

AVIATION AND HEALTHCARE: THE CRITICAL ROLES OF ACCREDITORS IN ADVANCING SAFETY AND RISK MANAGEMENT

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Commission on Accreditation
of Healthcare Management Education

INTRODUCTION





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Ignaz Semmelweis made one of the most important safety contributions to modern medicine — handwashing. Determined to find out why so many women died from “childbed fever,” the death of a male pathologist provided a clue. Particles from cadavers were being passed to mothers during birth. After implementing hand and instrument washing, deaths decreased. While this should have been celebrated, disgruntled doctors felt they were being blamed for the deaths. They actually stopped washing their hands in flagrant opposition to Semmelweis, arguing that water was the potential cause of disease.

We know that even with protocols in place, risk and potential error cannot be completely eliminated in healthcare. *To Err is Human: Building a Safer Health System*, a groundbreaking book by the Institute of Medicine (US) Committee on Quality of Health Care in America (Kohn LT, Corrigan JM, Donaldson MS, editors, National Academies Press; 2000) featured research from a Harvard Practice Medical Study¹ estimate that 98,000 people died in 1991 due to medical errors. The report rocked the healthcare world; future analysis showed that the initial estimate was grossly understated. By 2016, Johns Hopkins researchers estimated the number at more than 250,000 deaths per year. The number continued to increase, and at some point began to reach the level that destroyed all credibility of medical errors as the cause of death. When a study in the British Medical Journal (2019) concluded that more than 400,000 people died of medical errors each year in the United States, which translates to 62% of all hospital deaths the skepticism that ensued hurt the cause of patient safety.

We need to embrace a thoughtful, reliable approach to understand quality and safety. We need to see healthcare professionals not as sole heroic safety leaders. We need protocols in place (like handwashing) that are embraced. We need practitioners, executives, and the graduates of CAHME Accredited programs to be grounded in competencies that lead to a deep understanding of the complexities of safety management within the nuances of healthcare. This paper draws on the experience of students, academics, executives, practitioners, and policy makers in safety management. The juxtaposition of healthcare and aviation is not to imply a simple solution, but a solution that, in the words of industry icon David Nash, MD, enables “us to build a system that supports true good health for us all, with justice, equity, and compassion.”

¹ American Hospital Association. *Hospital Statistics*. Chicago. 1999. See also: Brennan, Troyen A.; Leape, Lucian L.; Laird, Nan M., et al. Incidence of adverse events and negligence in hospitalized patients: Results of the Harvard Medical Practice Study I. *N Engl J Med*. 324:370-376,1991. See also: Leape, Lucian L.; Brennan, Troyen A.; Laird, Nan M., et al. The Nature of Adverse Events in Hospitalized Patients: Results of the Harvard Medical Practice Study II. *N Engl J Med*. 324(6): 377-384,1991.



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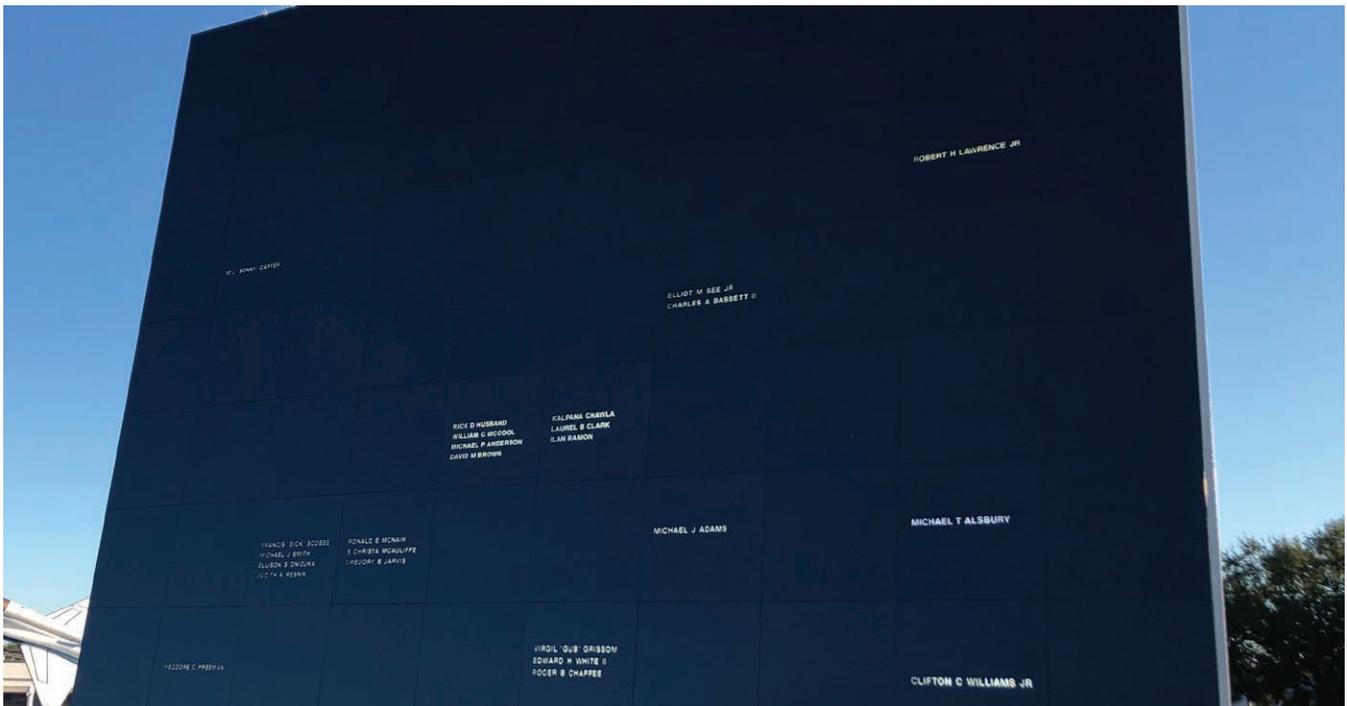
The Boeing 747 captain taxied the jumbo jet across the tarmac to the international terminal at the end of an eleven-hour trans-Pacific flight from Tokyo to Los Angeles. Before turning off the seatbelt sign allowing the passengers to disembark, the captain made a PA announcement, “Ladies and Gentlemen, you have just completed the safest part of your journey. When you leave this airplane, wherever you go and however you get there; it will not be as safe as your flight was tonight. So please, drive safely on the busy roads of Los Angeles”. The captain spoke the truth. According to research by Harvard University, flying in the US, Europe and Australia is significantly safer than driving a car.

From the first powered flight on December 17, 1903, at Kill Devil Hills, North Carolina, safety has been the aviation guidon, leading the industry from a bicycle shop to the current \$841.4bn global industry. Safety slogans have hung in every airplane hangar from the Wright Cycle Shop in Dayton, OH to the 8-acre Vehicle Assembly Building at NASA’s Kennedy Space Center. “Safety First”; “Safety Is No Accident”; “Our Goal—Zero Harm”; and “Safety Is Free, Use Plenty of It”. Aviation safety could not rely on slogans and inspirational speeches. In the 60s and 70s, responding to a number of high-profile accidents, aviation began to develop safety as a system. From Kill Devil Hills, aviation safety exponentially became more complex; it required a systems approach to safety — applying systems thinking to design practical methods to increase safety and reduce accidents. The design of a safety system required a set of safety components working flawlessly together and interacting with other systems through an interconnected network. When properly designed, a safety system includes a safety maintenance system, an analytic approach to safety with regular inspections, audits, data analysis, updates, training, etc. Adapting the concepts of system management from other industries, such as Quality Management Systems (QMS), the aviation industry began to develop the foundations of a Safety Management System. It became clear that aviation safety was a global issue that transcended national borders, cultural influences, and aviation authority regulations. In 1997, the International Civil Aviation Organization (ICAO) introduced the Global Aviation Safety Plan (GASP), a systems strategy for continuous improvement of aviation safety with the goal of reducing fatalities, mitigating risks, and developing a harmonized aviation safety strategy. From GASP; working with manufacturers, airports, airlines, and international aviation organizations; ICAO formalized an aviation safety system which was published in the ICAO Safety Management Manual (SMM Doc 9859) and evolved into a globally accepted Safety Management System (SMS).

