



# If Charles L Scudder Could See Us Now

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Right after I was asked to give this year's address, I learned that we lost Frank Mitchell. Shortly after that I found out that we lost Erwin Thal, and it was just a kick in the gut to me. I had lost a close family friend in the same month and I could not reconcile these losses. It was hard to figure out what we were going to do without these people. They had been there for so long, providing us with wisdom, leadership, and advice.

And then we lost Norm McSwain. So I thought a lot about the topics that I wanted to put together for this presentation. I almost made this a eulogy to those 3 and I will, in a way, but I wanted to really take advice that LD Britt gave me, which is, "Someone needs to talk about the contributions of the Committee on Trauma (COT) over the last 20 years." Because I have been associated with the COT for that long, I thought that would be a good topic and a way to commemorate, recognize, and thank these previous giants in surgery (Fig. 1), who helped us get where we are today.

## The Premise

I propose that we are on a platform better prepared than any other specialty or any other disease to face the challenges of the payor system in the future and to face the challenges that our patients are going to bring to us. We have, by vision, by lots of determination, by the hard work of people all over the US, and by some visionary leadership, not including me but others, placed ourselves in the position to deliver value to society when it comes to treating the injured patient. The premise is, if we ensure the right infrastructure—provide people, equipment, and hospitals, as we do through verification; if we provide the tools—in Advanced Trauma Life Support (ATLS) and other courses; if we set high standards for ourselves; if we use the right risk-adjusted and valid data, in which we can believe as deliverers of care and designers of systems; if we obtain external validation of those

data by objective people who know what they are doing, then I would argue that we are positioning ourselves to better manage patients in the future than any other existing disease managing group. Foundations of this premise are shown in Table 1.

## Formation of the Committee on Trauma by Regents

I will quickly give you some background, and want to review the major contributions of the COT. In 1909, Sir Arbuthnot Lane came from England to the American Surgical Association and started pushing the idea that we ought to be fixing fractures early. Dr Scudder heard this and gathered together about 20 people at Massachusetts General Hospital to study the concept and see if it could be done. They began to work on those patients in that way, recorded the results, showed those results were right, and took those data to the Regents of the American College of Surgeons (ACS).

These are the minutes of that meeting of Regents:

*"After general discussion of the report (May 1922) the following resolution was unanimously carried and the following committee appointed:*

*BE IT RESOLVED that a committee be appointed to formulate a plan of action to present to the Board of Regents in according with the report presented by Dr. Scudder.*

*BE IT FURTHER RESOLVED, that this committee shall be comprised of the following:*

*Dr. Charles L. Scudder*

*Dr. Joseph A. Blake*

*Dr. William Darrach*

*Dr. William O'Neill Sherman*

*Dr. Robert B. Osgood*

*Dr. Kellogg Speed*

*Dr. Astley F.C. Ashhurst*

*Dr. William L. Estes*

*Dr. George W. Hawley"*

And that was all there was to it. That created the Committee on Fractures. It subsequently merged with the Committee on Industrial Injuries to become the COT. This is the origin of what we do.

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### Abbreviations and Acronyms

ACS	= American College of Surgeons
ATLS	= Advanced Trauma Life Support
COT	= Committee on Trauma
NTDB	= National Trauma Data Bank
TQIP	= Trauma Quality Improvement Program
VRC	= Verification Review Committee

### History of the Committee on Trauma

George Stephenson wrote a classic article, “The Committee on Trauma: Its men and its mission,” describing the history of the COT<sup>1</sup> in the October 1978 *Bulletin of the American College of Surgeons* (ACS). According to Stephenson, Dr Scudder organized the Committee on Fractures by appointing 12 members as area chairmen, with 66 local chairmen. So the beginning of the COT was organized at the grass roots level by Fellows of the College. They then had those folks go and try fixing fractures, try dealing with that! They came together annually, sometimes semiannually, to write up their findings. These results became the recipes and syllabi for the treatment of the injured patient with fractures. As stated by Stephenson, “It is not possible to judge the relative value of the various programs of the COT over the years, but the production of manuals, posters, and other publications may well be its greatest legacy.” There are 50 drawers or more filled with snake bite posters, burn management posters, and original treatises on how to manage injuries—it is a huge body of work. One might argue that the scholarly works were the most important part of the COT up to that time. They also had tremendous contributions: defining what ambulances should be like, training prehospital people, and defining what hospitals should have in order to properly treat fractures. This was the state before the modern era.

