VINCENT’S TWO SCIENCE SENSE

Science is the basis for continuing education and rationalizing processes. As noted in last month’s issue, the word science stems from the Latin root word *scientia* meaning knowledge. It is *scientia* that pushes our program’s limits and establishes future discoveries. In this month’s issue, David K.C. Cooper and Joseph Tector push the boundaries of science and history into the future with a report on triple knock out pigs as a potential source for kidney xenotransplantation for carefully selected patients with end-stage renal disease. Bessie Sycip calls to our attention the burnout from compassion fatigue as Saima Aslam cautions us about having a little summer fun. Unlike today’s U.S President and the recent focus on how to lose a guy in 10 days, our esteemed Andrew Fisher provides his 100 day report on his Presidency, while Christian Benden excites members for our 2018 upcoming Annual Meeting in Nice with a call for abstracts!

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ISHLT 2018 Call for Abstract Submissions

The ISHLT 2018 Abstract Submission Site is NOW OPEN

**Deadline:** December 1, 2017 11:59PM EST

The ISHLT 2018 Call for Abstracts is available in two electronic formats:

- [2018 Call for Abstracts PDF Brochure](#)
- [2018 Call for Abstracts Flipbook](#)

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December International Traveling Scholarship Application Now Open

[International Traveling Scholarship Application](#)

**Deadline:** December 1, 2017 11:59PM EST
IN THE SPOTLIGHT: President’s 100 Day Report

Andrew Fisher, FRCP, PhD
ISHLT President

I am delighted to provide my first update to ISHLT members since starting my term as President at the end of the 2017 Annual Meeting in San Diego.

Our annual meeting is a great place to start as it marked yet another milestone of success for the Society becoming our best attended meeting with just short of 3900 delegates. When compared to an attendance of 2300 in 2007, this represents a 70% increase in attendance over the last 10 years, and shows how the appeal and relevance of our educational and network offering continues to strengthen. Furthermore, this year’s meeting was the most internationally diverse and multidisciplinary we have ever hosted.

I would like to take the opportunity to formally thank our past program chair, Jeff Teuteberg, and the entire 2017 program committee for doing a truly amazing job. Of course great content doesn’t guarantee a great meeting without the superb and seamless organization by the ISHLT staff that goes on behind the scenes. Work is now progressing rapidly in developing the content for the next Annual Meeting in Nice under the leadership of Christian Benden, our 2018 Program Chair. This program promises to rival the quality of the meeting we just experienced in San Diego in the equally spectacular venue on the south coast of France.

The Board of Directors has continued to push forward with the implementation of the Society’s Strategic Plan with major projects such as a complete redesign and enhanced functionality of our website well underway. The new website will be unveiled at the 2018 Annual meeting and should transform the user experience for members with the feedback provided by many of you in our recent survey, providing useful guidance for the design team. In addition, substantial work is going on behind the scenes to formalize and modernize the operational governance of the society. The revision of our Bylaws approved by members at the annual business meeting in April has moved much of our governance from bylaw to policy, and has generated a lot of work in developing these policies. I am very grateful to Maryl Johnson, our immediate Past-President, for leading this work with the members of the ISHT Governance Committee.

For me personally and for many of the members that I speak to, it is the internationality and multidisciplinary character of the ISHLT that makes it so unique as a professional society, and it is the reason we feel such close affiliation with the ISHLT, its mission and its network of members. In recognition of this, the Board of Directors felt it was now timely for the Society to demonstrate its commitment to diversity through a formal statement and additionally to add Diversity as a new guiding principal to our strategic framework. I am pleased to share this official statement with you which will also be hosted on our website.
The International Society for Heart and Lung Transplantation (ISHLT) is comprised of members from across the globe dedicated to improving the care of patients with advanced heart and/or lung disease through transplantation, mechanical support and innovative therapies via research, education and advocacy. We serve as a platform for scholarly exchange, encourage basic and clinical research in these disciplines, and provide a forum for professional growth. Our core values advocate for a multidisciplinary model of scientific advancement and patient care which values the diversity and contributions of all our members regardless of age, ability, race, gender, sexual orientation, gender identification, nationality, geography, political ideology, religious or cultural affiliation, or professional discipline. We expect respect, tolerance, and professionalism in all interactions.