Like other aviation systems, a Safety Management System must have components that work together and interact with other systems in the network. The system must have flexibility and long-term plans that are adaptable to changing technology, changing political influences, and changing demands from the public and customers. The systematic design of the Safety Management System resulted in four components (sometimes called pillars) of an SMS: 1) Safety Policy, 2) Safety Risk Management, 3) Safety Assurance, and 4) Safety Promotion.

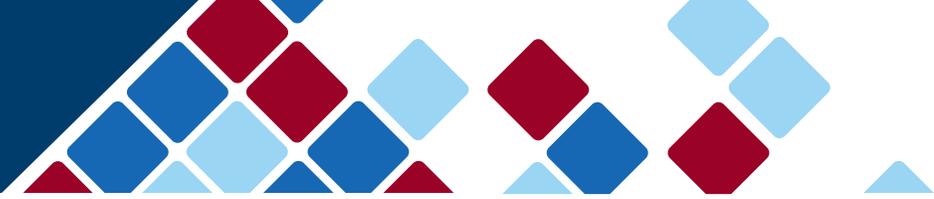
This white paper explores Safety Management Systems from two dissimilar but parallel industries — aviation and healthcare management. These two industries have an intersection; they both work with the most complex system in the known universe — human beings. Aviation and healthcare management will explore four different perspectives on the four components of a Safety Management System. Our hope is that, as human beings safely interact with these two complex systems (aviation and healthcare), they will experience the singular goal of safety — physical, emotional, and environmental well-being.

At the Kennedy Space Center in Florida, visitors spend thoughtful moments at the Space Mirror Memorial, honoring astronauts who died “in the pursuit of knowledge that lies beyond Earth”. Emblazoned on the highly polished black granite are the names of 24 former astronauts, including the crews of Apollo 1, Challenger, and Columbia. The most notable feature of the memorial is not the list of astronauts; it is the huge blank surfaces that seem to be awaiting the names of future astronauts. It is quixotic to think that Safety Management Systems will prevent the addition of new names to the Space Mirror Memorial. And yet, though it may seem to be “tilting at windmills”, the goal of a Safety Management System is to preserve blank spaces on monuments and memorials throughout the world.



Space Mirror Memorial, Kennedy Space Center, FL

Photo credit: JohnOwen848; https://commons.wikimedia.org/wiki/File:SMM_Jan_25_2020_Glatfelter.jpg



SAFETY ASSURANCE





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Quality, Safety and Investigation: Making Health Care A System

The word system is ill suited to the fragmented and conflicting group of organizations, institutions, and individuals responsible for our health. The word implies a mechanism that works according to some design or intention but the US healthcare system grew up organically in an environment of market and political competition, educational traditions, and expediency. Even within a single hospital, tensions pull along different axes, with varying economic forces; the wills of independent physicians and insurance companies; the factors of worker gender and class; and patients' racial, spiritual, and social backgrounds. Rather than a system, health care often looks more like an arena.

The shock of Covid forced hospitals and healthcare as a whole to become more of an actual system. Virtually every hospital activated an incident command structure during the pandemic. The incident command system is an organizational response to a crisis originated by California firefighters in the 1970s. The concept brings together the headquarters of every organization managing an incident into a single command post with unified responsibilities and immediate communications and coordination among players. In essence, incident command forces a unified system into existence.

“The Covid response also benefited from what hospitals had learned over the past decade from other industries with high reliability practices, including aviation, nuclear energy, and amusement parks”, said Mary Cooper, MD (director of the Healthcare Quality and Safety Program at the Jefferson College of Medicine). They used huddles which give small teams a chance to quickly share information and make decisions collaboratively on the floor. And they had hand-off structures to make sure that information would be given accurately and completely when responsibility for a patient was transferred between caregivers. These skills reduce the risk of errors at any time. During the crisis they probably expanded teams' capabilities to handle loads of patients.

We can imagine a health system in which the minds of brilliant clinicians are free to develop innovative treatments in cooperation with distant colleagues, partnering with nurses and patients. And we can also imagine how the tools of quality and safety would empower those great minds, by protecting them from avoidable errors and from situations in which technology would overrun their mental capability to safely provide care. We can further imagine economic incentives that would encourage both those goods, an educational system that would provide the skills and values needed, the technology that would enable it with communication and artificial intelligence, and the employers who would gladly pay the bills for a safer and more efficient system that results.

Nothing in this vision is in conflict. All the strands tie together. They go back to the just culture, in which every member of the health care team can speak up freely, and to the values of the patient who is respected and honored at the center of the entire enterprise.

(Excerpted from How COVID Crashed the System, Rowman & Littlefield, © 2022, by David B. Nash, MD, and Charles Wohlforth. Used with permission.)



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A Brief Overview of Safety Assurance

We participate in an astounding number of activities without any conscious regard to our safety — driving or riding in a vehicle, taking a flight, or riding a rollercoaster. We have the luxury of taking safety for granted because others have designed systems to ensure it. Appreciating the energy that has gone into safety assurance provides a different perspective on how impressive it really is.

Safety Assurance

In a Safety Management System (SMS), the Safety Risk Management (SRM) process is an effective tool for a) identifying hazards, b) assessing the overall risk associated with those hazards, c) as necessary, developing controls as a way of reducing the risks to an acceptable level. The efficacy of risk controls is an important aspect of maintaining an acceptable level of safety in a system. The Safety Assurance (SA) process plays the critical role of providing confidence safety objectives are maintained by ensuring risk controls developed in the SRM process remain effective. SA monitors the performance and effectiveness of risk controls and provides a means of addressing situations when the system is not meeting the organizations safety objectives. SRM and SA are the risk management decision-making tools in the SMS.

Safety Assurance Flow

Federal Aviation Administration Advisory Circular 120-92B describes the process used in SA. Input from the SRM process flows into the first step of the SA process, System Monitoring. The input represents hazards that have been analyzed and assessed and as necessary had risk controls applied. Figure 1. illustrates the process associated with SA.

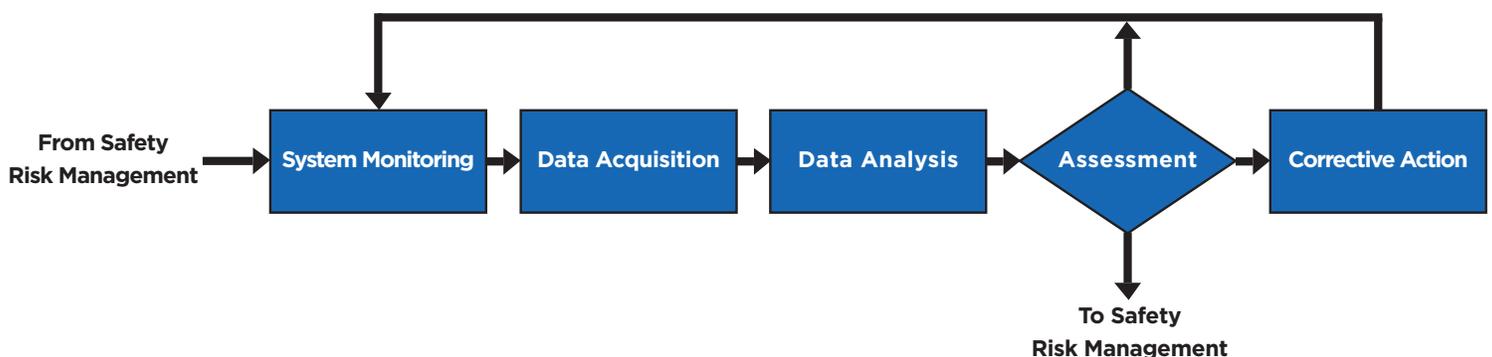


Figure 1. Safety Assurance Flow

System Monitoring

System Monitoring speaks to the importance of developing an understanding of the system and the context of risk control strategies used. To develop a meaningful level of confidence in the effectiveness of risk controls, a level of familiarity and expertise is a prerequisite. The System Monitoring process may be thought of as having the right people and tools to develop a comprehensive and accurate understanding of system operations. Figure 2. illustrates input to the System Monitoring from the SRM process and output to the Data Acquisition process.