### The modern era

I define 1979 as the beginning of the modern era, because this is the year that a proposal was presented to the Board of Regents of the ACS to institute a course called Advanced Trauma Life Support (ATLS). The Board of Regents approved the proposal and the first edition of the ATLS manual was developed. As you all know, the course was motivated by the crash of a plane by Dr Styner in Nebraska (Fig. 2). He worked with his partner and colleague, Skip Collicott, who was connected to the ACS, to create the prototype course. This first edition provider’s manual was the result of the collaborative efforts of Dr Collicott, Irvine Hughes, Brent Krantz, and others. The College invested about \$80,000 to

publish the manual and organize courses to take around the country—and what a return on that investment! The inaugural course was in 1980. Now, you can download the 9<sup>th</sup> edition of this book, which has many user-friendly features. It has been disseminated throughout the US and the world. It is a truly international course, with approximately 75,000 downloads in 176 countries. It is the transformative product of the COT and a result of their intellect, commitment, and foresight. For this, we owe a special thanks to Skip Collicott and Ms Irvine Hughes. It was a challenge to find a picture of Ms Hughes and I wish she were here so that we could applaud her efforts. She was a driving force behind this effort and ran the program for decades. Figure 3 shows Irvine Hughes and Erwin Thal; the picture was taken during the introduction of the course in Israel.

We also owe a special thanks to the previous chairs of the ATLS Committee (Table 2). Our chair since 2013, Sharon M Henry, has evolved the ATLS course to become a true multimedia learning experience that provides flexible, on demand, and dynamic pathways to educating a new generation of providers. This one data-driven and validated educational tool, which teaches and provides a safe way to take care of a trauma patient, has been an essential pillar of the infrastructure of the ACS trauma programs.

### Other American College of Surgeons Trauma Programs and courses

Since this first effort, the ACS has adapted this approach for medical students: the Advanced Trauma Operative Management (ATOM) course, for which we owe a huge debt to Len Jacobs, and the Advanced Surgical Skills for Exposure in Trauma (ASSET) course, which, to my recollection, was started by Demetrios Demetriades and Juan Asensio. Other trauma education courses include the Disaster Management and Emergency Preparedness course, started by Rick Frykberg, and the Rural Trauma Team Development Course, which, to my recollection, Tom Foley brought to us on scraps of paper that he had typed up himself! Bridget Blackwood pulled it together and created something that is a major contribution to public health. These are other foundations of the ACS trauma infrastructure (Fig. 4).

And I must not omit Norman McSwain, whose slogan, “What have you done for the good of mankind lately?” was how he lived his life. I had the honor of introducing him for his Scudder Oration,<sup>2</sup> and the part that I remember most is a quote from the Emergency Medical Services in New Orleans, which is apparently recorded and can be listened to, “This is McSwain. I’m bringing you a 22-year-old man who has been shot.” The receiving hospital replies, “Where has he been shot?” McSwain



**Figure 1.** Giants in surgery. (A) Franklin L Mitchell Jr, MD, 1930–2014; (B) Erwin Thal, MD, FACS, 1936–2015; and (C) Norman E McSwain Jr, MD, FACS, 1938–2015.

replies, “I don’t know, I haven’t shot him yet.” Norman lived life to the fullest and worked tirelessly to make the world better, safer, and healthier. He was a tremendous contributor to the Prehospital Trauma Life Support Course and was one of the earliest, best, most profound supporters of ATLS. He was a mentor to many of us and will be sorely missed.