Of course, it’s actions and not simply words that demonstrate the Society’s commitment in this area. I have been working with Amanda Rowe, our CEO, over the last couple of months to plan an ISHLT leadership summit that will be hosted in London in October 2017. At this event, the Board of Directors and all Committee and Council chairs will meet together and discuss how the Society will continue to move forward successfully and protect our commitment to internationality and multidisciplinary diversity. In addition, we will be looking at ways the full diversity of the Society’s membership can be better represented as participants in the Society’s projects and leadership roles. I will be sure to update you on progress in a future report.

If any member has comments on the topic of diversity, then please share these with your Scientific council chairs, or contact me directly at president@ishlt.org.

Disclosure statement: The author has no conflicts of interest to disclose.
IN THE SPOTLIGHT: Program Committee Update

Christian Benden MD FCCP
2018 Scientific Program Chair

It is the beginning of summer holidays here in Switzerland, and I have just returned to Zurich from Chicago following my first Scientific Program Committee (SPC) Meeting within my new role as the 2018 Scientific Program Chair. Chicago, the Windy City, is always worth a trip. I particularly love all the architectural diversity of the city; however, this time the 2018 SPC Meeting has been the focus of my attention. The 2018 ISHLT SPC consists of 31 members reflecting our Society’s diversity regarding disciplines, geography, gender and generations.

Almost 150 symposia proposals were submitted by the ISHLT Membership for consideration by the SPC to develop the best scientific content for the ISHLT Annual Meeting taking place in Nice, Southern France in April 2018.

At the SPC Meeting in Chicago, there was initial time for “ice-breaker” activities in order for SPC Members to get to know each other better, before starting the difficult task of selecting the most exciting symposia proposals and scientific content for the ISHLT Annual Meeting. In Chicago, the SPC put together over two dozen Symposia and three Plenary Sessions for next year’s Annual Meeting. The three Plenary Sessions will be scheduled on Wednesday, Friday and Saturday, and Symposia throughout the meeting. As commenced at the 2017 Annual Meeting, we continue to attempt clustering of program content; however, as with previous meetings outside North America, there will be no Sunrise Symposia scheduled in Nice.

Over the last two years, I have learned how detailed the process in preparing for our annual meeting is. And here, I would like to thank everyone who assisted me during this process so far; the always helpful ISHLT Staff, our Society’s President, Professor Andrew Fisher from Newcastle (U.K.), and last but not least, the 2017 Program Chair, Jeff Teuteberg, from whom I have learned so much.

In May of this year I had the great pleasure to visit Nice, the host city of our next Annual Meeting, with our President and Amanda Rowe, the ISHLT Executive Director. We inspected the congress venue, The Acropolis Congress Center, located in the center of Nice. In addition, we looked at potential locations for our traditional President's Gala Reception, finally deciding to return to the fabulos Hotel Negresco, a stunning example of the Belle Époque located beautifully at the Promenade des Anglais. Thus, I am very pleased to report that Nice is well prepared and ready to host us!

For now, I would like to draw your attention to the opening of the Abstract Submission site on August 1st 2017. Please submit your research to be considered for presentation at the 2018 Annual Meeting in Nice.

I promise to keeping you updated on the progress of our preparations of the Nice Meeting in the months to come.
Finally, I would like to ask all of you to mark your calendars – if you have not already done so – and put in the dates of our Society’s next Annual Meeting scheduled from **April 11th to April 14th 2018** in Nice, Southern France. There is no need to tell you that glamorous Nice, the capital of the Côte d’Azur located beautifully at the Bay of Angels, is always worth a visit. Many of you probably still have great memories of our 2015 Nice Meeting. In Autumn 2013, the inauguration of the brand new *Promenade du Paillon* - 30 acres of park running from the city center to the Mediterranean Sea – added another glorious and playful slice of urban greens to the lovely Nice. Please come to Nice in April next year to experience it for yourself.