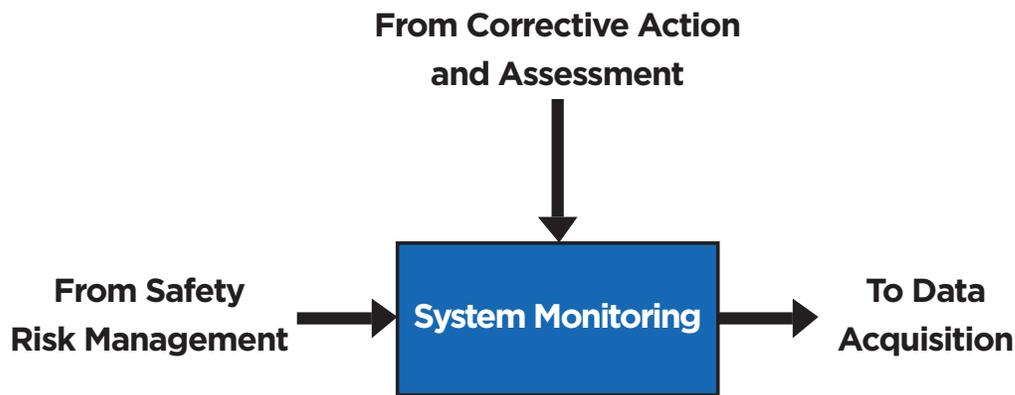


Figure 2. System Monitoring

Data Acquisition

Downstream from System Monitoring the next process is described as Data Acquisition, which identifies various means of collecting data on the effectiveness of risk controls and the overall safety performance of the organization. Numerous methods may be leveraged to collect data surrounding safety including internal and external audits, incident and accident investigations, noncompliance reports and feedback from employee reporting programs. Figure 3. illustrates input from the System Monitoring process and output to the Data Analysis process.



Figure 3. Data Acquisition

Analysis

Analysis of the data collected in the Data Acquisition step of SA is accomplished by Subject Matter Experts (SME) to develop an understanding of the effectiveness of risk mitigation strategies and the safety performance of the operation. An examination that seeks to identify patterns and trends is most effective. Figure 4. Illustrates input from the Data Acquisition to the Data Analysis process and output to System Assessment.



Figure 4. Data Analysis

Assessment

Once data has been analyzed, the next step in the SA process is Assessment. Assessment is used to determine whether the results from Data Analysis support risk control effectiveness. The Assessment process is critical in attempting to identify whether any unanticipated hazards have emerged as a result of a risk control strategy. Additionally, the assessment of data may be used to evaluate the safety performance of the SMS and identify changes in the system that potentially affect safety.

Multiple paths are possible upon completion of the Assessment process. When Assessment indicates risk control strategies and the SMS remain effective, a path back to the start of the SA process is provided. Risk controls strategies (and the overall SMS) are repeatedly evaluated to develop and maintain confidence in safety of the operation.

If Data Assessment reveals a risk mitigation strategy is ineffective or a new hazard has emerged, one of three possible paths are followed as a means of providing continuous improvement. Figure 5. illustrates flow into Assessment from Data Analysis and output to one of three possible processes including a) the SRM process when the design of a risk control is inadequate or results in new, unforeseen risk, b) to the start of the SA process when risk controls are working effectively and, c) to Corrective Action when risk controls require minor modifications to provide continuous improvement in safety.



Figure 5. Assessment

Corrective Action

The Corrective Action process of SA is used to correct deficiencies with the conformity of previously developed mitigation strategies. Since the risk was previously identified in the Safety Risk Management process, the Corrective Action process adjusts the mitigation strategy to bring it into effectiveness and compliance. Figure 6. illustrates the input from Assessment into Corrective Actions and the output to the start of the SA process.



Figure 6. Corrective Action

Safety Assurance and Safety Risk Management are a decision-making process used in an SMS to manage risk to an acceptable level and provide for the continuous improvement of safety. SRM is a design process that generally includes the development of controls when risks are unacceptable. SA is a process to measure the safety performance of the SMS (including risk controls) to develop confidence safety efforts are meeting objectives. When considering all the safety aspects that go into some of our more risky yet routine activities, one has a far greater appreciation for how well this system works without us even realizing it.



SAFETY PROMOTION





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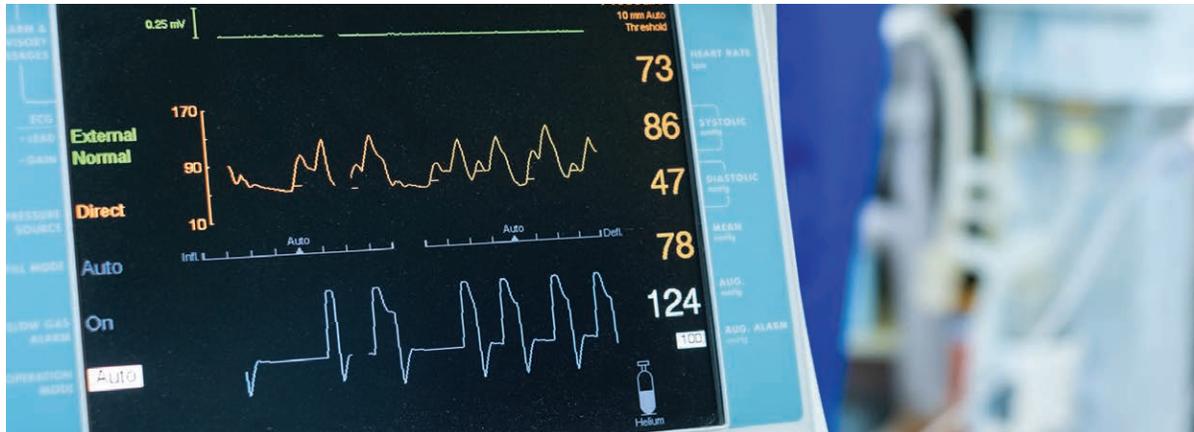
Safety Promotion in Acute Care: Alarm Management

A positive safety culture provides the foundation for all safety improvement activities. It is created through safety promotion, which as an organizational priority requires that every employee, from boardroom to bedside, is committed to safety in word and action. Safety promotion includes education, communication, and continuous improvement. Organizations must provide initial and ongoing education for employees to ensure they are aware of their responsibilities related to safety, as well as to ensure they are prepared and competent to perform their job duties. In positive safety cultures, communication flows freely and respectfully, regardless of title or status, and without fear of punishment. Lastly, continuous improvement requires that employees are always proactively examining processes and situations in their environment which may impact safety, and intervening before any harm occurs. It is the ongoing process of questioning whether it could be better or safer for patients and clinicians, working to reduce vulnerabilities, and not just accepting the status quo.

In my roles as both clinical nurse coordinator and graduate student, I collaborated on a project which applied the elements of safety promotion to alarm management. It took place on a busy, high acuity, and loud 26 bed medical stepdown unit that had been challenged by alarm fatigue for years. Physiological monitors, ventilators, and other medical devices all contributed to noise, producing visual and audible notifications designed to alert clinicians to changes in patient condition. However, many monitoring devices are too sensitive, resulting in excessive clinical alarms that are false or non-actionable and do not require intervention. It is estimated that up to 99% of clinical alarms are non-actionable, causing alarm fatigue, desensitizing clinicians to the alarms, and leading to delayed response to or dismissal of alarms. This places patients at risk when true instability is not recognized or attended to because it is lost among the nuisance alarms; a great irony, as this means the very devices designed to enhance patient safety can actually compromise it.