**Table 1.** The Premise for Preparing Ourselves to Deliver Value to Society in Treating Injured Patients

Foundation	Supporting programs
Build infrastructure: people, equipment, hospitals	Advanced Trauma Life Support; Rural Trauma Team Development Course; Advanced Surgical Skills for Exposure in Trauma; Advanced Trauma Operative Management; Disaster Management and Emergency Preparedness; Trauma systems; Emergency Medical Services; International Injury Care Committee; Performance Improvement and Patient Safety; Verification, Review, and Consultation; Prevention
Set high standards	Verification, Review, and Consultation; Trauma systems
Use the right data	Trauma Quality Improvement Program; National Trauma Data Bank; Performance Improvement and Patient Safety; Emergency Medical Services; International Injury Care Committee; Verification, Review, and Consultation; Prevention
Verify	Verification, Review, and Consultation; Trauma system consultation, Trauma Quality Improvement Program

I want to thank Frank Mitchell, Charlie Wolferth, and Hank Cleveland, founders of the Kansas City, the Eastern States, and the Las Vegas trauma courses, respectively (Figs. 5A–C). As an essential part of our infrastructure, these presentations educate thousands of trauma providers in this country and support the Resident Trauma Papers Competition every year from the marginal course proceeds. As a public service announcement and a word from our sponsor, I strongly believe in supporting our residents and fellows through the fellowship fund of the ACS. I urge everyone to join me in contributing to the Resident Trauma Papers Competition fund.

I also want to thank the current course directors (Fig. 5D–F). We owe a great debt to Dr Mattox, who has created an exemplary course in Las Vegas. Through the science of performance improvement and commitment to excellence, Dr Mattox’s course is internationally famous and has thousands of attendees. Dr Britt presents the Eastern States course called Point/Counterpoint, and



**Figure 2.** A plane crash by Dr Styner motivated the development of the first Advanced Trauma Life Support course.



**Figure 3.** Special thanks to Paul Collicott (left), Irvene Hughes (right, back row, center), and Erwin Thal (right, front row, center).

apparently, he is going to hand that off to Dr Scalea next year. Dr Britt runs a meeting in a way that no one else can, so Dr Scalea has a hard act to follow! Reg Burton runs the course in Kansas City, which I think is the longest standing course.

### Resources for Optimal Care of the Injured Patient

Another COT accomplishment is the creation of the *Resources for Optimal Care of the Injured Patient*, in which we set the standards for hospitals for trauma care. Before this document, when trauma centers were first beginning in the 1970s, they were struggling. Trauma was the stepchild of the hospital population and was perceived to be an inner-city hospital problem. It was hard to get resources from the hospital administration and impossible to get operating room time for trauma patients. In the 1980s, it was hard to get computer assisted tomography (CAT) scanners, nurses, or providers to take trauma call. The “Resources” document articulates the standard of what we need to provide patients with optimal care. It sets the expectation that we will be there and prepared when the patient arrives at our hospital, and holds providers accountable. The metaphor that it is “hard to boil a frog” applied to our growing need. The

expectations put forth in the “Resources” document allowed trauma programs to leverage changes in their hospitals all over the country. Clearly, this has been one of the most important contributions to trauma care anyone could make, and it created standards for outcomes-based verification of trauma centers (Fig. 6). Frank Lewis, whom I admire greatly and who would know something about accreditation, says that the trauma center verification process is probably the most robust accreditation process of those he knows. Of course, he is most familiar with the Residency Review Committee (RRC) and Surgery, so you can understand his standards are low! But he would still think that Verification Review Committee (VRC) sets a pretty high bar for verification and accreditation processes.

### From standards creation to outcomes-based verification

The original VRC started reviewing programs based on the principles set forth in the ACS *Bulletin* article. They did trauma center site visits and verifications, wrote up visit reports and convinced the Board of Regents to support the VRC authority. It was a serious undertaking. I have it on great authority that when they took this idea to the Board of Regents (Dr Trunkey describes it as, “nothing serious, just a little chat with the boss.”), Dr Trunkey was brought into Rollo Hanlon’s office and severely scolded and told, “Thou shalt not do this. This is heresy.” This was a serious hurdle that took courage on the part of the VRC to overcome. Hank Cleveland said at the next COT meeting, “If we don’t get this done, we’re going to spend the rest of our lives doing nothing but writing snakebite posters.” They were convinced that they needed to do this because it was not only important, but it was the right thing to do. They not only summoned up the courage to persist, but also the data, with an accurate enough design to support their position. They were able to convince the Board of

**Table 2.** Advanced Trauma Life Support Chairs, Past and Present

Chair	Years
Paul E Collicott	1980–1987
Max L Ramenofsky	1987–1991
Brent E Krantz	1991–1995
Richard M Bell	1996–1999
Steve N Parks	1999–2003
Christoph Kaufmann	2003–2007
John Kortbeck	2007–2010
Karen Brasel	2010–2013
Sharon Henry	2013–



Figure 4. Other American College of Surgeons trauma programs and education courses.

