Intraoperative Neuromonitoring:

Now and the Future

A Strategic Healthcare Summit

December 3-4, 2010

Chicago, Illinois

Objective

The Summit objective was to develop consensus statements that address four crucial areas of intraoperative neurophysiological monitoring (IONM): Technology, Quality, Providers and Economics. A half-day session was devoted to each area utilizing the same format. An introductory plenary speaker, unrelated to IONM, framed the task. Then, multiple breakout discussion groups addressed aspects of the topic in representative fashion. Finally, all participants re-assembled to hear group presentations and discuss consensus. The extensive deliberations resulted in the following proposed initiatives:

IONM Summit Committee Summary

- ***Technology**: Its role in:*
  - *providing patient data and all necessary complementary information*
  - *standardization of procedures*
  - *standardized education*
  - *integrity of communications*

- ***Quality:** Improvement and assurance through establishing:*
  - *standards*
  - *code of ethics*
  - *accountability*
  - *science based clinical guidelines*

- ***Provider:** Foundational concepts including:*
  - *consensus driven provider standards*
  - *minimal competency requirements accommodating multiple educational pathways*
  - *education framework with core curriculum and clinical training*

- ***Economics:** IONM impact contingent upon:*
  - *value of IONM shown through scientific basis, measurement, implementation, improvement, and reporting—the value proposition*
  - *outcome studies through shared database*
  - *cost effectiveness, cost/benefit data*

IONM Summit Committee Summary

The Summit included IONM practitioners, surgeons, anesthesiologists, hospital & insurance administrators, manufacturers and others engaged in the delivery of IONM services.

Introductory speakers were chosen for their authoritative work and recognized expertise related to the topic. By intention, none had involvement in IONM, nor were they asked to address specific IONM issues. Group moderators were tasked with being neutral and representative. Plenary session speakers were:

- ***Technology: by Rick Satava, MD, FACS***
- ***Quality: by John Tooker, MD, MBA, MACP***
- ***Providers: by Michael Hriljac, DPM, JD, LLM***
- ***Economics: by Frank G. Opelka, MD, FACS***

Consensus Points Technology

- *IONM should embrace standardization (equipment, communications, internet capability, etc.)*
- *IONM should have technology-based availability of all complementary patient information that removes patient/provider barriers, on site or remote*
- *IONM should embrace standardized technology-based education, with core curriculum and clinical training goals*
- *IONM should encourage technological advancement, such as wireless technology, use of simulators, etc.*
- *Inter-societal communication and cooperation is essential to the application and advancement of technology in IONM*

Consensus Points Quality

- *IONM should have an accountability mechanism*
- *IONM should have standards and guidelines for training, certification, licensure and continuing education*
- *IONM must have a Code of Ethics*
- *IONM should shepherd the pathways from science to clinical guidelines*
- *IONM should have a shared database with outcome analysis*
- *Inter-societal communication and cooperation is essential to advance uniform quality in IONM*

Consensus Points Providers

- *IONM should have consensus driven guidelines for supervising professionals and technologists*
- *IONM should develop a flexible core curriculum with formal course work, clinical training and experience*
- *IONM should recognize independent vs. dependent practitioner issues*
- *IONM should develop a minimal competency assessment mechanism that will recognize multiple educational pathways*
- *IONM should encourage dedicated professional level training*
- *Inter-societal cooperation is essential to develop high quality educational models for supervising professionals and technologists*

Consensus Points Economics

- *IONM should employ a patient oriented Value Proposition: Value = Patient Benefit/Cost*
- *IONM value considerations will include utilization, bundles, longitudinal view*
- *Value Proposition must be driven by science*
- *IONM should develop outcome studies with attendant need for shared database*
- *IONM should justify its "place in the (surgical services) bundle"*
- *Inter-societal communication is essential to promulgate the value and cost-effectiveness of IONM.*

Consensus Call for Action

In closing remarks and discussion, Summit Chairperson Dr. Bernard Cohen emphasized that lasting value of the Summit could be achieved through widespread dissemination of the proceedings throughout the IONM community. The Summit organizing committee summarized the proceedings and suggests the following action items:

1. *Through technology, IONM should encourage standardization of information availability, education, training and communications*
2. *IONM must foster quality assurance and improvement through a Code of Ethics, evidence-based clinical guidelines and accountability*
3. *IONM should support guidelines for providers, core curriculum, clinical training, minimal competency, and continuing education*
4. *IONM should develop a Value Proposition to document its cost-effectiveness as a clinical service*
5. *Inter-societal cooperation, communication and collaboration is essential to enhancing patient care through IONM*

Respectfully submitted:

IONM Strategic HealthCare Summit Committee

Bernard Allan Cohen, PhD, DABNM, FASNM
John D. Hastings, MD, FAAN
Lawrence R. Wierzbowski, AuD, DABNM
Michael J. Russell, PhD, DABNM
Mark M. Stecker, MD, PhD, DABNM, FASNM

The above compilation represents the work of the Summit participants as reviewed and summarized by the committee members and does not necessarily represent the opinions of the American Society of Neurophysiologic Monitoring (ASNM).

Facilitator's Contemporaneous Notes

All of the material which follows represents the events and notes of the Summit as captured by our Facilitators and is not intended to be a verbatim text of the entire proceedings. This material is for reference only and may represent only the views of the individuals as understood from the discussions.

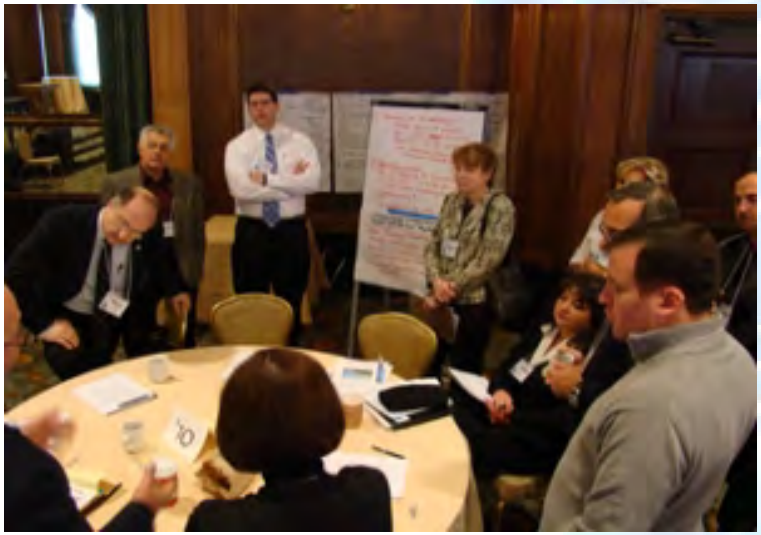
Overview

The objective of this Summit was to develop consensus statements on IONM addressing the critical areas of Technology, Quality, Providers and Economics. Each primary topic occupied one half day's work.

Faculty presentations set the tone and facilitated OUR work. We achieved results by breaking into small, focused discussion groups, ultimately reconvening to form consensus of the group as a whole. At the end of the Summit, participants had the foundation necessary to impact their own environments within the following areas:

- the cost/benefit relationship and utilization of advanced IONM technologies
- relevant quality measurements related to the delivery of IONM services
- the latest regulatory/certification/licensure requirements related to IONM
- the economics of producing and delivering a medical service such as IONM

This Summit was for IONM practitioners, surgeons, anesthesiologists, hospital & insurance administrators, manufacturers and others engaged in the delivery of IONM services



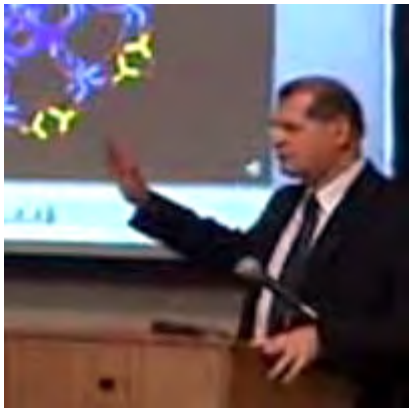
Technology | Presentation by Dr. Rick Satava

Dr. Rick Satava: Thank you for the opportunity to address this elite body. This reminds me of a meeting in 1981 when surgeons felt they didn't have enough of a voice. Now they have one of the most prestigious professional societies. I relate this to you because this meeting may well be the beginning of a society that in 15 years may be the most influential voice in the field.