Disclosure statement: The author has no conflicts of interest to disclose.
**ISHLT Call for Nomination to the Board of Directors**

Maryl Johnson, MD, Chair of the Governance Committee, invites the nomination of qualified ISHLT members to serve as Directors on the ISHLT Board of Directors. There are **four** open positions for Director on the ISHLT Board of Directors. Completed nomination packets must be submitted to the ISHLT HQ Office by **5:00 PM US Eastern Time on Friday, September 15, 2017**.

Nominees desiring to be favorably considered for a Director position should have had significant involvement in and service to ISHLT. Additionally, nominees should have **demonstrated ability** to think strategically, work effectively within a collective decision-making body, and have knowledge of or experience with organizational governance.

The Governance Committee will give priority to evidence of the following criteria when evaluating nominations:

1. Leadership experience and abilities
2. Ability to work collaboratively among peers with different needs and interests
3. A commitment to help ISHLT make progress towards its strategic goals and objectives
4. Experience in one or more of the following areas: finance, advocacy, fundraising, leadership development, and/or organizational governance
5. Prior service in a leadership position for ISHLT, such as Chair of a Council or Committee; Workforce Leader of a Council; Chair or Project Lead for an ISHLT activity (academy, standards and guidelines project, registry, monograph, etc.)
6. A commitment to set aside time to devote to active engagement in ISHLT leadership and oversight responsibilities
7. A willingness to engage in self-evaluation as well as in the evaluation of and feedback to other volunteer leaders
8. A minimum of 5 continuous years of membership in ISHLT

A completed **Nomination Application** and **two letters of reference** detailing the nominee’s abilities as outlined above are required for each nominee.

- One of the letters must be from an ISHLT member in good standing describing the contributions that the candidate has made to ISHLT.
- One of the letters must be from one of the candidate’s administrative superiors, must address attributes 1, 2, and 6 listed above, must include specific examples that demonstrate those attributes, and must indicate the institution’s support of the candidate’s commitment to ISHLT leadership.

Letters commending the nominee’s professional stature, research, and/or clinical accomplishments, etc., are less helpful. The letters of reference will be given close attention by the Governance Committee.

Individuals who serve as an Officer on the Board of a related medical professional society are not eligible for simultaneous service on the ISHLT Board. Nominations of individuals who serve as a Director on the Board of a related medical professional society will be considered on a case by case
basis. Note that ISHLT Officers and Directors may not simultaneously serve as officers of any ISHLT Scientific Council nor as Project Leads/Chairs for any ISHLT activity (standard/guideline, new registry initiative, Academy, etc.). Officers and Directors may serve as ISHLT Committee Chairs.

ISHLT has become a large and complex organization. Board members are responsible for governance, policy setting, and decision-making from the perspective of the Society as a whole rather than from the perspective of their particular professional specialty, geography, or other demographic attribute.

The Board focuses on mission, strategic direction, organizational priorities, programs, and financial oversight. The Board of Directors undertakes ISHLT business via three face-to-face board meetings a year (2 days each) as well as regular, interim conference calls. Between Board meetings/calls, the Executive Committee (the 5 officers) meets every other week via conference call to undertake business that does not require a Board vote.

Board members are assigned to serve as Board liaisons to one of ISHLT’s Committees or Scientific Councils. The Board liaison is expected to participate on all Committee / Council conference calls, serve as a conduit of information between the Board and the Committee / Council, and provide oversight of / guidance to the Chair. Board members may also be assigned to serve on various Task Forces. An expected turn-around time of between 2 and 5 days for email correspondence and email votes is the norm, depending on the urgency of the matter. Given the demands of Board service, nominees are asked to provide a description of how they will allocate the necessary time for Board service in light of their work demands.

Members elected to the ISHLT Board of Directors provide an invaluable service to the organization and its future. The Governance Committee appreciates your participation in the nomination process and in identifying individuals who will continue to strengthen the ISHLT. Self-nominations are both welcomed and encouraged.

Your Nomination Packet must include the following:

1) Nomination Application completed by the nominee
2) 2 letters of reference as described above

NOTE: If you submitted a nomination packet last year, your letters of reference from that packet will be added by ISHLT to your nomination packet this year. Additional /updated letters of reference are welcome but not required.