Regents to proceed with developing what is now called the Verification Process, approved in June 1987. One of the greatest sticking points and the hub of the debate was whether it would be appropriate to go to the hospitals

of all our Fellows and report if they were or were not certified or allowed to take care of trauma patients. This issue was ultimately resolved by having the process of verification be defined as confirmation of the presence of a list of



Figure 5. Course founders (A) Frank Mitchell, Kansas City Trauma Course; (B) Charles Wolferth, Eastern States Trauma Course, Point/Counterpoint; (C) Hank Cleveland, Las Vegas Trauma Course; and current trauma course directors (D) Reg Burton, (E) LD Britt, and (F) Ken Mattox.



**Figure 6.** The process from standards creation to outcomes-based verification.

optimal resources for caring for injured patients. This has been the backbone of the Verification Program ever since. It was the stroke of genius without which we would not have trauma center verification. We would not have the standard that verification represents or this invaluable tool to leverage hospitals to create today’s trauma systems.

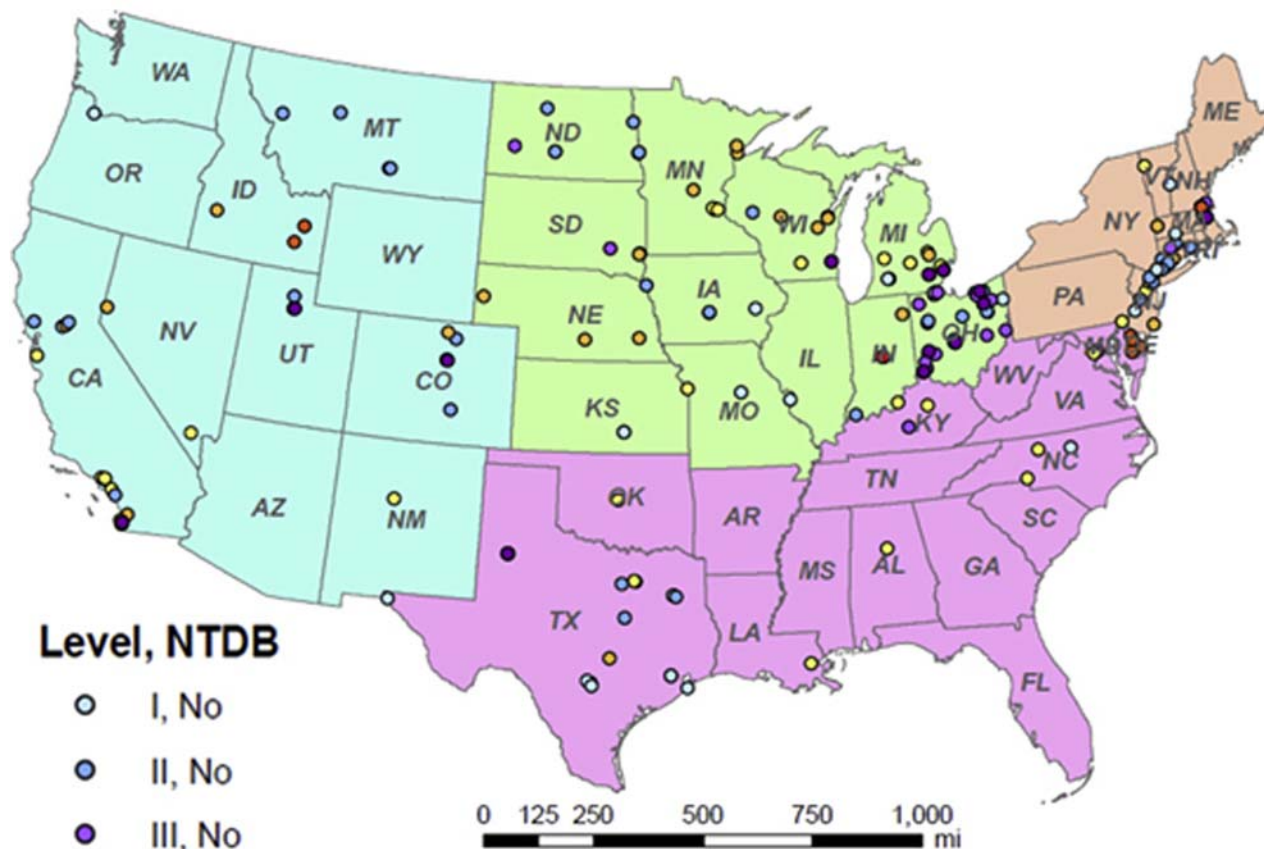
The most recent *Resources* book<sup>3</sup> was released in October 2014 and was implemented in July 2015. Those who have been involved in producing each edition of the *Resources* book realize what a tour de force it is to create