My lecture begins in the year 2020 and goes beyond. We need to change the fundamental ideas we hold about how to provide patient care. Robots are already available. They can enhance our capabilities, care and patient safety.

My product is my patient. If I do something wrong, it suffers. We're the only industry that hasn't created a model on which to practice before we do it for real. This must change in healthcare. In the future we'll be substantiating the image of an individual in a way so that it will become the new medical record. We will be able to give virtual medication to see what happens to the image. If it doesn't work, we can correct before the medicine is actually given to the patient. This can all happen within milliseconds.

The power of visualization will become more and more obvious. In my first time working on a patient without ever touching them I became an information manager. I can do open, minimally invasive, and remote telesurgery. I plan and rehearse my operation on the image so if any mistakes are made, they are made before I get to the patient.



A modern curriculum includes simulation, anatomy, procedures, errors, skills training and outcomes. The key is to teach them to make, recognize and to correct mistakes. Many people die because we don't make the right connections between the operating room and the recovery room. There is technology that can help us track thinking, such as eye movement and brain activity. We can infer judgment from these measurements. The key is to teach them to mistakes so they can recognize and correct for them.

We need to have smart rooms for the operating room, with the ability to control light source, direction and intensity with voice. How about a robotic scrub nurse? Meet Penelope. It can deliver forceps in 7 seconds with 99.97% accuracy even after standing there for 6 hours. What person could or would want to do the same thing?

There no longer is a question of technology. Between NASA's UAVs, cockroaches with electrodes, transcranial implants, and growing artificial organs we can expand the venue and uses of neurophysiologic monitoring.

But in all of this, we have profound questions to answer. Who will decide what can and cannot be done? Are you still human if we replace all your organs? Who will be the next "created" species?

Questions to consider:

- Given the speaker's remarks, what are the technology implications for *onsite* and *remote* Neuromonitoring?
- How will monitoring and its professionals be impacted because of developments in technology and medicine?
- What advantages/challenges in communication between members of the operating team and the Neuromonitoring professional do onsite and remote practitioners enjoy? Given technological advancements, how will that change?
- What information must be made available about the patient and the procedure being performed, and how should it be made available?
- How can technology overcome challenges in acquiring neurophysiologic data?
- What do you predict will happen given rapid technology changes and how should practitioners prepare?
- How does technological advancement influence the debate about onsite and remote monitoring?
- As medicine becomes more and more firmly entrenched in the information age including robotics, how will technology driven medicine impact Neuromonitoring?
- What advantages/challenges in communication will technology provide or cause?
- What advice would you offer to Neuromonitoring societies about how to help prepare professionals for what's next?

Reports

Team 1 & 2

We thought standardization is the most important. It would be nice to reach nationwide and create a website that shows these standards. We want this to be education-based and what the structure looks like. We want the education to be portable between institutions. We want our learning to transfer into our tools and supplies. Simulators are the next step we have to take. We need to assess patients to ensure they're getting the highest quality of care. Virtual technology can help us integrate all the specialties and their monitoring so we can all be on the same page for the patient. We need to have acceptance and acknowledgement among us so we can make the change.

Team 3 & 4

Education, integration and interpretation are the key points. We don't use technology enough in our education and we must. We need to strive to have more integration between the surgical teams and we could take advantage of technology for this. Technology will advance interpretation and possibly will replace us. Training certification is paramount. We looked at questions about the difference between remote observation and control. Can remote neuromonitorists take control and make changes in the parameters? How does that impact everything else we discussed?

Team 5 & 6
We need minimum standards of how the internet connects each operating room. We need standards for devices to perform rationally between them. We need to develop standards for everything: productivity, telemonitoring, and connectivity.

There needs to be a development of curriculum for doing the same kinds of tasks so that they can be reproduced everywhere. We developed a wish list for how we might better do our job. We'd love to have wireless connections between our patients and our machines, better simulators, better monitors and eliminate all barriers between us and our patients.

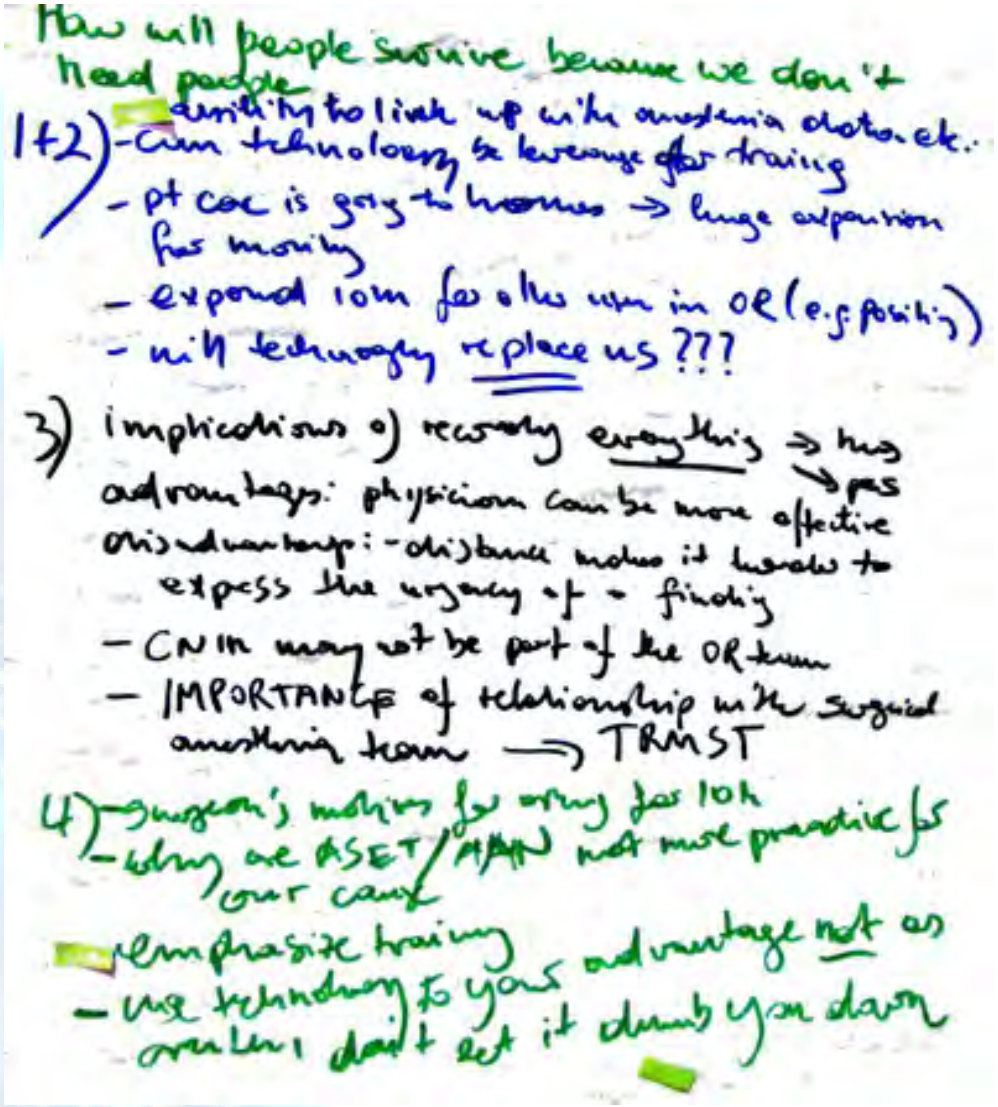
Team 7 & 8
We want to have an artificial intelligence database which is embedded in the dog-tag that follows the patient everywhere. We want to have total patient monitoring that looks at the whole patient and not just the area where we're working. We need data sharing We want continual monitoring from the operating room to ICU and to rehab.