A baseline clinical alarm report for this unit showed over 341,000 physiological alarms per month, or roughly 437 alarms per patient per day. Unit staff were constantly interrupted and distracted by excessive alarm noise while trying to complete job duties, requiring them to remain impossibly vigilant at all times. A multidisciplinary team was formed with the goal of reducing nuisance alarms without compromising patient safety, and the baseline alarm report was analyzed for opportunities. Expert consultation was sought internally from Respiratory Therapy, Clinical Education, Biomedical Engineering, and Quality & Safety colleagues, and externally from other network hospitals as well as the vendor educator and engineer. Best practice guidelines were reviewed and compared to policy and unit practices.

Interventions included changes to default unit alarm settings, alarm system software and hardware upgrades to improve functionality and reliability, equipment standardization, and clinician education. By redesigning the secondary alarm system, an ineffective workaround contributing to alarm burden was eliminated. This quality improvement initiative resulted in a 44% reduction in alarms per month. The success of the project was due to a shared mindset from employees across title, department, and organization committed to working together to make the environment safer.



Recently, the Institute for Healthcare Improvement called on healthcare to move from a reactive piecemeal approach to safety to a proactive total systems approach. This requires stronger safety cultures, better collaboration and dissemination of information and processes across systems, and improved accountability. Drexel's MS/MSN in Quality, Safety, and Risk Management program focuses on knowledge and application of systems thinking, human factors, and QSEN competencies, positioning graduates well to be active participants in the transformation of healthcare towards a proactive total systems safety approach. From a more global perspective, the culture of safety, collaboration, and information sharing must extend beyond the walls of the hospital, reaching upstream and downstream industry partners, across organizations and regulators to create sustainable system changes in which alarms are no longer non-actionable 99% of the time.

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All It Takes Is One Misstep

All it takes is one misstep, one crash, one fatality, to change our world.

October 2021: a University of North Dakota student ended his life on a solo training flight. Accordingly, flight operations were suspended, discomfort filled the campus, and a bitter truth arose. We were not doing enough for our students to address their needs as people, as human beings. Among pilots, there seems to be a common pattern: struggles some may experience could put an end to their flying, and when faced with that reality it can end up costing them their life.

Safety promotion encompasses training, communication, culture, and the determination that every single person has a role in creating safe flight operations. After this tragic event, staff and students alike went back to the “drawing board” and determined (through safety assurance) that not enough was being done to address the mental health of our aerospace students.

Flying is difficult by nature. There’s a reason high-performing men and women are attracted to this field, but it is not for the weary or the uncertain. Commonly known as “drinking from the firehose,” UND’s Private Pilot course weeds out close to half of the students. They are challenged by difficult block exams and stage flights, designed to develop a pilot with no flying experience into one who can safely fly alone. Add the pressures already apparent in college — newly minted adults flood the dorms and campus, making good and bad decisions alike. There is alcohol, relationships, and new-found independence that tells them that “you can do anything”, yet forgets there are consequences to everything.

Get caught drinking alcohol underage? Get put on a six-month flight hold. Get a DUI? In some cases, good luck finding a job or explaining your actions to your future employer. Struggle with depression or anxiety? Good luck choosing your own health over your will to fly. That last one was where we realized we needed to create the biggest change.

During my time here at UND, the college has done an admirable job promoting aviation safety on our campus. I was introduced to this beginning my freshman year when I attended our safety seminars. They reminded us of the importance of staying vigilant while flying, while bringing actionable and quantitative changes into the cockpit. The safety culture here encompassed all of its subsets: informed culture, reporting culture, flexible culture, learning culture, and a just culture. Flight students, including myself, were encouraged to live up to the highest standards we could expect from ourselves in order to continue to make UND a safe training environment.

With that accident came needed change. Once again, we realized how invaluable it is to focus on the greatest asset in our school — our people. Faculty and students here at UND inspired change. Our dean, who is also our Accountable Executive, invited it. With those decades of cultivating a positive safety culture on our campus, change came naturally.

Change meant allocating resources to create mental health programs and hiring an aviation psychologist (we also realized how difficult it is to get someone up to North Dakota!). It meant teachers taking time at the beginning of class to address their students' concerns and needs. It meant students stepping up to find ways where they could make change for their fellow students. It meant inviting industry leaders from all over the country and inviting officials from the Federal Aviation Administration to our Aerospace Mental Health Symposium. This became actionable proof that everyone has a role to play in aviation safety.

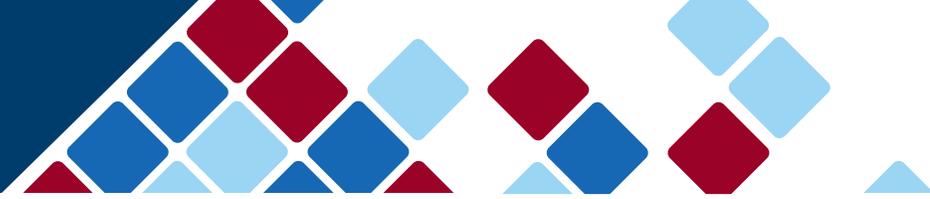
An additional change revolved around creating a peer support program. It is a common saying that pilots need two licenses to fly: their pilot certificate and medical certificate. The medical certificate is a very fragile thing — as with certain medical conditions the certificate can be deferred or outright denied. It opens a unique conundrum. Many pilots need help; some pilots may need to be prescribed medication or be actively involved in therapy. Yet a diagnosis of anxiety or depression that insurance may require to continue their care may hamper their flying career. These Peer Support Programs (PSPs) provide necessary and informal mental health care provided by other pilots, just like them. They provide that listening ear, that resource that will help those who need it most.



Two of these exemplary people, Dr. Bjerke and student Emmeline Miller, did an extraordinary job researching and reaching out to those in the industry. They learned how peer supporters in the airlines helped their pilots through issues that plagued them — whether it be divorce, interpersonal issues, drug issues, or mental disorders.

From this knowledge sprouted a program called UpLift — a collegiate peer support program for our students. We worked on creating an exciting program for students to become a part of. Teachers gave us the platform in their classes, while marketing resources supported us in getting our message across. We managed to get a group of remarkable students to join our peer support program and create a group of strong leaders who are pointing UpLift towards success. They are people who have the will and motivation to create a strong and resilient program for our peers to access. And they have already helped several students since the launch in November — it's only the tip of the iceberg.

Mental health is in a decline here in the United States and many western countries. We cannot afford another German Wings, nor another needless death on our own campus. We must choose to embrace these new programs, embrace these changes, to address our pilots' needs as people. So much has been invested in training, better maintenance practices, and more efficient ways to analyze fleet metrics, yet how much has been invested into our most valuable asset — each other.



