happiness at that point was 62% - These patients are walking around unhappy!
- JP Warner to Steve Burkhart: Steve, it would be great to have a multi-center study in which you looked at survival of happiness and survival to revision in your arthroscopic resurfacing patients.
- Joe Eichinger – To define "happiness" I asked them would they have surgery again, were they happy with function – relatively short term – anatomical total – survivability of happiness really declines over time – free from revision but the surgery doesn't sustain their satisfaction
    - Finding: looking purely at revision rates is not good enough – future registries need to look at patient satisfaction – total's outperforming hemi's
    - WHY were they unhappy? – what is the #1 risk factor?
- JP Warner – Our current approach to Patient Reported Outcomes: We use SOS® – We now have 3 year data of patient perception of pain relief and durability as well as functional recovery over time
    - Tools are very low cost and low barrier to get patients to continue to input data
    - Barrier would be technical expertise – need more numbers and follow-up

V. *DISCUSSION: What Do We Want this Organization to Be?*

- What should we be?: Alumni Group? Think Tank? NPO? Research Group?
- Should we invite just shoulder experts to be our speakers and stimulate discussion? Should we invite others with expertise outside our own to inform us and challenge us in practice management, healthcare reform, research?
- What do we want to accomplish between the meetings – do we really want to be ambitious and create organization that is a not for profit think tank? Then we would need a mission statement and a strategy
- Opportunity to get us all together – stimulate what we think about and what we don't know
- Broaden scope? Make it topic based each year and really dive into something and then get questions from that – meaningful studies that those who want to can be involved with – don't involve much to finish
- Should we try to organize studies together so we can all benefit
- How will we fund ourselves (So far Jim Esch and SDSI have been our benefactor with Larky Blunk being our representative here in San Diego to organize details)
- Requires that we all want to do it and have ability to do it –should this be opened to others beside former fellows – Asheesh Bedi, George Athwal interested in doing things together that you couldn't do alone

- Bassem Elhassan – Idea of having other people with other training is a good one – would bring new ideas and other perspectives
- Ruth Delaney - Studies mentioned – some of us work in places that are so isolated – it would be wonderful to tap into this type of network - not high complexity but just for numbers
- JP Warner – A few things that would be simple
    - Session on infection – don't know how to optimize prophylaxis – vancomycin powder and utility in arthroplasty
    - Do power study to see number we need to see if the powder makes a difference or does not make a difference – analyze that question and come up with answer
    - Patient-specific planning like Blueprint – license – see if makes difference in what you are doing
    - Could look at impact of stemless on outcomes – does it make a difference – cost comparison study using TDABC methodology
- John Costouros – we need to define what the goals are
- JP Warner – bringing you all together so that you guys can do publications together
- Most numbers we see are so small – don't have much power behind them
- John Costouros – Perhaps we bring Mayo and Kaiser together
- Ron Navarro – internationally doing some things – John Sperling interested in doing things too – how to harmonize and agree on definitions
- Would need to define data set and make sure agree to it, and can then pull data
- It is doable and takes a lot of agreement and building bridges across data sets etc
- I have invited four representatives from Industry. How should we involve industry in what we do?
- JP Warner: In coming year, I will create website where we can put insights into what we get from meeting – where that goes remains to be seen – if want to do studies together can help facilitate stuff as well. But I will need all of you to support these efforts with your time. How we fund this is something to discuss as right now we benefit from the generosity of SDSI, Jim Esch and Larky Blunk and I pay for the other minor details which will include the website.

THANKS TO ALL—SEE YOU NEXT YEAR!