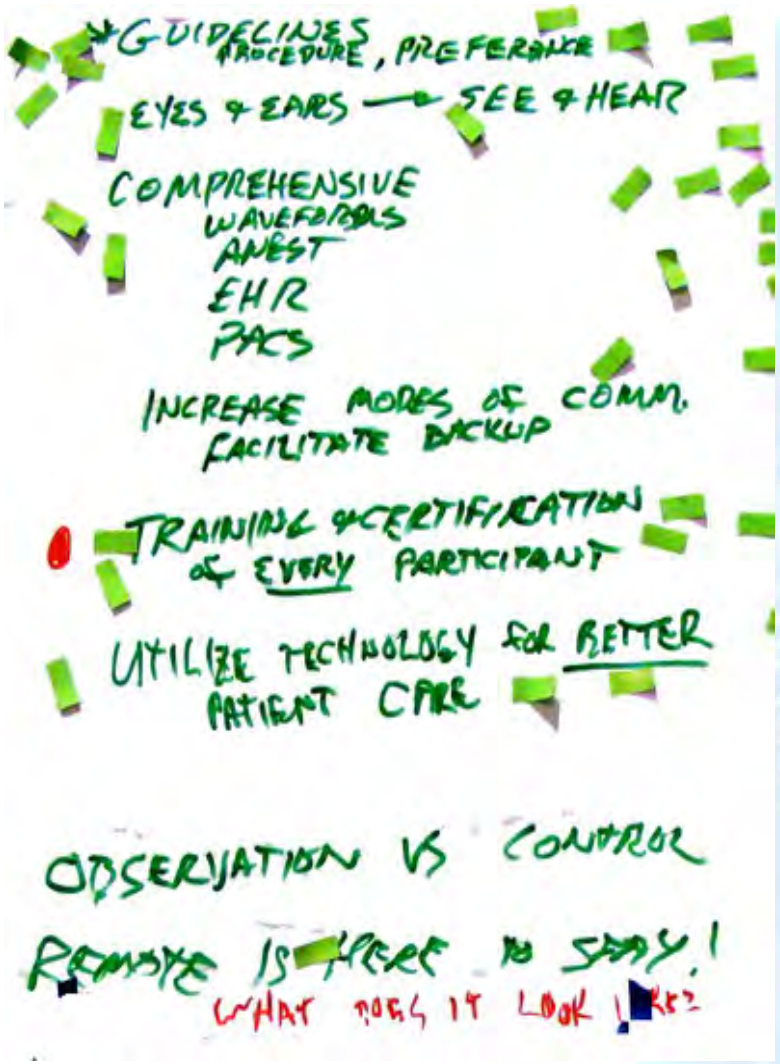
We want to reinvent the role of the person in the OR. Everyone needs to expand knowledge and awareness and need improved training on virtual reality machines. We need to give immediate feedback to the surgeon. We need to be cross-trained in all of our disciplines. We need to get rid of technologists in the OR and have clinical people there who know how to use the data from the technologists.

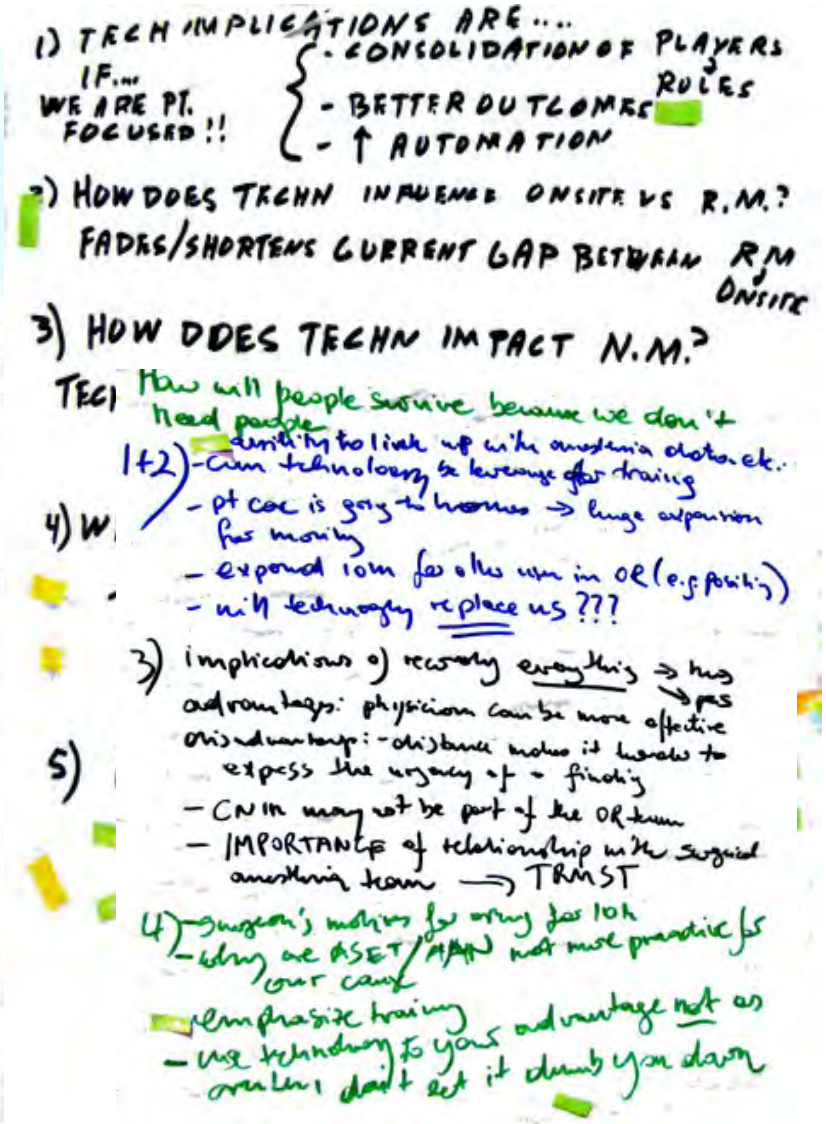
Team 9 & 10
We need consolidation within roles, better automation and communication. We should be the ones driving the technology and not the other way around. We should be involved in all the things in technology and give better patient care. In terms of on or offsite, technology will morph roles, education, and career lab and expand our services. There will be enhanced information but consistently we came up with the issue of information overload, especially if you're doing more than one case.

Flip chart images contained in this document include green, yellow and orange "votes". These each indicate a participant's impression of a team's report-out results according to the following scale:

Green = positive
Yellow = neutral
Orange = negative




GUIDELINES, PREFERENCE
PROCEDURE
EYES & EARS → SEE & HEAR
COMPREHENSIVE
WAVEFORMS
ANEST
EHR
PACS
INCREASE MODES OF COMM.
FACILITATE BACKUP
TRAINING & CERTIFICATION
OF EVERY PARTICIPANT
UTILIZE TECHNOLOGY FOR BETTER
PATIENT CARE
OBSERVATION VS CONTROL
REMOTE IS HERE TO STAY!
WHAT DOES IT LOOK LIKE?


1) TECH IMPLICATIONS ARE....
IF... WE ARE PT. FOCUSED!!
- CONSOLIDATION OF PLAYERS, RULES
- BETTER OUTCOMES
- ↑ AUTOMATION
2) HOW DOES TECHN INFLUENCE ONSITE VS R.M.?
FADES/SHORTENS CURRENT GAP BETWEEN RM ONSITE
3) HOW DOES TECHN IMPACT N.M.?
How will people survive because we don't need people
1+2) - can technology be leverage after training
- pt coc is going to increase → huge expansion for monitoring
- expand IOM for other use in OR (e.g. positioning)
- will technology replace us???
3) implications a) recovery everything ⇒ less
advantages: physician can be more effective
disadvantage: - distance makes it harder to express the urgency of - finding
- CN in may not be part of the OR team
- IMPORTANCE of relationship with surgical anesthesia team → TRUST
4) surgeon's motives for going for IOM
- why are ASET/AMAN not more proactive for our cases
- emphasize training
- use technology to your advantage not as
crutch; don't let it dumb you down

Dr. John Tooker: Last year there was a 1.1% increase to make healthcare about 17% of the GDP. It's the largest increase in over 50 years. Right now private spending is almost equal to government spending and that's going to change as public spending will become the greater portion. We want to increase quality while reducing costs. The 18-member commission had to vote and it was 11-7 in favor of the reform. This will be a blueprint for future policy.