SAFETY POLICY



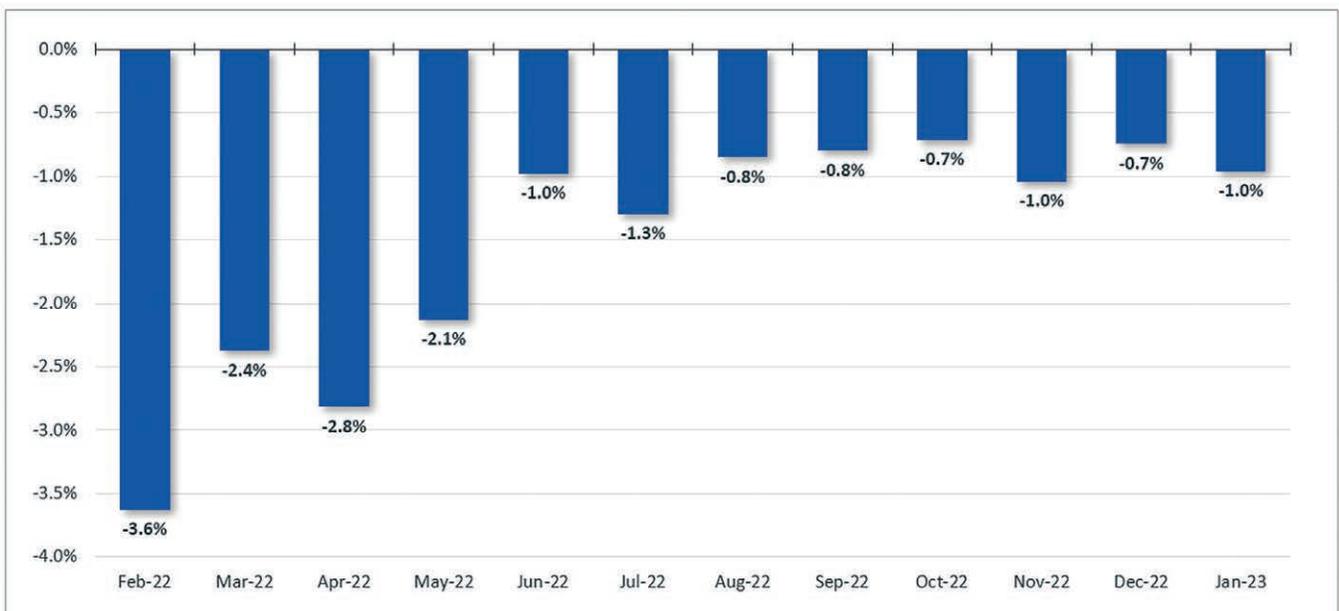


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The Financial State of Healthcare and the Threat to Quality and Safety

Hospitals and health systems are facing one of the most difficult operating environments they have ever experienced with the convergence of financial pressures, staffing, and migration of services impacting resources to allocate to quality and safety initiatives. Kaufman Hall's National Hospital Flash Report shows median operating margins for not-for-profit hospitals and health systems remained in negative territory through 2022. More than half of these organizations failed to generate sufficient revenues to cover their operating expenses. Median operating margin remains stubbornly in negative territory through January 2023 (Figure 1).

Kaufman Hall Operating Margin Index™ YTD by Month



* Note: The Kaufman Hall Hospital Operating Margin and Operating EBITDA Margin Indices are comprised of the national median of our dataset adjusted for allocations to hospitals from corporate, physician, and other entities.

Figure 1: Median Operating Margins Remain in Negative Territory into 2023

Current Challenges

Several trends are contributing to the difficulties hospitals and health systems face and reflect increased pressure on quality and safety:

- **A nationwide labor shortage** — and a particular shortage of nursing professionals — has generated wage inflation, which has been compounded in healthcare by the need to hire more expensive contract labor to try to cover shortages in nursing staff. With labor costs constituting 50% or more of a hospital's expenses, wage increases have put significant pressure on operating margins and the ability to fund and provide qualified professionals to support quality and safety efforts.
- **Staffing shortages** have also caused many hospitals and health systems to cut back on services, with an impact on quality and safety. Sixty-six percent of respondents to Kaufman Hall's 2022 *State of Healthcare Performance Improvement Survey* reported that they had run their facilities at less than full capacity because of staffing shortages.
- **Inflationary pressures** have also driven up non-labor expenses. Kaufman Hall *National Hospital Flash Report* data show that total non-labor expenses were 16% higher in January 2023 than they were in January 2020, shortly before the COVID-19 pandemic began.
- **Continued migration of services** from inpatient to outpatient settings has increased the competition hospitals and health systems face from ambulatory surgery centers, specialized healthcare providers, and other competitors (including national health plans that are vertically integrated through investments in physician practices). The need to ensure that smaller outpatient facilities can provide safe care is compounded with many locations.
- **Stock market volatility** has cut significantly into returns generated by hospitals' and health systems' investment portfolios. These returns have played a crucial role in recent years in supporting healthcare organizations' balance sheets, and losses in 2022 eroded the buffer that investment income has provided.
- **Rising interest rates** are increasing the cost of accessing the capital hospitals and health systems need to finance large capital expenditures. Although rates are still relatively low from an historical perspective, there was approximately \$28 billion in healthcare debt issuance in 2022, down from approximately \$52 billion in 2020. Debt issuance activity has remained very light in the first months of 2023.

If not-for-profit hospitals and health systems are viewed as the combination of three companies — an operating company providing clinical services, an investment company generating investment returns, and a finance company responsible for external capital formation — these trends have created headwinds that are challenging the performance of all three companies and undermining the resiliency of many healthcare organizations.



Figure 2: Headwinds Challenge Operations, Investments, and Capital Formation

How Hospitals and Health Systems Are Responding

Hospitals and health systems are pursuing several strategies to help mitigate the challenges they are facing. These strategies include:

- **Performance improvement initiatives.** Improving labor productivity helps alleviate staffing shortages, facilitate care transitions to reduce length of stay, and seeks to ensure quality and safety. Length of stay issues also are being driven by staffing shortages at post-acute care providers, reducing their capacity and making timely discharge of patients to post-acute care more difficult.
- **Portfolio review.** Hospitals and health systems are assessing underperforming or underutilized services and making decisions on their long-term viability. With some crucial services being curtailed or closed, particularly in rural settings, access to care may impact patient care, decrease patient safety, and threaten the health of the community.
- **Partnerships.** Partnership strategies are taking several forms, but the end result is to create efficiencies, increase scale, reduce administrative costs, and standardize best practice. However, this is balanced with the need to merge disparate cultures. We have seen a rapid escalation in the size of hospital and health system merger transactions, as larger organizations seek partners to enhance capabilities and generate economies of scale.
- **Balance sheet management.** Many hospitals and health systems had been able to increase the strength of their balance sheets in the years leading up to the pandemic, and emergency relief funding helped to maintain that strength through 2020 and 2021. That strength is now diminishing, and hospitals and health systems are focused on efforts to conserve balance sheet resources. Of particular concern for organizations with outstanding debt is breaching covenants if financial reserves available for debt service coverage, for example, fall below thresholds specified in their loan documents.

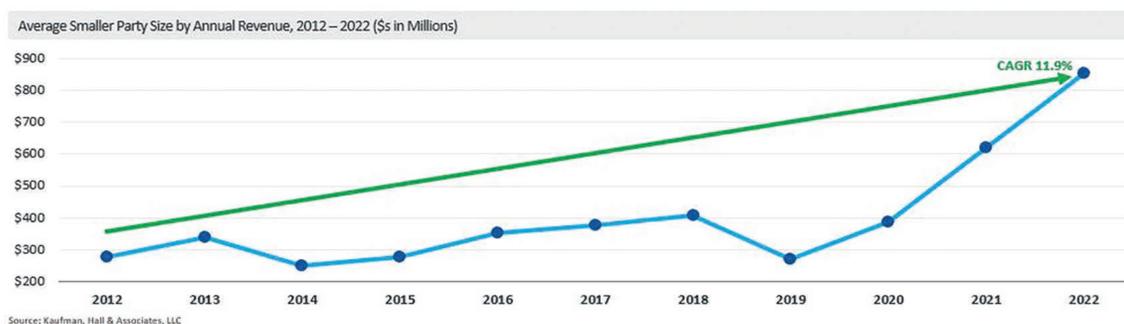


Figure 3: Rapid Growth in the Size of Hospital and Health System Merger Partners

This is a transformational moment for not-for-profit hospitals and health systems. With no immediate end in sight to the many operational and financial challenges they face, organizations must seek all opportunities to maintain their long-term sustainability and ability to fund necessary infrastructure investments to improve quality and safety.



