

## Guest Editorial

# Integrating Evidence-Based Perfusion Into Practices: The International Consortium for Evidence-Based Perfusion

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**Abstract:** There is surmounting pressure for clinicians domestically and abroad not only to practice evidence-based perfusion, but also to supplement practice with documentation thereof. In this editorial, I shall describe an international initiative aimed at embracing this dictum from patients, regulatory bodies, and payers.

“Research is the only hope that the future will be different than the past”—Daniel Mintz, MD

“Practical men who believe themselves to be quite exempt from any intellectual influences are usually the slaves of some defunct economist. . . . It is ideas not vested interests which are dangerous for good or evil.”—John Maynard Keynes *JECT. 2006;38:297-301*

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What are the origins of how clinicians practice their trade (Figure 1)? While there are many avenues by which this may occur, traditionally there are four: 1) what we were taught in school, 2) our best judgment, 3) the best of intentions vis-à-vis our intuition and motivation to deliver quality care, and 4) local practice patterns that may influence or drive our practice. Nonetheless, gaps still exist between the outcomes stemming from current clinical practice and that to which we aspire. The goal that we share may be characterized as being patient-centered, that is, catered to the individual’s risk profile and unique presentation, grounded in evidence stemming from the peer-reviewed literature.

Therefore, what are the current obstacles that prevent us as a community from achieving our share goal of delivering optimal care?

From my perspective, there are at least six current obstacles.

### Development of Evidence-Based Guidelines

As stated in a previous editorial in this journal, there continues to be an enormous volume of new research that is published every year in the peer-reviewed literature concerning the practice of cardiopulmonary bypass (1). Interpreting and synthesizing this evidence requires the active engagement by the reader. Even so, seating new



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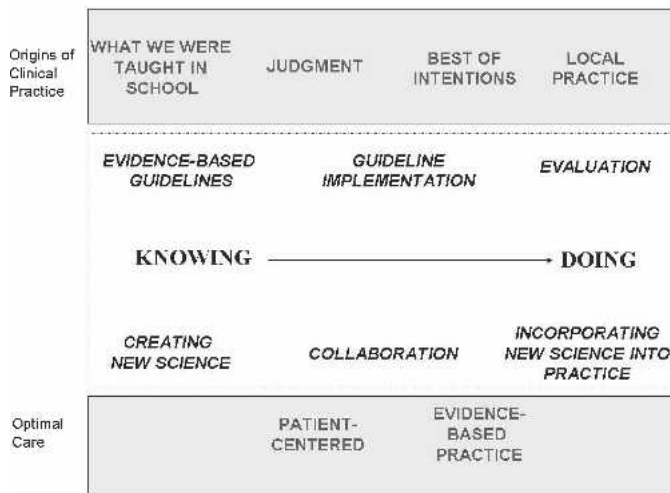
evidence in the context of existing and perhaps conflicting evidence is not a small or insignificant task. The development of evidence-based guidelines would assist clinicians in knowing the “state of the evidence” concerning the practice of cardiopulmonary bypass.

### Creating New Science

Research should be the underpinning of perfusion and other clinical enterprises, but unfortunately, personal preference, bias, marketing, and financial gain have often influenced and supplanted research. The creation of evidence-based guidelines will identify areas of the practice of cardiopulmonary bypass that are lacking in sound sci-

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**Figure 1.** Roadmap of translating knowledge into practice.

ence. It will be the responsibility of the profession at large, once these areas have been identified, to prioritize and subsequently fill these gaps with new and sound research. The practice of perfusion will benefit from this responsive approach to gaps in current knowledge.

### Implementation of Evidence-Based Guidelines

Guidelines are only useful if they are used to guide current care. Often, guidelines may not be used. They are often created as reference manuals, without the authors necessarily considering how they might be used not only to guide care but as part of clinical practice. Future guidelines will need to be written in such a way that clinicians may readily adopt them into their practice.