Is there a need to improve quality and safety in this country? Do we have the best healthcare system in the world? The latest report indicates that we don't. A charter on medical professionalism was published in the *Annals of Internal Medicine*. This has been endorsed by almost every professional society in this country. The key points refer to the quality of care. Not only do we have a personal obligation for this but it is now the law. There is a framework for accountability and quality improvement from the private and public sectors.

What do we mean in terms of performance measures? All of us want to influence how the science is developed. From that science we want to move into clinical guidance. The measures are developed by taking the available guidelines and distilling them into one system. The physician consortium has come together to agree on a set of measures. Individual societies can make their own, but usually go with the national standards. The federal government will take the lead from these agreed upon standards. The National Quality Forum sets up the standards and also endorses them.

Each piece of legislation has a disciplined and sometimes tedious process. There will need to be at least 575 rules. It is enormous. All the federal agencies are working together which has implications for us and other stakeholders. There is a sea change in QI moving from the private sector to federal control. The linkages are complicated between policy and politics. Everyone is scrambling to understand the legislation. You have to decide if you want to do this yourselves or partner with others.

Q: This sounds like HMO rewarmed. Can you compare and tell me what differences you see to that?

A: If you think about Kaiser, it is an insurance entity you pay into and then they contract with you to pay for care. We don't know what the care organization will be since there are no standards set for an ACO. We have some evidence from other entities with insurance and integrated health systems. They do this efficiently so that they actually make money.

Q: What's the probability of success looking out 5 years?

A: Failure is an alternative and in some places is already playing out. In Arizona transplants are no longer funded. If leadership can come from this conference to the White House then we'll see more success than not. These two wars have increased the deficit incredibly. There will be a reasonable shot at lowering the deficit by changing the incentive formula in healthcare where there is a finite amount of money to manage.

Quality | Assignments & Reports

Questions to consider:

- Given the speaker's comments, how should quality be defined?
- What quality considerations matter to surgeons, hospitals, patients and payers who choose our services? How does the definition of quality serve them?
- How should this definition be communicated and upheld within our specialty?
- What assistance could professional societies give in upholding an equivalent definition, standards, measurements and documentation of quality?
- How should quality standards and measurement be established and documented?
- Applying your ideas for standards setting, by what means can equivalent quality standards be set and maintained across the various practice methods?
- How should quality be measured, documented and shared within our specialty and outside of it?
- By what means can equivalent levels of quality documentation be done and maintained across the various practice methods?
- How should documentation of quality and cost be shared within our specialty and outside of it?

Reports

Team 1 & 2

The discussion centered around the process or the outcome. We looked at outcomes and liabilities, minimizing the incidence of false negatives. We looked at things that are important to surgeons and payers. The main things we found effective is consistent standards and increasing standards for certification, maybe even requiring a license.

Team 3 & 4

We thought a multi-city committee would be the best way to set standardized guidelines. Any interpreter/supervisor would have qualifications, perhaps a certification, for trainings. There would be continuing education standards. There would be a system for communication. This committee would set a code of ethics. An audit might be difficult to do, but there could be a forum to discuss difficult cases. A safe place would have to be established to do this. A professional society could monitor this. If you didn't follow the guidelines, there would be some accountability.

Comment: I would be careful about using the word 'standards". Guidelines might be a better term. We want to invite people in from the beginning and then set the guidelines together.

Team 5 & 6

Standardization is the key word. We need to take all the data from that and bring it back into the loop in order to improve the process. From there you make sure everything is transparent; from the hospital to the practitioners to the patients to the payers. We can review the practice guidelines and can audit the regulations. There needs to be some kind of system to verify this or people won't do it.

A big part of the team doesn't really know what we do. The idea of creating a guideline is so that among ourselves we've presenting ourselves in an organized fashion.

Team 7 & 8

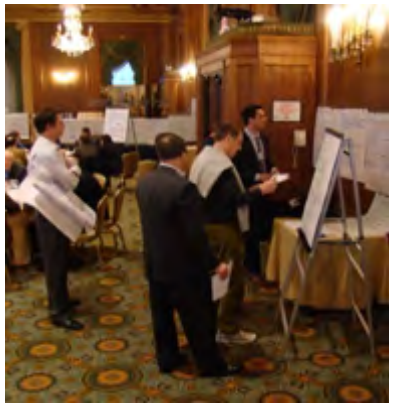
One of the guidelines we came up with is "watch and learn". We want to be able to discus these cases in a learning environment. How do you share these quality documentations? Perhaps within the IONM societies, review committees, but we need to be cost effective and appropriate. We need a shared database. This is a working project. How can the societies standardize the 901 records, similarly to how the anesthesia records are standardized? We should have requirements for documentation just like anesthesia.