The Honorable J. Randolph “Randy” Babbitt
Former FAA Administrator and Principal Partner of Babbitt & Associates, LLC

Air Safety Policy

Policy is a mainstay in aviation, the centerpiece being “Safety Policy.” In general, policy is defined as “A deliberate system of principles to guide decisions and achieve rational outcomes. A policy is a statement of intent and is implemented as a procedure or protocol. Policies are generally adopted by a governance body within an organization.”

I have operated under numerous policies and guidance during a variety of positions in my aviation career as an airline pilot, past President of the Air Line Pilots Association (“ALPA”) and the FAA Administrator. Interestingly all those positions have safety as their centerpiece. In fact, ALPA’s motto is “Schedule with safety.”

But safety requires constant attention; it’s not enough to write it and put it in a manual, pamphlet or on a placard. It must be put into practice and made part of everyday operational life. It must be monitored and, of equal importance, constantly updated so the policies cover the latest technology and reflect lessons learned from data monitoring and accident investigations.

Education about safety procedures should begin at the most primary level of student pilot training, whether it be military or civilian. From day one, learning all facets of flight training must include all the safety parameters involved. Obviously, checklists are one of the most basic methods for maintaining safe operations, not just to be read and responded to, but in fact understood and cross checked. Students must understand what event actually inspired various procedures and safety checks, why they’re effective, and how they will be used.

It is very important to note, maintaining a sound safety policy is not a static event; it must constantly be monitored and adjusted with feedback from all potential sources. Programs such as Aviation Safety Action Program (“ASAP”) provide wonderful insights whereby pilots and others in operations and aviation an honestly report mistakes they made, and often this leads to the development of a new or modified procedure to prevent such a mistake or accident in the future.

We also have implemented requirements for Safety Management Systems (“SMSs”) to be incorporated into all aviation operations that must include the four key safety components: Policy, Risk Management, Assurance, and Promotion.



The FAA has excellent guidance that recognizes SMS in organizational roles in accident prevention by providing:

- A structured means of safety risk management decision making.
- A means of demonstrating safety management capability before system failures occur.
- Increased confidence in risk controls through structured safety assurance processes.
- An effective interface for knowledge sharing between regulator and certificate holder.
- A safety promotion framework to support a sound safety culture.

This comprises all facets of aviation training and operations, including colleges and universities, flight schools, ground schools, airlines flight operations, and maintenance facilities, to name a few.

Establishing and utilizing an SMS has been a major step forward in enhancing aviation safety at all levels, but in today's operational environment the rapid advancement of technology and operational changes means that yesterday's SMS program is just that — "yesterday's". It is of paramount importance that we constantly review all the components of our safety programs to ensure they are maintaining oversight ability, insights, and exposure to a variety of new systems procedures and potential failures.

To underscore my concerns, an old quote from Clive Jones: "It is only when they go wrong that machines remind you of how powerful they are." Our safety management systems must be constantly upgraded to keep up with the technology and equipment of tomorrow.

We must continue to work together at all levels seeking input and gaining insight into a wide variety of operational concerns. With the FAA, NTSB, air carriers, employee representatives and others, working together in concert can ensure we continue to gather the necessary data and operation insights needed to keep our Aviation System the world's leader in aviation safety and the "Gold standard".





SAFETY RISK MANAGEMENT





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Curt Hohman, MHA, FACHE
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Facilities
Avera McKennan Hospital &
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Sioux Falls, SD

Patient Safety Huddles Engender a Culture of Safety at Avera Health, Sioux Falls, SD

Avera Health has 20,000 employees and physicians, serving more than 300 locations, 100 communities, and 37 hospitals in the Upper Midwest region. We carry on the health care legacy of the Benedictine and Presentation Sisters, delivering care in an environment guided by our values of compassion, hospitality and stewardship.

Regional Hospitals at Avera Health participate in daily Safety Huddles as a tactic in their patient safety plans. These are intended to be a short synopsis of safety events or concerns from the prior day. Safety events may include patient and employee injuries, mechanical failure, falls, near misses, medication events, even security issues. In addition to serious safety events, Safety Huddles are also used to acknowledge safety successes and celebrations of a job well done. Anticipated events are also discussed, for example, safety issues with impending inclement weather.

Building the culture of safety from the top down, Safety Huddles are led by senior leaders at the organization and meetings are short and concise. Each attendee comes prepared to report, attendance from each department is mandatory, and the information discussed is documented and recorded. Huddles continued through COVID, utilizing virtual options to keep safety first. Safety Huddles are not problem-solving meetings, but rather a process of sharing and delegating solution development to the appropriate person. Actionable items from the Safety Huddle are tracked until resolved.

Safety Huddles create a culture of psychological safety where errors are seen as opportunities for all to learn, rather than mistakes to be hidden. Accountability is built into the process, ensuring leaders find and implement safety solutions that are within their authority. Ultimately the Safety Huddle is intended to improve communication across the team, preventing a serious safety issue from going unnoticed and unresolved.



Safety Huddle



Eileen E. Jaskuta MSHA
BSN, RN, Vice President
Quality and Patient Safety
Main Line Health
Radnor, PA



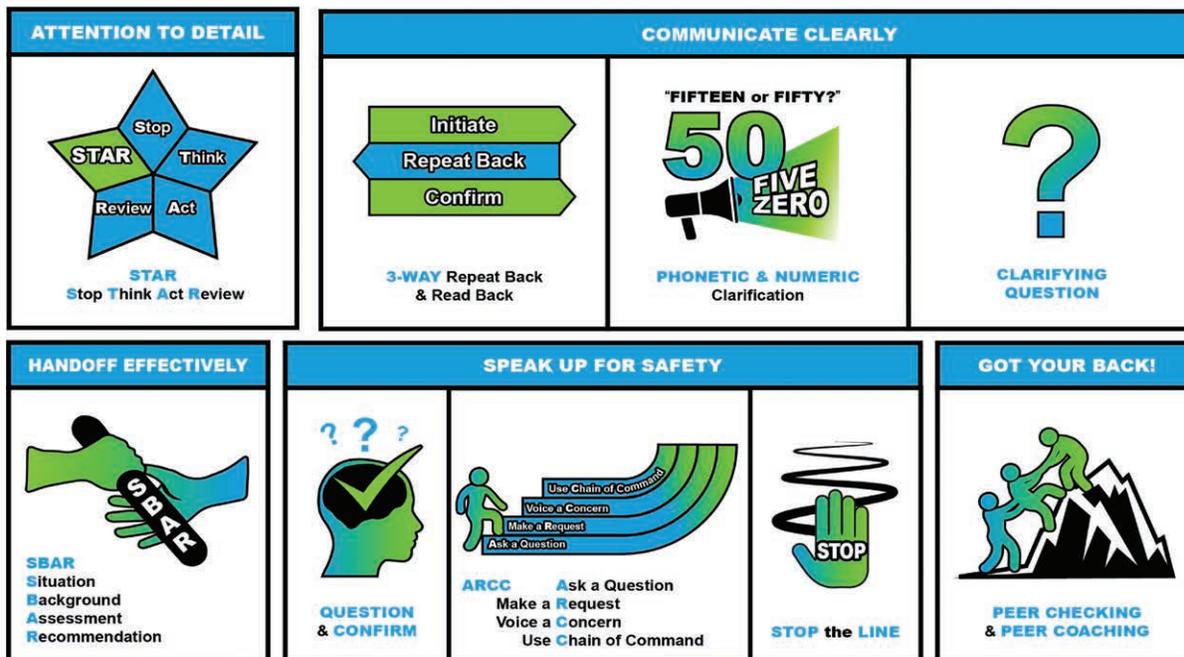
Anne Marie Browne, RN
CPPS, System Director
Quality and Patient Safety
Main Line Health
Radnor, PA

Creating a Culture of Safety at Main Line Health, Radnor, PA

Main Line Health is an integrated healthcare system serving surrounding communities to improve the quality of life for all people by providing a comprehensive range of safe, equitable and high-quality health services.