this document. Frankly, having been engaged in the process since the original Orange Book, I know it is now much easier to get consensus on concepts than it was then. Wordsmithing the document, however, remains a constant challenge.

**Growth of the Verification Program and organized trauma systems**

There has been incredible growth in the Verification Program, both in terms of the number of visits and in the number of verified trauma centers. The effect of trauma systems has been evaluated by many studies<sup>4,5</sup> and revealed a 25% reduction in mortality for seriously injured patients treated in trauma centers. The location of US trauma centers is shown in Fig. 7.

I want to thank the Verification Committee chairs for their tremendous effort and dedication to the verification process; they may have the most demanding job in the COT. It is nights and weekends, phone calls in airports from reviewers, and imploring, sometimes even harsh, comments from your friends to overlook their insufficiencies. The valor, integrity, and fairness of these



**Figure 7.** The location of trauma centers in the US. NTDB, National Trauma Data Bank.

individuals are the foundation and fundamental significance of verification. We owe Frank Mitchell, Charles Lucas, Bob Coscia, Tres Mitchell, Chris Cribari, and Rosemary Kozar the greatest debt of gratitude for building and sustaining our Verification Program.

Before 1966, there were no formal trauma centers or systems. There were, however, surgeons in hospitals throughout the country who cared for injured patients. By 2006, several states had completed trauma system consultation, with Montana being the first, in 1999. Several states—Utah, Virginia, and the southwest region in Texas—were in the process; however, most states were without evaluation, facilitation, or consultation. Today, many states have completed trauma system consultation and others are in progress.

### Model Trauma Care System plan

Due to the inspiration and support of the members of the COT in collaboration with the Health Resources Services Administration (HRSA) a Model Trauma Care System was developed. The plan was first conceptualized by Brent Eastman, perhaps inspired by Ric Martinez, who, at the time, was an administrator at the National Highway Traffic Safety Administration (NHTSA). The way I remember it, Bill Schwab gave an informal consultation in Florida as they attempted to create a trauma system. After a time and not without a lot of issues, a viable trauma system was developed. Based on what they had learned in this trial, Bill Schwab urged his colleagues and mentors to formalize the consultation process and challenged Drs Trunkey and Eastman to create the Trauma Systems Consultation committee. Dr Eastman appointed a committee and gave one of the best Scudder Orations I have ever heard.<sup>6</sup> We now have a tremendous number of statewide trauma systems and many that are in progress, dramatically improving the mortality of patients in our country. If you are injured in an accident while

traveling somewhere along the 3,000 miles of Interstate 40 between Wilmington, NC and Barstow, CA, your outcome should depend on your injuries and not the ZIP code in which the accident occurred. We are dramatically better off in terms of uniformity of care and approaching this ideal with trauma center verification, ATLS, and trauma systems. The chairs of the Trauma Systems Committee, Brent Eastman, Bob Mackersie, Mike Rotondo, and Rob Winchell, deserve our heartfelt thanks for this enormous undertaking (Fig. 8).