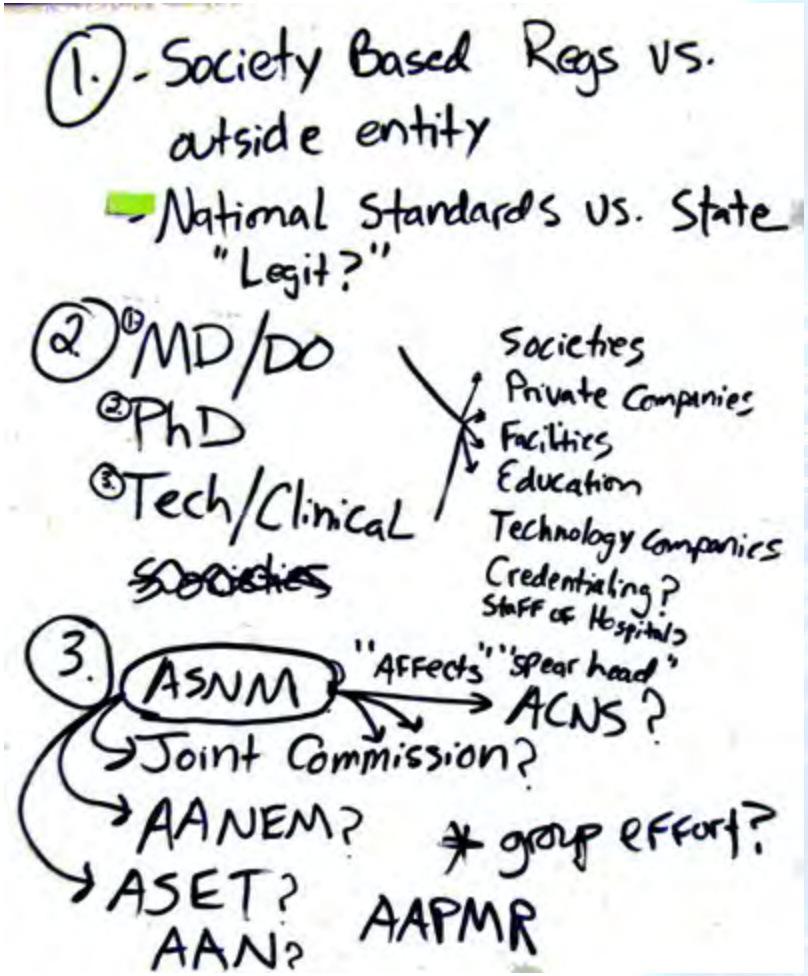
Team 9 & 10

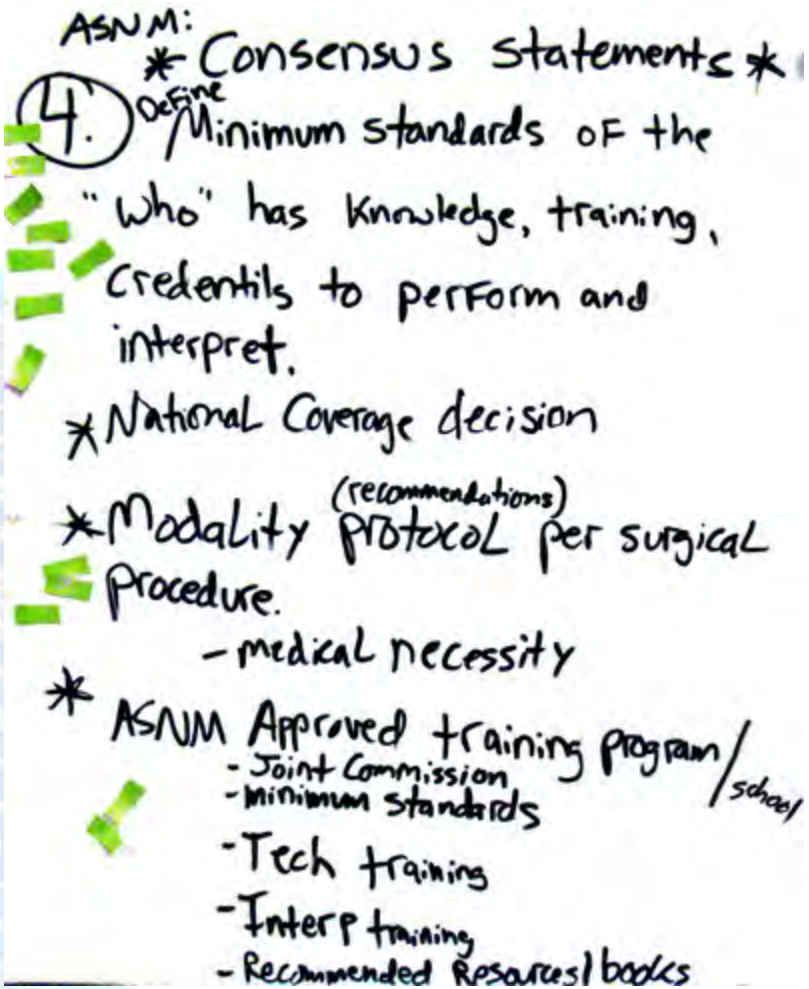
We were charged with responsibility of looking at what's involved in providing leadership to execute these things in terms of "guideline-ization". If we don't take action and don't create our own mandate then we'll be stuck with what someone else imposes on us. Action beats reaction every time.

Both tables agree that all the different constituents need to talk together. It can't be one group promoting their guidelines over someone else's. Authority of quality needs to reside with the people who do it. This is the broadbase consortium. We don't want the government creating it for us.

We need to do database development and have minimum standards of who has knowledge. These all need to be created. We want to get all the societies working on the database for all different modalities and literature we use.

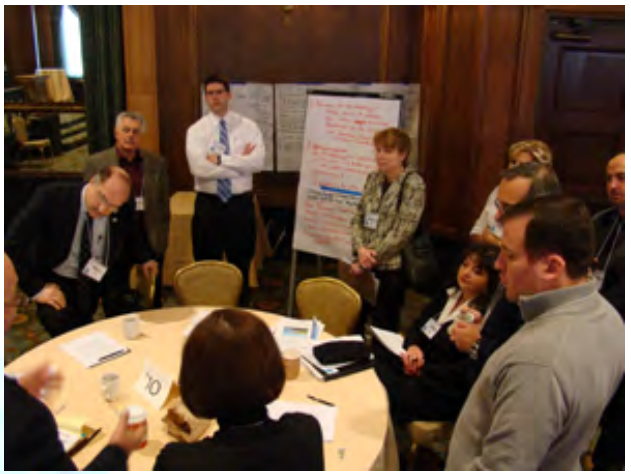



1. - Society Based Regs vs. outside entity
- National Standards vs. State "Legit?"
2. MD/DO
PhD
Tech/Clinical
Societies
Private Companies
Facilities
Education
Technology Companies
Credentialing? Staff of Hospitals
3. ASNM
"Affects" "Spear head"
ACNS?
Joint Commission?
AANEM?
ASET?
AAN?
* group effort?
AAPMR


ASNM:
* Consensus Statements *
4. Define Minimum standards of the
"Who" has knowledge, training, credentials to perform and interpret.
* National Coverage decision
* Modality (recommendations) protocol per surgical procedure.
- medical necessity
* ASNM Approved training program/school
- Joint Commission
- Minimum standards
- Tech training
- Interp training
- Recommended Resources/books

Quality | Reports & Output

1) Quality Definition
   - → Consistent Performance of Service
     - On-time starts
     - False-negatives/positives
     - Incidence for intervention based on IONM standards
     - Compliance with agreed upon service
   - → Metrics
2) What's Important
   - A) Surgeon's
     - Outcomes
     - Reliability
     - Training (Competency)
     - Efficiency
     - Timeliness (Delay in OR)
     - Billing Policy/Process
     - Appropriate Modalities
     - Minimize False Negatives
   - B) Payors
     - Appropriate treatment for Dx
     - Clear and relevant documentation
     - Accurate Coding (real-time)
   - C) Patient
     - Safety (Technical - Cause no harm)
     - Billing Policy/Process
     - Effective Education + Communication
   - D) Hospitals
     - Credentials/Competencies
     - Quality Programs
     - Consistency of Policies + Procedures
     - Compliance to Hospital Policy (Billing Policy/Process)
     - clear and effective communication



Dr. Michael Hriljac: There is a weave of different pathways and credentialing bodies. The current status of MD's and DO's is that they can practice independently and non-physicians must work under a license holder. Licensing is a state issue. On the federal level, they can certify which fields are covered under those programs.

Once you are licensed there are rules that you must adhere to and those are interpreted by the court system and this allows the state to discipline practitioners through a variety of actions. If there is a non-licensed MD and they are practicing without a license they go in front of state's attorney's office.

Clinical counselors, psychologists, and social workers have separate licenses. This is the same for the limited licensed physicians, such as podiatry, dentistry and chiropractic.

Unlicensed practitioners bill through the license holders and the licensed practitioners maybe bill directly depending on the act and the payers agreements.

Medicare acceptance requires US legislative action through a change in the Social Security Act--including in the definitions a physician. Or they could be added as a separate covered category. Medicaid acceptance via Social Security Act requires the same, or they also can be added as a separate covered category. Services may be mandated or optional.

All these different credentialing bodies and that cause some confusion. Multiple certification tracts may block efforts.

Usually independent practitioners have clinical training and medical or osteopathic affiliation is helpful but it's not mandatory. Standards should be established for IONM providers by a consensus of the groups providing services. They should address the special interests within those groups and compare with a similar field.

What kinds of things should be done in a practice field and how can multiple educational pathways be integrated towards a common goal? You can set minimal competency standards, do a practice survey and have a standardized licensing exam that is valid, reliable and defendable.

Why do you want acceptance by other groups? This is a business. It means better revenues and financial outcomes. Acceptance also results in better patient safety, reduced liability and shorter OR times.

You should look to existing non-physician independent practitioners, limited license practitioners and the emerging professions as models for how to proceed.

Providers | Assignments

Questions to consider:

- What key points from the speaker's presentation can you apply to establishing the requirements for credentials and/or licenses?
- Applying these ideas, how could we best establish requirements for credentialing and/or licenses which are meaningful?
- What Neuromonitoring professional credentials/licenses would help surgeons, patients, hospitals and payers when choosing among our service methods?
- What would be the first "next step" for professional societies to take moving toward meaningful requirements for credentials and licenses?
- What are the challenges that exist today in supervising Neuromonitoring professionals? What key points from the speaker's presentation can you apply to these challenges?
- Applying these ideas, what model of supervision would work best for each service method we use, even if it might be considered "radical"?
- What would be the first "next step" for professional societies to take to move toward strengthening supervisory models?
- Incorporating lessons learned from the speaker's remarks, design the optimal education plan at a high-level (meaning as much detail as you can) that would produce the best professionals. Assume the existing educational pathways do not exist and you have a blank slate.
- How could you best prove the value of qualified providers to those who hire and pay you?
- What requirements would you include in educating professionals if you could design the optimum educational plan(s)?
- What would be the first "next step" for professional societies to take to strengthen the education required to practice?
- Incorporating lessons learned from the speaker's remarks, define a high-level set of credentials/licenses (meaning as much detail as you can) that would enhance significantly the clarity and stature of the profession. Assume you have a blank slate. What would be BEST?
- What education, training, supervised practice and other ways of learning would you include?
- Why would a surgeon or hospital choose a professional with your newly designed set of credentials over others?
- What does our profession need to do to make significant progress in clarifying and strengthening credentialing and licensure?
- If you were on the outside of your specialty looking in, what would you want to see happen to the IONM field in terms of credentialing and licensing across all service methods?
- What is the smallest change that you could make in today's credentialing process that would have the biggest impact toward improving patient care and ultimately our stature as a profession?
- What advice would you give to the societies about taking leadership in the area of credentialing and licensure?