### Collaboration Across Centers and Professional Organizations

No one individual, medical center, or professional body has a monopoly on knowledge. Unfortunately, for several reasons, including competition, lack of free time, etc., it is often difficult for individual clinicians to foster collaboration regarding professional issues. Undoubtedly, however, some collaborations are successful. We have been quite fortunate in northern New England to have benefited from a voluntary collaborative effort with eight institutions performing cardiovascular interventions in Maine, Vermont, and New Hampshire (2). Through this effort, we have witnessed sustainable reductions in mortality and morbidity and tackled important issues relevant to providers in our region. Nevertheless, opportunities still remain to improve further the quality of care that is delivered to patients every day in our region. This continued progress will not be possible without a multi-disciplinary, multi-institutional approach. Each institution and individual has brought, and will continue to bring, a unique perspective

and skill set to the table for the betterment of the patients we serve.

### Evaluate Clinical Practice

Avedis Donabedian, MD, MPH, was a general practitioner, scholar, and teacher. One of his fundamental contributions to mankind was the notion that quality of care is intricately related to the mechanism by which it is delivered (i.e., the system of care). Donabedian was instrumental in clarifying the linkage between scholarly work (that we may term research) and action that was the responsibility of the provider.

“In all my work I have tried to embody the passionate conviction that the world of ideas and the world of action are not separate, as some would have us think, but inseparable parts of each other. Ideas, in particular, are the truly potent forces that shape the tangible world.”—Avedis Donabedian (1986)

As Donabedian has taught us, the key to evidence-based practice is to appreciate the relationship between structure, process, and outcomes (3). That is, not only does it matter (outcomes) how you practice (process), but where, or the context in which, you practice (structure). Without a mechanism for evaluating these relationships, the evolution of practice cannot occur.

One mechanism for bridging the gap between knowing and doing is a clinically based registry. A registry has the ability to track information, not only clinical outcomes, but critical information concerning a patient’s disease process to account sufficiently for potential confounding factors. To track the implementation of guidelines, one would also include variables that characterize whether clinicians practiced evidence-based perfusion. By doing so, one could determine whether centers that adopt evidence-based practices have better outcomes than centers that do not, even after adjusting for potential confounding factors.

### Incorporating New Science Into Practice

The incorporation of new science into practice is not a trivial matter, but nonetheless critical for ensuring evidence-based practices. Keys for achieving this aim include formulating a team of dedicated individuals, identifying a dedicated time for the team to meet, sharing and distributing the evidence-base to team members, identifying obstacles for the incorporation of new science into practice, and testing interventions for overcoming these obstacles. Many individuals consider this the “grunt” work, but undoubtedly this step is where the “rubber hits the road.”

## A PROFESSIONAL APPROACH

The perfusion community has recognized the importance of developing, promoting, and implementing perfu-

sion practice based on evidence-based medicine. This has led to the formation of the International Consortium for Evidence Based Perfusion (ICEBP), a group involving many domestic and international perfusion societies. In an effort to coordinate our efforts and seek deeper involvement from our professional colleagues, the ICEBP organized a dedicated conference focused on implementing evidence-based principles into perfusion practice.

The American Society of Extra-Corporeal Technology (AmSECT) has led the development of the ICEBP. The ICEBP is a joint venture of a growing number of international perfusion societies. Currently, AmSECT, the American Academy of Cardiovascular Perfusion, the Australasian Society of Cardiovascular Perfusion, the Japanese Society of Extracorporeal Technology, the Canadian Society of Clinical Perfusion, the German Society of Cardiovascular Engineering, and the European Board of Cardiovascular Perfusion have agreed to participate in the ICEBP.

The mission of the ICEBP is to continuously improve the delivery of care and outcomes for surgical patients through peer review of scientific publication by

- Developing evidence-based guidelines for extra-corporeal circulation.
- Promoting the integration of these guidelines into clinical practice.
- Identifying gaps in the medical literature.
- Encouraging research in areas where evidence is lacking.
- Evaluating improvement in surgical care related to the adoption of the guidelines.

To accomplish this initiative, the ICEBP has developed a principle steering committee with subcommittee structure (Figure 2). The steering committee oversees the work of eight subcommittees: a clinically based registry, pediatric process improvement, communications, evidence-based guideline writing group, educational, research development, adult process improvement, and scientific sessions. These subcommittees serve to conduct the necessary work of accomplishing the mission of the ICEBP and report their progress to the steering committee. Each subcommittee is required to report on their progress on a quarterly basis to the steering committee.