Patient Safety is embedded in the culture of Main Line. Every meeting starts with a safety story, then our team looks at patient risks by encouraging reporting of near miss events to help identify trends and themes. Increased reporting reflects the culture of safety, as it indicates that safety and error prevention are on the minds of our front line, and in fact increased reporting is among our strategic imperatives.

Culture of Safety Behavior and Tools



New processes and systems, along with areas of existing vulnerabilities, undergo risk analysis utilizing tools like FMEA (Failure Modes and Effects Analysis) and the Risk Matrix. Our team includes Process Improvement Engineers and our Human Factors Engineer, to design systems that prevent errors and harm to staff and patients.

Formal Culture of Safety work, including defined Safety Behaviors and Error Prevention tools, was implemented in 2011 with a great reduction in preventable serious harm events. In recent years, we identified that preventable harm events were occurring, and so we embarked on a "Culture of Safety: Resetting Expectations."



The Andy Norton MD Best Catch and Safety Hero Award recipients at Main Line Health.

This program includes interactive eLearning followed by a one-hour Virtual Instructor Led Session, during which break out rooms are utilized to allow small groups of front-line staff to practice and discuss the use of tools and behaviors in varied scenarios. These sessions are led by leadership staff and executives who are always accompanied by a Patient Safety / Risk Manager. Barriers to using the tools and challenges are discussed. Participants have been very receptive and engaged in these sessions. Of note, we build a parallel curriculum for staff who are “non-patient-facing” to assure that the same language and tools are used in a meaningful way

MLH celebrates and recognizes reporting through the Great Catch Program, which is awarded each month for every entity of the organization. This helps to reaffirm the role that everyone plays in keeping the culture of safety paramount. At the end of the year there is an Award Program, developed to honor those recognized as Safety Heroes. A Safety Hero is an individual or group that has exemplified three guiding principles for creating/maintaining a culture of safety through:

- Setting expectations
- Education and building skills
- Holding themselves and others accountable

An award is given to an individual, a physician, and a team. Nominated by their peers, a voting process is utilized to choose winners, which is no easy task as so many meet these criteria! This is a coveted award and winners display their medals and trophies proudly.



“Hospitals and health systems continually invest and innovate to improve the quality and safety for America’s patients. Despite dealing with the aftermaths and aftershocks of a once in a lifetime public health emergency, caregivers are more committed than ever to ensuring that each patient receives the right care at the right time in the right setting. The result — improved health overall, lower costs and continued trust in our health care system.”

Richard J. Pollack
President and CEO
American Hospital Association



Faye Malarkey Black
President and CEO of the
Regional Airline
Association (RAA)



Nobuyo Reinsch
VP - Safety & Regulatory
Affairs of the Regional
Airline Association (RAA)

Safety Management Systems and the Modern Regional Airline

Every day, on every flight, the airline industry is focused on safety. This dedication has produced tangible results; today, aviation benefits from a level of safety unmatched by other modes of transportation. Yet, safety is not a destination but is evolutionary at its core.

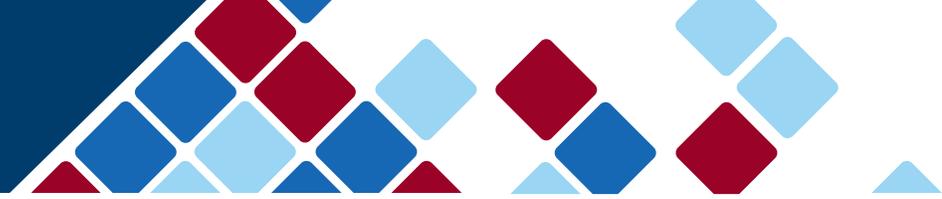
As aviation safety advanced from its early, pioneering days to the point where accidents no longer had a single, common thread, stakeholders recognized the need to move beyond accident forensics to a predictive and preventive system. From this thinking arose an evolutionary process in system and safety management that we call Safety Management Systems (SMS). SMS integrates modern safety concepts into repeatable, proactive processes, emphasizing safety management as a fundamental business process and foundational value.

SMS programs harvest data and go to the heart of identifying and mitigating risk in the system before accidents take place. They take us from “how did that happen” to “what are the individual and aggregate incidents, errors, risks and hazards, and how do we prevent them?” SMS does not rely on what seems like the answer, nor does it guess. Instead, SMS relies on collaborative data sharing. Inputs by tens of thousands of individual aviation professionals who feel safe in sharing errors and information, collectively provide insight into millions of operations. These data illuminate trends, and these trends illuminate risk, so that aviation professionals can collaborate on the best means of reducing the risks through safety enhancements.

SMS has contributed mightily to today’s high level of safety, while assuring one level of safety, consistent across carriers of different scopes and sizes. Regardless of size or type of operations, or culture of an airline, SMS principles are steadfast in weaving safety into the fabric of the organization, from top to bottom and front to back. SMS must be scalable and adaptable to succeed.

Risk Management

SMS is fundamentally data driven. Key elements include Aviation Safety Action Programs (ASAP), which are cooperative, nonpunitive processes for flight professionals to self-identify and report safety issues to learn from incidents and errors and prevent recurrence. Airlines implement ASAP across multiple departments, collecting safety data from various workgroups to strengthen safety culture overall. Flight Operations Quality Assurance programs (FOQA) provide an additional window into flight operations through aircraft data monitoring and analysis. The Aviation Safety Information Analysis and Sharing (ASIAS) program allows participants to monitor and collaborate on known risk, evaluate the effectiveness of risk mitigations, and detect emerging hazards. Advanced Qualifications Programs (AQP) incorporate data from multiple SMS programs, including ASAP and FOQA, to tailor airline training to respond to changes in aircraft technology, operations and mitigations of the identified hazards. The most important component of SMS is that the collected data from each program is incorporated into a cohesive, company-wide system to manage risk meaningfully and proactively.



The Regional Airline Association (RAA) and its members also participate in the Commercial Aviation Safety Team (CAST). CAST implements comprehensive, voluntary safety enhancements with a goal of achieving continuous fatality risk reduction. CAST relies on partnership between government and industry, jointly investing in the right voluntary safety enhancements. CAST has been pivotal in moving aviation safety beyond the proactive stage into the predictive phase of risk management, and SMS programs are a key data source for CAST.

Advancing Safety Culture Through the Association

While safety progressed significantly for all airlines in the early days of SMS, a series of accidents in the early 2000s evolved the industry's safety advancement with new urgency. In 2009, Federal Aviation Administrator (FAA) Randy Babbitt issued a Safety Call to Action, urging the aviation industry to embrace SMS as the way forward. Regional airlines leaned in early and hard on solutions, emerging on the front lines of voluntary SMS adoption. Embracing the Administrator's call, regional airlines implemented SMS faster than any other aviation sector and had well developed programs in place ahead of the FAA's eventual rulemaking.

The exclusive focus of the next RAA Annual Convention was safety. All day, from morning to night, regional airline presidents engaged in detailed, thoughtful assessment of every safety practice, addressing issues related to training, fatigue, commuting and crew lifestyles, and flight deck professionalism. RAA launched a Strategic Safety Initiative that went beyond FAA safety requirements and assembled a task force of member airlines' safety and operations directors to share best practices, reflecting National Transportation Safety Board (NTSB) guidance. RAA sponsored an independent Fatigue Study, developed an industry-leading Fatigue Awareness Management Program, urged Congress to require the use of cockpit voice recorders for accident prevention, and recommended random fatigue tests to ensure that pilots are rested before flying. Crucially, RAA urged the FAA to establish a single national database of commercial pilots' training and check ride records (PRD). This initiative, finally implemented by FAA in 2022, offers a profound safety benefit.