Reports

Team 1 & 2
We propose residency for two years and it is essential they receive on the job training. We could have 20 cases in broad categories. Alternatives might be a simulator and possibly with animals. This is a field and hospitals don't realize that. This allows us to regulate and discipline. The last step is the hard step. We can't do this by ourselves. We need to have all the relevant societies and create a set of guidelines for how we perform all these different tasks. It needs to be a true collaborative effort to go to the legislature.

Team 3 & 4
We talked about the interpreting and reading professionals but the same ideas would be applied to the monitoring professionals. Formal coursework, clinical training and evidence that can be presented to the outside world would be required. The challenges are that people come from various backgrounds and we need to come up with a training program that has a consistent base of knowledge that all agree upon. We would have different requirements for grandfathering. Our next steps include naming the four societal groups who could get the rest of the societies to come on board. We would pitch this to hospitals and payers.

Team 5 & 6
We need to relationships with surgeons. We see the imbalance of power and workforce issues of supply and demand. The key point is that licensure and certification are paramount. The radical idea is that licensure must be done by PhD's. We have to focus on curriculum development and standardized training.

Team 7 & 8
We want direct participation in the operating room either facilitating monitoring or having a presence onsite or in a remote monitoring site. The person should be able to switch from one role to another as demand requires. In order to do that, you have to set up a plan to train the health care provider. That person in the operating room has to be treating the whole patient and not a component of that patient's nervous system. That individual should go through a core curriculum regardless of what background they have. To do that, you have to cover areas of oncology, pathology, biophysics, volume conduction, cyber physics, and other things that are not part of a standard medical school curriculum. This could be set up in a variety of ways. This would be object-oriented learning.

Team 7 & 8 continued

There would be an introduction to the clinical environment to provide relevance. At the end of the two year program there would be tests to make sure that the core competencies are met. There would be increased exposure to what all the different constituencies are concerned about. In the second two years there would be real life settings in which to apply the learning. This is an educational path for a doctoral degree in neuromonitoring and would provide the necessary resources to sit for the graduate exam and the boards.

In continuing education, there are no standards set and that could be done quickly. This would help assure that people practicing now are up to the criteria set and have ways to know how to make improvement if there are deficiencies.

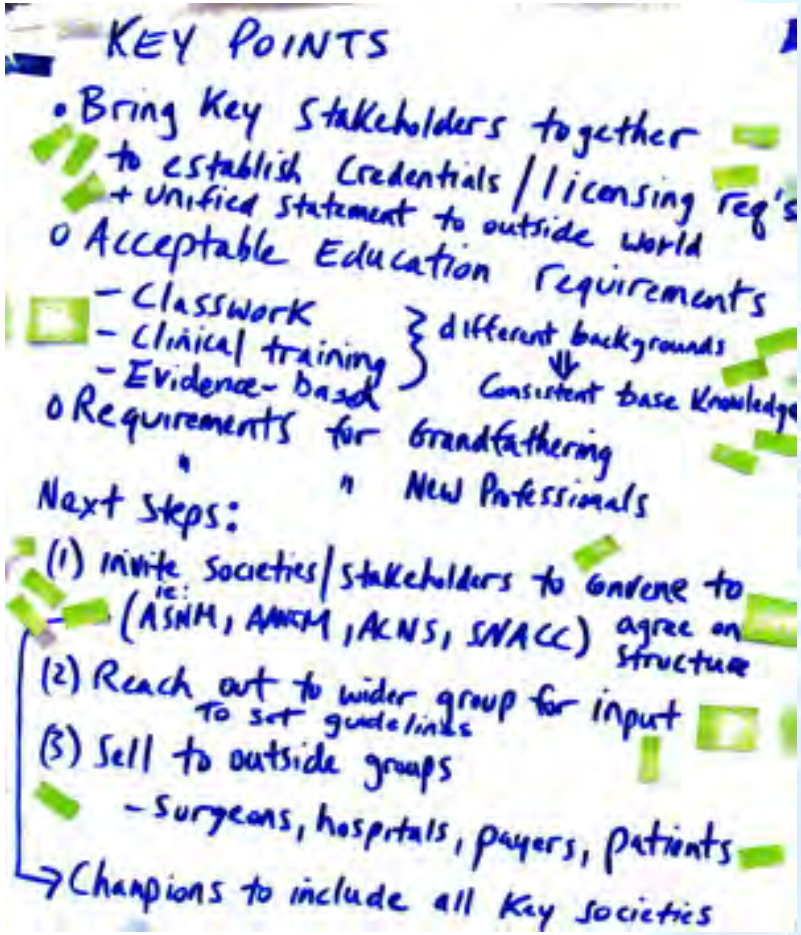
We have to have a vision. We need a strategy and curriculum to carry this out. In implementing this we have to build teams. Ideally we need a classical foundation. This program would be open to individuals who graduated out of a bachelors level program. It could be people who are on the PhD track. It might be individuals who are branching off or who are taking a subset of courses that might qualify them for a technical track. These would be the people who would be hired to provide high level clinical services.

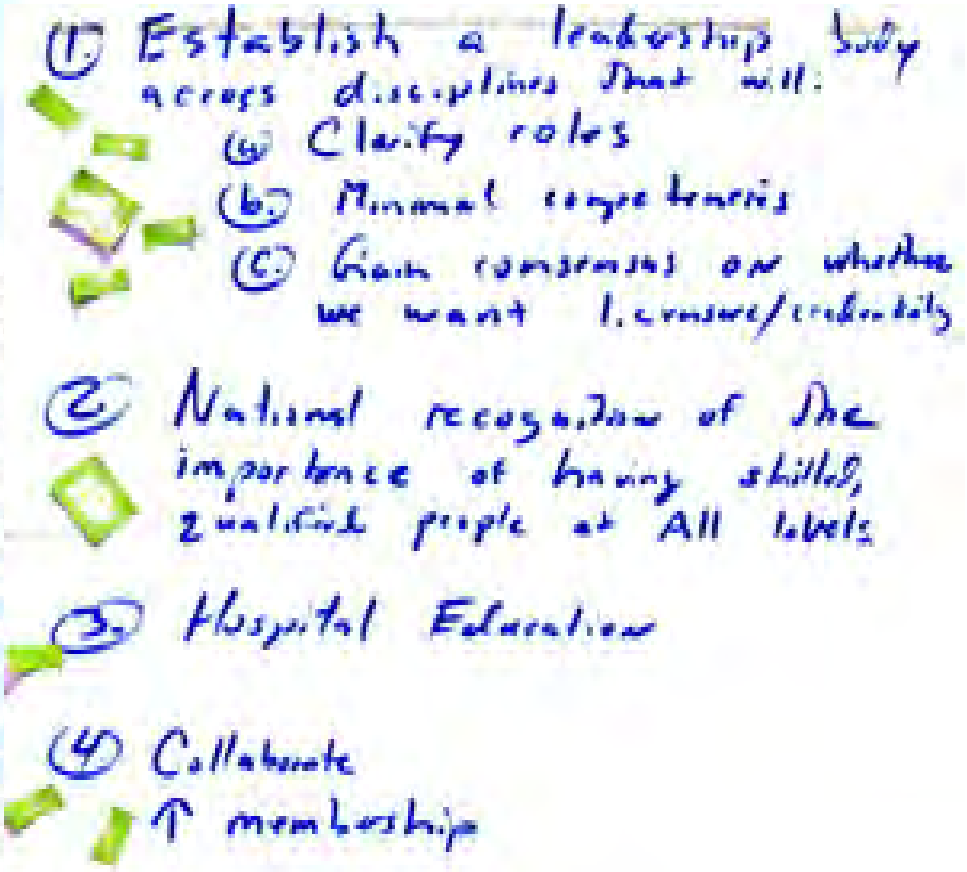
Team 9 & 10

The end product will encompass a lot of pieces. You're going to have to paint that for your constituents so people can get the jobs you're describing. The question that sticks out is who is that changing? If you're an outsider looking in, what do you suggest? There are multiple options. We need to create a leadership body and outline what is reasonable. The numbers for neurology have gone up a lot. That's not going to serve the academic process. We've heard about the train leaving the station. We need to make sure that have the leadership in place so that at least 80% of it is acceptable to us.