At least one member from the steering committee is represented on each subcommittee.

#### **Clinically Based Registry Subcommittee**

The mission of the registry subcommittee is to maintain a registry of the practice of cardiopulmonary bypass and synthesize and share useful and actionable clinical infor-



mation from this registry to engage and improve continuously the care provided to patients. The registry will provide reliable and contemporaneous information to clinical teams conducting cardiopulmonary bypass. This information will enable teams to assess their performance and identify how they perform as it relates to regional, national, and international benchmarks. Additionally, this registry will afford the opportunity for addressing important and timely research questions for improving not only the care of patients but also the science of cardiopulmonary bypass. Registries should cover areas for adult as well as pediatric perfusion.

It would be the goal of this subcommittee to work with participating perfusion societies to encourage their membership to participate in this registry, with consideration of including participation in the registry as a practice standard.

#### **Pediatric Process Improvement Subcommittee**

The mission of the pediatric process improvement subcommittee is to develop, foster, and promote process improvement in the delivery of perfusion services for neonatal, infant, and pediatric patients. The focus of this subcommittee is the practice of cardiopulmonary bypass and extracorporeal membrane oxygenation (ECMO). Areas of study are identified through reports generated by the clinical registry and guideline writing subcommittees.

This initiative will not be successful without providing the requisite skill sets to the clinical teams. This subcommittee, in collaboration with the adult process improvement subcommittee, will be charged with developing and implementing a quality improvement training module. This training module will provide hands on and interactive training in the principles of quality improve-

ment, team and leadership training to clinical teams caring for neonatal, infant, and/or pediatric patients. Teams will learn how to evaluate their current practice and design tests of change, assessing whether changes result in improvement. Teams will also learn the concepts of measurement and systems assessment and how to overcome organizational obstacles. Training will occur initially at key pilot sites that house early adopters and innovators in our profession.

Subsequent to the training module, process improvement projects will be developed and implemented regionally, nationally, and internationally. Interventions will be assessed through the clinically based registry.

### **Communication Subcommittee**

With any large initiative, it is imperative to have a unifying voice and vision. The mission of the communication subcommittee is to coordinate communication regarding initiatives of the ICEBP with the perfusion communities and societies. The focus of this subcommittee is to integrate itself with existing international societal communication committees when they exist. The ICEBP recognizes that it is imperative to leverage existing infrastructure within the international perfusion societies to promote and integrate the ICEBP initiatives. When these infrastructures do not exist, the ICEBP communication subcommittee will be helpful in creating one. Accordingly, membership on this subcommittee will include representatives from the international societies' communication committees.

The communication subcommittee will identify and devote resources to promoting the ICEBP mission through a variety of media and print channels. The subcommittee will explore the use of the Internet, listserves, "dotProject.net," and newsletters.

### **Educational Subcommittee**

The mission of the educational subcommittee is to integrate the principles of the ICEBP into the existing infrastructures responsible for training new and existing perfusion professionals. This subcommittee will be tasked with identifying the core skill sets necessary for new and existing professionals for practicing evidence-based perfusion. Curricula will, when possible, have commonalities throughout membership organizations. Curricula will include, but not be limited to, quality improvement methodologies, critical appraisal of the peer-reviewed literature, and data collection and synthesis.

This subcommittee will coordinate efforts with the international accreditation boards of cardiovascular perfusion to integrate these principles into credentialing process. This subcommittee will also study avenues for including the ICEBP principles as a mandatory component of

the continuing educational credits for existing perfusion professionals.

### **Evidence-Based Guideline Writing Subcommittee**

The mission of the guideline writing subcommittee is to develop evidence-based clinical practice guidelines for cardiovascular perfusion. This committee would adopt the methodology used by the American College of Cardiology/American Heart Association (ACC/AHA) guidelines writing group. These guidelines would be written and subsequently updated to remain concurrent with the medical literature. The use of these guidelines in practice would be tracked through the clinical registry subcommittee.