Applications and all attachments must be submitted by 5:00 PM US Eastern Time, September 15, 2017. Upon its completion, a copy of the applications will be automatically sent to megan.barrett@ishlt.org.

Late Nomination Packets or Packets that do not contain ALL of the required documents will not be accepted.
Call for ISHLT Links Editor Applications

DEADLINE: October 2, 2017

The International Society for Heart and Lung Transplantation (ISHLT) is seeking an enthusiastic, creative and innovative individual to become the new Editor of the monthly ISHLT LINKS newsletter.

After 7 years of exceptional and dedicated service as Editor, Vincent Valentine’s term will be expiring in April, 2018.

Applicants for the Editor position must be members in good standing of the ISHLT and should submit a letter of interest by October 2, 2017. The letter of interest should include the following:

- the reason the applicant is interested in this volunteer position
- previous experiences (managerial, leadership, editorial, etc.) that speak to his/her qualifications for the position
- a statement of the applicant's vision for the newsletter

The ISHLT LINKS Editor position will be a three-year appointment, with the option of being renewed for additional years up to a five-year maximum. The Editor will have the ability to appoint associate editors as needed. The Editor’s primary responsibilities will be to:

- implement the strategic vision for the newsletter
- determine the theme for each issue, proactively identify and solicit its content, and task the appropriate individuals to deliver that content
- provide editorial guidance to the associate editors and other contributors
- work with the ISHLT staff to produce the newsletter
- work with the Board of Directors to ensure that the newsletter meets the communications goals and objectives of the Society
- work with the Program Committee, media consultants, and staff to identify writers for and develop the content for the Daily LINKS Newsletter at the Annual Meeting
- meet tight deadlines
- respond rapidly to evolving issues

The Board’s goal for the LINKS is that it serves to keep the Society membership abreast of ISHLT programs, activities, and emerging opportunities. The LINKS is a vital means by which the Board meets the Society’s strategic goals of 1) enhancing membership value, 2) engaging our community worldwide, 3) improving science and driving innovation.

Accordingly, the Board expects the LINKS to include content such as the following:

1) Regular, scheduled updates from the President and Program Chair/Committee
2) Board news (including new policies or procedures, finance information, governance updates, important deadlines, new programs and services)

3) Education Committee news (new educational offerings)

4) Registry news (including new registries, new additions to our registry participants, new data of interest)

5) Standards and Guidelines news

6) Scientific Council news

The Board also desires to use the LINKS to enhance international engagement, perhaps by sharing information about upcoming co-sponsored or endorsed activities and collaborations, or even with stories from our newer members and centers in emerging programs. The International and Intersociety Coordinating Committee (I2C2) can be helpful in this regard.

Further, the Board believes that the third strategic imperative (improving science and driving innovation) could be boosted by 1) highlighting upcoming or recent JHLT articles and 2) inclusion of Grants and Awards announcements, grant opportunities, and reports about award recipients and innovation driven by those individuals ISHLT has supported through grants.

Additionally, the current directed sections with pearls from senior faculty or inclusion of historical events related to advanced heart and lung disease or the Society continue to be valuable in making the connections between ISHLT, its members, and our clinical/scientific focus.

In recognition of the commitment and time involved, the Society will award an Honorarium of $500 per issue to the Editor or Associate Editor assigned primary responsibility for the given month’s edition, when published on time.

Please send all letters of interest to Megan Barrett (megan.barrett@ishlt.org) by October 2, 2017.

The ISHLT Board of Directors will consider applications and come to a decision in early 2018. Responsibility for the newsletter will begin with the June 2018 issue.

Andrew J. Fisher, FRCP, PhD
ISHLT President
Summer Fun

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As we are midway into summer and transplant patients and providers alike head off to vacation, it’s a good time to remind people about the existence of travel clinics and vaccinations. There are a number of excellent resources available to the public that can help navigate a virtual minefield of infectious diseases.