If you drive licensing and credentialing, that's going to take a lot of money and time. We need to identify the audience. This is not hospital CEOs, this is your own societies. This is where the movement needs to be.

The question of leadership is who has the most to win or lose. For neurology, this is a great and honorable sub-specialization. For ASNM it's the great cross-section of a lot of constituencies. There are great leadership opportunities for both.


KEY POINTS
• Bring Key Stakeholders together
to establish Credentials / licensing req's
+ unified statement to outside world
o Acceptable Education requirements
- Classwork
- Clinical training
- Evidence-based
} different backgrounds
Consistent base Knowledge
o Requirements for Grandfathering
" New Professionals
Next steps:
(1) invite Societies/stakeholders to convene to
ie: (ASNM, AANEM, ACNS, SNACC) agree on structure
(2) Reach out to wider group for input
to set guidelines
(3) Sell to outside groups
- Surgeons, hospitals, payers, patients
→ Champions to include all Key societies


(1) Establish a leadership body
across disciplines that will:
(a) Clarify roles
(b) Minimal competencies
(c) Gain consensus on whether
we want licensure/credentials
(2) National recognition of the
importance of having skilled,
qualified people at All levels
(3) Hospital Education
(4) Collaborate
↑ membership

1) Two Levels Licensed Credential
   Prof Tech
2) Education & Training
   A) Existing Prof. Grandfather & Test for Competence
   B) MD, PhD AuD et. New But Relevant Test (ABCN or other) 2yr Residency
   C) Graduate Program
3) Why
   Define Scope of Practice
   Discipline
   Patient Safety
4) Next Step
   a) Define Groups (AANS, ASNM et AAN & CNS AANEM)
   b) Collaborate
   c) Meet with Legislators.

Dr. Frank Opelka: I am one of the National Priorities Partners advising the secretary for Health and Human Services. We frame our thinking by identifying gaps and barriers. For example, a barrier is a health plan's payment policy and a driver is certification to do this.

What is the market seeking? What can the ASNM members provide? What does a sustainable business model look like? If something is too expensive and only sustains life for a short time, it might not be worth it. The forces of economics are laws and you can't ignore them. You need to create the demand and offer the supply. We can't deliver healthcare the way we're doing it today.

Within the Health Care Reform And Affordable Care Act, this industry cares about the delivery system and payment reform. We need to know how to drive the value proposition, especially with a question of national strategy for quality.

You need to map the needs of the national level against what the ASNM can do. Your long term survival is based on comparative data. Everyone will have an electronic medical record and use cloud technology to track real-time photons. We are going to become a learning network.

How are we going to narrow networks to drive improvement? One group that doesn't want to, but is doing it, is the payers. The Fortune 25 employers are saying "you will do this or we'll go to someone else who will." And they are.

Look at what you provide, it's all collaborator focused and not patient focused. Don't go running after an ACO. There are clinical and insurance risks. You want to focus on bundles and the value proposition. In the condition specific bundles you look at things like chronic, ambulatory and acute hospital care from a longitudinal view. You can price out a one-year bundle more expensive than everyone else but it works when you're clear about your value proposition. This is a completely new model. We're not wired this way but it's the future. The more data you push into the cloud, the more data you'll have available.

You have to have the science behind what you do. There are politics to it but there is also a process and it will happen without you. The world isn't built on level 1 evidence. Most is level 3 and 4 which is done by consensus.

The patient is part of the delivery system. We live in a capitalistic country and we need to attend to these issues. Look to the airline industry in terms of economy, quality and sharing between competitors. United, Continental and US Airways are part of the Star Alliance. Look at the banking industry and how they follow standards in transferring money between competing banks. This will be our electronic records. These other industries share systems and are still competitive and are successful.

Questions to consider:

- Applying what you've heard and building on the work of the past two days, design a model of bundled services, standards, quality assurance and designated reimbursement levels, pursuant to excellent patient care and that the market demands.
- Why would surgeons, patients, hospitals and payers recognize your new model as valid?
- How might we reinforce our value in each interaction we have with payers?
- Applying what you've heard and building on the work of the past two days, design an approach for educating and building relationships with payers that builds credibility on behalf of your specialty.
- From a payer's perspective, how is the cost-effectiveness of IONM best documented and communicated to them and others?
- How might we reinforce our value in each interaction we have with payers starting now?
- What would you do to implement your approach quickly?
- Applying what you've heard and building on the work of the past two days, design an approach for educating and building relationships with surgeons so that the surgeon sees the valuable options s/he has and becomes your advocate to patients and payers.
- What should the surgeon and even the patient know about our services and their value? What about the payers?
- Applying what you've heard and building on the work of the past two days, design a way of doing business (a business model) that the surgeon sees is valuable and the payers prefer to reimburse.
- How well will your new business model respond to the upcoming health care changes keeping in mind what's important to the market?
- What would you do to implement your approach quickly?
- Applying these ideas, how could the variety in our methods be leveraged as an abundant strength for our entire specialty?
- What professional practices if adopted now, would help our specialty gain firm ground rather than lose it with health care policy changes?
- What is the smallest change that we could make that would have the biggest impact toward offering our services to every hospital, surgeon and patient in the country?
- What would you do to implement your approach quickly?

Reports

Team 3

We like what team 4 did and think they did a good job. We can tell the surgeons to include the data so that the patient has it and they have it. We can identify literature that is already out there and consolidate it. We might need an auditor for our data.

There is a tendency to be called true positives and we need to define the terms. We have no idea how many cases are out there. The quality of the literature is extremely varied. There has to be an objective evaluation of it.

Team 4

We will decrease surgery time and spring-back procedures. We would differentiate quality of care with or without IONM. We would start the conversation with the surgeon before collaboration happens. We would have them participate in the iONM research. Within the surgery, we can point out how IONM was used. There are plenty of cases where it was not documented and we need to make sure that it is an intimate part of the surgical plan. We need to assess what kind of data is available and needed, and which societies we need to collaborate with.

Team 5 & 6

What does variety of methods mean? We have models of how we provide service. We have in-house and real hands-on as well as remote services and everything in between. We have diverse modalities, groups of people, and deliverable models. This variety and ability to be remote allows us to offer and promote services where we wouldn't otherwise be able to do so. Depending on the need, we would offer different services.

We need to have a timely adoption of guidelines. If we don't do it, then someone else is going to do it for us. We need to collaborate with other societies. The biggest bang for the buck is letting patients know about IONM and have us become consumer driven. We can do that through patient-centered education and a viral marketing campaign. To get our information out there usually costs big dollars like the pharmaceuticals spend, but viral marketing is cheaper. We need something with a lot of pizzazz.

Let's put out a date before we leave for when the next summit is. We need an access point where people can reach us. I see that time and again from my own website.

Team 7 & 8

The approach to build credibility was to provide guidelines for a specific set of procedures. The proper utilization of monitoring would be shown because payers appreciate that. The best way to find out what a payer wants is to ask them about outcomes and what didn't meet their needs. We need to speak with one voice. We need to educate payers and get in on the managed care meetings.