### Major Trauma Outcome Study

The original Major Trauma Outcome Study (MTOS) was a proposal by Howard Champion and Charlie Frey back in the late 1970s or early 1980s. Not many in the audience are likely to admit they are old enough to have contributed patients to the MTOS. With this proposal, the COT recognized that administrative data were insufficient for improving performance. They realized the need for risk-adjusted, clinically relevant data and the ability to assess the severity of injury. This quality and quantity of data were required to find that “needle in a haystack” bit of information to develop a performance improvement plan and to evaluate outcomes measures.

### National Trauma Data Bank

I think the need for a national database was David Hoyt’s idea, and I witnessed his choice of emblem (Fig. 9). As chair of the National Trauma Data Bank (NTDB) between 2 giants of competence, David Hoyt and John Fildes, I traveled through a valley of humility and was challenged to meet high expectations for data accrual, analysis, and distribution. Dr Fildes took the mission on with a passion and had a talent for doing what I call, “Slap a matrix on it.” He could overlay a grid on anything that defined the parameters of getting things done.



**Figure 8.** The chairs of the Trauma Systems Committee. (A) Brent Eastman, (B) Bob Mackersie, (C) Mike Rotondo, and (D) Rob Winchell.



**Figure 9.** The National Trauma Data Bank: From David Hoyt's idea to a robust system of data accrual, analysis, and distribution.

He lived by the notion that the trauma registry would die if the data were not used. He championed a system to accrue, analyze, and distribute the data. We have gone from reports that were just colored graphs to true performance data, albeit not very well risk-adjusted. There are more than 6 million records with 800 participating hospitals, by far the world's largest collection of trauma center data. An example can be found the monthly NTDB Data Points column in the *ACS Bulletin*. Rich Fantus and John Fildes write a lot of these and I want to thank Chrystal Cadan Price for steadfastly getting the data together.

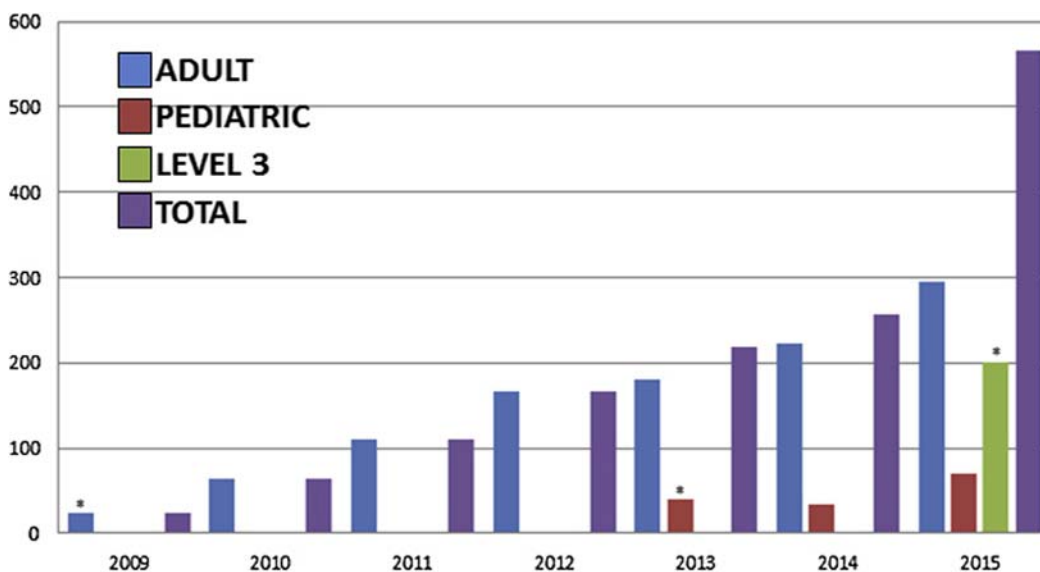
#### Building the National Trauma Data Standard: data dictionary

The first and most important hurdle was achieving consensus on the definition and coding of data in a trauma registry. Dr Fildes masterfully convened the

stakeholders, the vendors who wrote trauma registry programs, and the contributors to those registries, such as the Centers for Disease Control and the American Medical Association. Together, they crafted a data dictionary for records in a trauma registry. This standardization is the basis for the seamless collection, analyses, and consistency of data from all trauma registries today, and we have Dr Fildes to thank for it. I will never forget a horrible meeting we had at which he was trying to get permission to use Abbreviated Injury Scale (AIS) scoring and they wanted to charge for every AIS score that was used. His diplomatic but firm response was, "We will do that after we start paying Fahrenheit every time we use the term *degrees*."