As RAA and its members leaned in, the entire aviation ecosystem joined together, a collaboration that continues today. Regional airlines and their partners constantly engage in safety sharing and analysis meetings. This is no one-way street, where larger mainlines dictate best practices to regionals; instead, regional airlines frequently share their own safety innovations with the broader industry. At the 2010 World Airline Training Conference and Symposium (WATS), attendees were discussing fatal airline accidents involving stalls that occurred while flight crews were flying approaches to land with the autopilot engaged. Regional airline training experts recommended replacing traditional "stall series" training — explaining that this kind of training had devolved into an "artificial choreography" — with scenarios where pilots encounter stalls embedded in other training as a surprise. These views led to robust conversation and broader adoption. Importantly, industry did not wait to be regulated; instead, early ideas from a group of subject matter experts paved the path for powerful global standards. Similarly, when COVID and its recovery changed airline operating environment overnight — then continuously — RAA's Safety Council met constantly to identify new challenges, share tools and risk assessments, and collaborate with broader industry to mitigate emerging risk in real time.

Where do we go from here?

To keep the sacred public trust instilled in us by passengers, we must never allow a home for complacency. Change in aviation must assure safety advancement, yet stasis must undergo the same scrutiny. Safety demands openness to well-supported change. We should not change because "it seems like" we should, but rather because "this is what the data says."



In 2013 a Congressionally driven rule change, intended “to ensure that all pilots entering air carrier operations have a background of training and experience that will allow them to adapt to a complex, multi-crew environment in a variety of operating conditions,” required pilots to accumulate five times more flying time for hiring eligibility than was previously required. As a result, pilots arrived at regional airlines with more flight time, but with most of this flying accumulated in light General Aviation (GA) aircraft in clear weather conditions. Pilots also presented with longer gaps between training graduation and hire, a byproduct of gathering the required flight hours. Training directors reported degraded airmanship and skills deterioration among new hires and suspected this was because pilots rarely, if ever, encounter opportunities to practice commercial flying skills in light GA aircraft used to build time and the interjected time lapse between relevant training and hire was changing the quality of the pilot candidate pool considerably.

Safety is intentional. Anything that is unintended must be carefully examined. Four Pilot Source Studies examined the impact a pilots’ qualification background had on successful performance in airline initial training. These studies provided data that showed the fallacy of assuming a mere accumulation of flight hours produces an experienced and safer pilot. “All four PSSs (2010, 2012, 2015, and 2018) have substantiated the FAA’s 2010 ANPRM statement that experience is not measured in flight time alone.” Research has also proven that learning is enhanced when training is realistic and that the congressionally mandated gap between earning pilot certificates and beginning airline training had reduced the positive effects of pilots’ educational and experience backgrounds. Requiring pilots to accumulate high unstructured flying time before hire has introduced an unintended set of risks. Risk management depends on data to identify the risks and show where change is needed. Here, risk management is structured training pathways that center safe advancement to complex and sophisticated aircraft, with advanced performance capabilities. Airlines have presented data to the FAA, petitioning for more supplemental training pathways to offset rote flying. As they await approval, airlines have expanded their training footprints to provide more classroom time, extra simulator and other training sessions, and lengthier initial operating experience (IOE) to newly hired pilots.

The Future of Safety

The pace of change is accelerating today. New technologies and capabilities are available as the environment changes. As these technologies emerge, risks associated with them will change. Reflecting on this changing environment and a recent series of non-fatal incursions, FAA Acting Administrator Billy Nolen called a Safety Call to Action on February 14, 2023. Administrator Nolen asked aviation to examine itself for signs of complacency proclaiming: “now is the time to stare into the data and ask hard questions.” He will assemble a group of wide-ranging industry and government experts to examine which mitigations are working and why others appear to be less effective than they once were. As part of this process, CAST will take a fresh look at ASIAs data.

These are the tools of safety. These programs, independently and as part of a collective safety enterprise system governing all operational areas, empowered the tremendous progress we have made on our safety journey, while charting a road map for the evolution ahead. Through SMS, policies, processes, systems and culture combine to instill safety and risk minimization as core, foundational values. When we say safety is foundational, every day, on every flight, this is what we mean. SMS defines the modern regional airline. As the aviation industry changes, SMS is the key to ensuring safety evolves faster.

[1] “Special Purposes: Dual HGS, practical stall scenarios and unreliable-airspeed rehearsals help pilots manage risk of airplane loss of control.” by Wayne Rosenkrans | September 10, 2010. See <https://flightsafety.org/asw-article/special-purposes/>

[1] Federal Aviation Association Final Rule on Pilot Certification and Qualification Requirements for Air Carrier Operations See : https://www.faa.gov/regulations_policies/rulemaking/recently_published/media/2120-aj67.pdf

[1] See: <https://www.pilotsourcestudy.org/>

[1] Federal Aviation Administration, “Managing Risk through Scenario Based Training”
See: https://www.faa.gov/training_testing/training/fits/guidance/media/rm_thorough_sbt.pdf

CONCLUSION





Amy Dykens, EdD
CEO
Weave Education

The Role of Accreditation in Advancing Safety and Risk Management

For those of us who work in accreditation, we are very aware of the value it provides to students, their families, and the community. It is not high-profile or noticeable work; some liken it to doing your taxes — accreditation provides tangibles in the form of a peer-reviewed process that ensures quality assurance, and of more interest to students, financial aid.

However, there are concrete instances of risk management and safety involved in accreditation. Our society needs healthcare providers to receive the proper training and evaluation to care for us, pilots to master skills and protocols to ensure safety, civil engineers to complete the rigorous study required to build safe bridges and roads, teachers to understand learners and curriculum to educate our youth, and so many more occupations that very literally can mean the difference between life and death, success and failure, or danger and safety.

When an unaccredited school grants degrees, or certifications are fraudulent, it doesn't just cost money in the form of student debt — it can cost safety when they least expect it. In 2021 Education Secretary Miguel Cardona canceled \$1 billion in student loan debt for about 72,000 defrauded borrowers. Included in these cases were Corinthian Colleges and ITT Tech, both accredited by the Accrediting Council for Independent Colleges and Schools (ACICS), an accreditor that was stripped of its DoE recognition in 2016 for a history of non-compliance. While egregious and alarming, these examples hit home from a student financial standpoint — the students were, in a sense, robbed by the institutions and the accreditor. In a recent *Forbes* article, *How Thousands Of Nurses Got Licensed With Fake Degrees*, Emma Witford and Janet Novak delve into “the sale of 7,600 fake diplomas from three now-defunct Southern Florida nursing schools for \$114 million. The certificates enabled untrained individuals to sit for the national nursing board exams and at least 2,800 of them passed.” The “fake” nurses were then employed across various states in hospitals, assisted living facilities, homebound pediatric care, and veteran care. Not only is this extremely dangerous, it has violated the trust so many people place in individuals that are actually qualified with legitimate degrees.

In this case, much more than money is at stake — quite literally lives are being endangered. In addition to courses, training, and evaluation, it is imperative that stakeholders — students, employers, and the community — understand that these programs and institutions have another layer of rigor in the form of accreditation. Often invisible on a campus, the ongoing work to remain in good standing with an accreditor is extensive, and as this recent story points out, it is critical.

These stories highlight the importance of educating students, their families, employers, and the community about how high stakes accreditation actually is and why quality assurance in education cannot be an afterthought. Accreditation is not solely for granting financial aid or a badge on a website. It is part of a safety and risk management system to ensure not only quality faculty and instruction, but legitimate ability to do a job at the promised levels of proficiency. Like the Space Mirror Memorial, we aspire to have a blank wall. We do not want any victims of inadequate education — not students, patients, passengers, drivers — no one.

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*Universities offering multiple CAHME accredited programs.
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