Each guideline would be submitted to the participating perfusion organizations for their review and endorsement before submission for publication. Involvement of representatives from each of the participating perfusion organizations in the guideline writing subcommittee should reduce any un/anticipated hurdles for the endorsement of any given guideline.

### **Research Development Subcommittee**

The mission of the research development subcommittee is to identify, conduct, and disseminate new knowledge concerning the practice of perfusion services. This subcommittee will use data from the clinical registry for any and all analyses. Areas of study would include, but are not limited to, gaps identified by the clinical guideline subcommittee.

### **Adult Process Improvement Subcommittee**

The mission of the adult process improvement subcommittee is to develop, foster, and promote process improvement in the delivery of perfusion services for adult patients. Areas of study will be identified through reports generated by the clinical registry and guideline writing subcommittees.

This initiative will not be successful without providing the requisite skill sets to the clinical teams. This subcommittee, in collaboration with the pediatric process improvement subcommittee, will be charged with developing and implementing a quality improvement training module. This training module will provide hands on and interactive training in the principles of quality improvement and team and leadership training to clinical teams caring for adult patients. Teams will learn how to evaluate their current practice and design tests of change, assessing whether changes result in improvement. Teams will also learn the concepts of measurement and systems assessment and how to overcome organizational obstacles. Training will occur initially at key pilot sites that house early adopters and innovators in our profession.

Subsequent to the training module, process improvement projects will be developed and implemented regionally, nationally, and internationally. Interventions will be assessed through the clinically based registry.

### Scientific Sessions Subcommittee

The mission of the scientific sessions subcommittee is to develop and organize an annual scientific meeting focused on meeting the goals of the ICEBP mission statement. The scientific meeting (the inaugural "Best Practice 2006" meeting was held this year in Bellevue, WA) will cover topics related to all other subcommittees. In addition, the subcommittee will be charged with examining areas into which the meeting can grow to allow demonstration of sustained improvement in the care provided to patients.

### CONCLUSION

It is the hope of this author that the ICEBP will assist the professional perfusion organizations in going from knowing to doing.

How will the ICEBP measure success? In part by

- Active engagement in the ICEBP from international societies through their membership
- Improved awareness and adoption of evidence-based principles and practices
- Improved patient outcomes
- Collaboration within and across professional societies

A listing of the current steering committee members is included in the Appendix of this editorial.

### REFERENCES

1. Likosky DS. A primer on reviewing and synthesizing evidence. *J Extra Corpor Technol.* 2006;38:112–5.
2. Nugent WC. Building and supporting sustainable improvement in cardiac surgery: the Northern New England experience. *Seminars in Cardiothoracic and Vascular Anesthesia.* 2005;9:115–8.
3. Donabedian A. Evaluating the quality of medical care. *Milbank Mem Fund Q.* 1966;44(Suppl):166–206.

## APPENDIX: INTERNATIONAL CONSORTIUM FOR EVIDENCE-BASED PERFUSION

### Executive Committee

- R. Baker
- T. Dickinson
- D. Likosky
- K. Shann

### Steering Committee

- T. Dickinson
- R. Groom
- D. Likosky
- J. Riley
- D. Rosinski
- B. Searles
- K. Shann
- A. Stammers (American Society of Extracorporeal Circulation)
- R. Baker (Australasian Society of Cardiovascular Perfusion)
- T. Willcox (Australasian Society of Cardiovascular Perfusion)
- J. Sistino (American Academy of Cardiovascular Perfusion)
- D. Jones (Canadian Society of Clinical Perfusion)
- D. Hubble (Canadian Society of Clinical Perfusion)
- H. Weitkemper (German Society of Cardiovascular Engineering and the European Board of Cardiovascular Perfusion)
- H. Darban (Saudi Arabia Society of Extracorporeal Technology and Iranian Society of Extracorporeal Technology)
- K. Yoshida (Japanese Society of Extracorporeal Technology)
- Y. Yahi (Japanese Society of Extracorporeal Technology)
- S. Minami (Japanese Society of Extracorporeal Technology)
- Q. Gong (Chinese Society for Extracorporeal Circulation)