#### Trauma Quality Improvement Program

Another pillar is the Trauma Quality Improvement Program (TQIP). These risk-adjusted, severity-adjusted data help us achieve best practices and move forward in trauma care. In addition to TQIP reports, participating hospitals get benchmarking reports and are able plan and act on those reports. Every trauma center should be participating in TQIP, and you can see we are not quite there yet (Fig. 10). The TQIP has an annual conference at which we share ideas and develop best practices reports for multiple areas in trauma. This moves the bar from measure and act, to plan and do. It has gone from 145 people at the first conference, to 755 attending the 2014 conference. David Hoyt, Wayne Meredith, John Fildes, and Avery Nathens are the chairs of the Trauma Registry/NTDB/TQIP Committees.



**Figure 10.** Growth of the Trauma Quality Improvement Program (TQIP) by program, 2009 to 2015. \*Indicates pilot year.





**Figure 11.** The chairs of the Trauma Registry/National Trauma Data Bank/Trauma Quality Improvement Program committees. (A) David Hoyt, (B) Wayne Meredith, (C) John Fildes, and (D) Avery Nathens.



**Figure 12.** Committee on Trauma chairs, 1966 to present. (A) Oscar Hampton, 1966 to 1970; (B) Curtis Artz, 1970 to 1974; (C) Robert Gillespie, 1974 to 1978; (D) C Thomas Thompson, 1978 to 1982; (E) Donald Trunkey, 1982 to 1986; (F) Erwin Thal, 1986 to 1990; (G) Brent Eastman, 1990 to 1994; (H) John Weigelt, 1994 to 1998; (I) David Hoyt, 1998 to 2002; (J) Wayne Meredith, 2002 to 2006; (K) John Fildes, 2006 to 2010; (L) Mike Rotondo, 2010 to 2014; and (M) Ron Stewart, 2014 to the present.

A special thanks to Avery Nathens, who is currently running TQIP and has just done a great job of converting NTDB to TQIP and carrying that forward (Fig. 11).

#### **Committee on Trauma—duties of the chair**

In 1952, Dr Kennedy outlined the 12 duties of the COT chair: Appoint new members to the Committee, edit annual meeting minutes, prepare the Trauma Symposium at the Clinical Congress, recommend the Scudder Orator to the Board of Regents, approve COT expenses, call meetings of the COT Executive Committee, select section meeting topics, answer COT correspondence, encourage subcommittees to complete their assignments, report to the Board of Regents on COT activities, preside at COT meetings, and arrange the annual meeting agenda. Simple for back then and much more complicated now! At the time, Dr Kennedy could not envisage the effort and commitment of Ronnie Stewart to do this job today. Every day, Dr Stewart is doing something major in his position as COT chair: flying to Washington, writing a report, taking 10 phone calls, getting a talk together, consoling somebody, or helping someone find a chair for their state COT. The enormous responsibility of the COT chair's job warrants our sincerest appreciation and I would like to recognize and thank the past and present COT chairs, especially those whom I knew personally: Dr Hampton, Dr Artz, Dr Gillespie, Dr Thompson, Dr Trunkey, Dr Thal (we need you back), Dr Eastman, Dr Weigelt, Dr Hoyt, Dr Fildes, Dr Rotondo, and Dr Stewart (Fig. 12).

#### **The premise summarized**

I hope I have shown you that the premise of COT's work will pave the way for the next generation of trauma surgeons and care for our trauma patients. It will prepare us to meet new challenges in health care and health care reform. That premise is grounded in providing the right infrastructure, including people, equipment, and training, in setting high standards through verification and trauma system consultation, and in using data verified by external sources to develop best practices and trauma management guidelines. The contemporary COT is led by the chair and supported by 3 pillars: education, advocacy, and quality. It is a marvelous structure!

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