Team 9

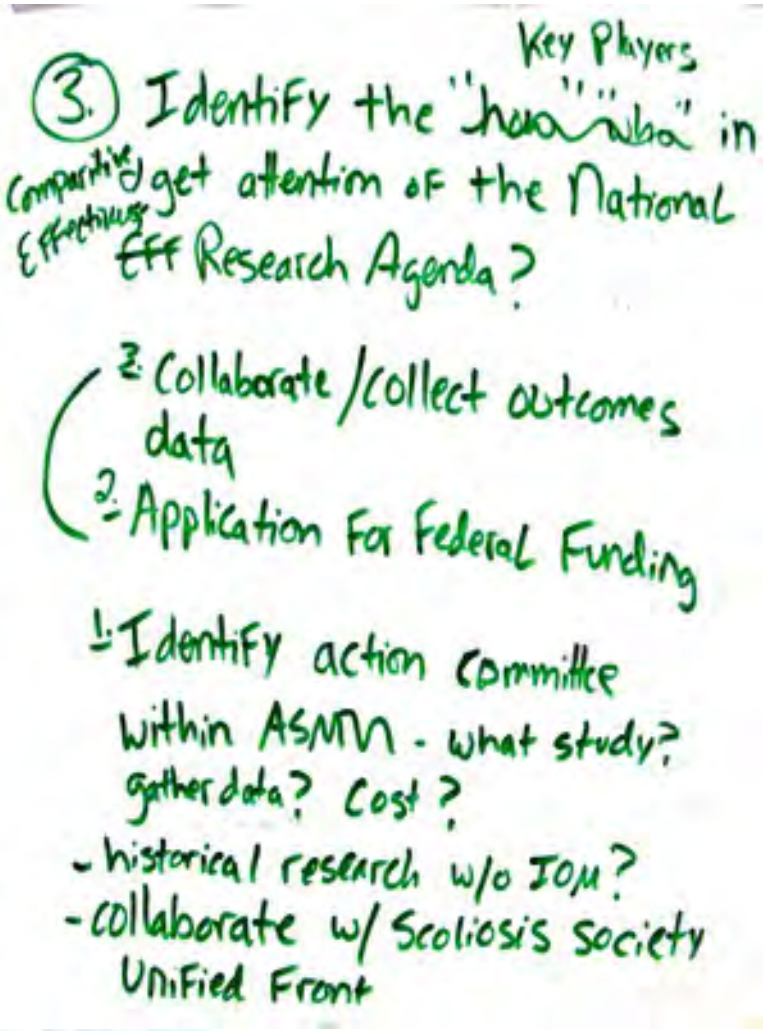
We're leaving the patients out of the question. A good goal of all IONM societies should be how to educate our patients on what we do. This might be done somewhat in private practice, such as on the websites. Most patients use Google or other search engines to learn about their disease. So perhaps we could use agencies and businesses that can put our societies' sites up at the top of the search rankings. Maybe a patient specific IONM site could be up there at the top. This might help sustain the business model. We have some of the finest minds in IONM but forming a good business model is hard for us.

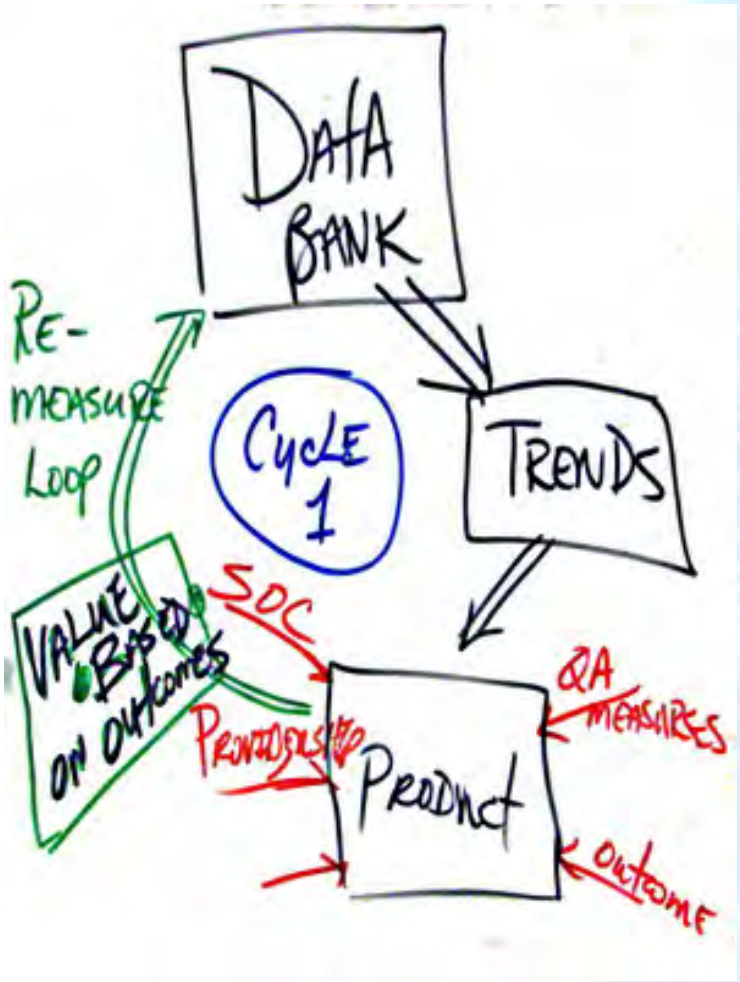
We would like to have IONM patient info websites from several professional societies. We know that the more experienced practitioners catch more Alert episodes than the lesser experienced from the literature. As a society and profession we need to be able to prove to the payers that IONM is as valuable as it really is.

Team 10

Value is based on outcomes. We would build a database with an internal validity for us and have payers look at it externally. We have to stop looking at payers as insurance companies. We need to keep value in our stuff. In the loops here you can see how this becomes a quality index. It will not become a question of whether or not we are needed but how best we are needed for quality. Here we have our implementation plan which includes a lot of communication. Today we have a library and clinical series. We don't have the database but we have some pieces of it. We need to communicate in a clear consistent voice.


1. Appach to Surgeons/Patients
- Define the "product". Value
2
- outcomes data / Reporting Data
- Patient safety
- ↓ surgery time via confidence
- ↓ bring back
- differentiate quality of care w/ IOM or w/o IOM.
- Brochures / pre-op info
- Surgeons advocate through dictation, word of mouth, participate in IOM research
- Payers/Healthcare Facilities
- outcomes ↓ $ liability
- Reporting Database Financial / Cost Savings Data


Key Players
3. Identify the "how" "who" in
Comparative Effectiveness get attention of the National
Eff Research Agenda?
3. Collaborate / collect outcomes data
2. Application For Federal Funding
1. Identify action committee
within ASMN - what study?
gather data? Cost?
- historical research w/o IOM?
- collaborate w/ Scoliosis society
Unified Front



PAYERS

① approach for EDUCATING & BUILDING relationship ⇄ PAYERS to build credibility
- Provide guidelines, credentialing info, appropriate util of monitoring
- Involve payers with discussions about coverage + research, existing literature
- Safety data
- Speakers for education conf. for MC and Dir.

② for PAYERS... how is cost effectiveness of IONM best documented + communicated
- Total cost of care/procedure or disease/ with and w/o mon.
long term
- All involved societies speak ⇄ one voice

③ how we reinforce our VALUE in each interaction we have ⇄ payers
- Two sentence executive summary included in notes sent to payers ⇄ claim.

④ what to do to implement our approach QUICKLY
- Proactive dialogue ⇄ payors - understand their needs
- Speakers @ MC meeting
- Educate Payors

Call for Action (Next Steps)

Bernie

I want to thank all of you for your participation. To the group who helped organize all of this and Leslie and Diane for assisting us and all of you who spent your time in contributing here.

The value of this weekend happens from this point on. Each of us should attempt, to the extent possible, to get our societies to buy into the work we have done here. The process really begins now. We have a lot to do starting from this point and there are things that all of you can do.

We had representation from the professional societies and constituencies and degrees. We want to have cross-collaboration and use this material for the future agenda. I look forward to seeing you at the next Summit.