Travel advice can be as mundane as washing hands and carrying alcohol hand gel at all occasions (yes, especially when camping but keep away from the log-fire), mosquito repellant (West Nile virus, anyone?), no skinning animals (wild game or otherwise) and properly cooked meats (Dutch ovens have made a comeback on the camping trail). There is always "glamping" which may mitigate infectious concerns, but beware rodent droppings in the finest of wood cabins (hantavirus), inhaling river water while gasping for air when kayaking down rapids (leptospirosis) or drinking untreated well/ spring/river water (giardiasis).

Some summer travelers may head further out of their comfort zone by taking in a foreign country. The CDC website has excellent advice according to area visited and the type of traveler https://wwwnc.cdc.gov/travel. For starters, always make sure that emergency medical insurance coverage is available. For patients, it is generally recommended that they are aware of the location of the nearest hospital and have emergency medical phone numbers on hand. It is always helpful to have a list of medications and medical problems on paper, and to take extra medications just in case.

While camping abroad, additional things to keep in mind are the local epidemiology of infections. Foreign travel generally encompasses delicious local cuisine (which may or may not be spiked with Escherichia coli, Salmonella typhi and relatives – keep antibiotics on hand and start if gastroenteritis occurs), and may encompass cruise ships (norovirus), “massage” parlors (sexually transmitted diseases), tattoo shops (hepatitis B/ C) and wide-open spaces (mosquitoes carrying malaria, dengue, chikungunya, etc. and ticks carrying rickettsia). Some fecal-orally transmitted infections may be preventable with immunization such as hepatitis A and Salmonella typhi vaccination, though advance planning is required and highly recommended; travel clinics can help best when consulted a few months before a planned trip, rather than the week before. Certain trips necessitate yellow fever vaccination or malaria prophylaxis.

While relaxing at the beach and reading “Links” on your screen, consider limiting sun exposure by using sun screen and cover-ups (increased risk of skin cancer with immunosuppression as well as photosensitivity if on various antifungals). Additionally, warm sea water on fresh abrasions may be associated with a rapidly progressive cellulitis/ fasciitis (vibrio sp.), Schistosoma larvae can "crawl"
through bare feet to set up home in the GI/GU tract, and raw oysters/ sushi are a big no-no for our patients (vibro again, various parasites).

Hope you all have a great summer!

PS. Excellent NEJM article for “fever in the returning traveler”

Disclosure statement: The author has no conflicts of interest to disclose.
One hundred years ago...

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In 1917, one hundred years ago, Emil von Behring, the recipient of the first Nobel Prize in Physiology or Medicine, died at Marburg, Germany. Behring studied under Robert Koch at Koch’s Institute in Berlin. During the first 20 years of Nobel Prizes for Physiology or Medicine, there was a dominance in the area of infections and immunity. In 1890, Behring and Shibasaburo Kitasato published their discovery that increasing doses of sterilized cultures of diphtheria or of tetanus bacilli caused animals to produce substances in their blood that could neutralize the toxins which these bacilli produced (antitoxins). They also showed that the antitoxins produced by one animal could passively immunize another animal, and that they could cure animals showing symptoms of diphtheria. By 1895, the antitoxin was successfully administered by injection to treat diphtheria patients. In 1901, the Nobel Prize in Physiology or Medicine was awarded to Emil von Behring "for his work on serum therapy, especially its application against diphtheria, by which he has opened a new road in the domain of medical science and thereby placed in the hands of the physician a victorious weapon against illness and deaths." Immediately after this discovery, there was a widespread use of specific serum therapy for treatment of infectious diseases. Diphtheria antitoxin was one of the first biological therapeutics to emerge.

Disclosure statement: The author has no conflicts of interest to disclose.
Xenotransplantation – Closing in on the Clinic

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We are all aware of the continuing critical shortage of organs from deceased donors for clinical transplantation. Whatever attempts are made to increase human organ donation, it seems very unlikely the demand will ever be satisfied. The transplantation of organs from pigs could resolve this problem, and for more than 30 years, efforts have been made to investigate the pathobiological barriers that need to be overcome.

In recent years, relatively rapid progress has been made, largely due to improved methods of generating genetically-engineered pigs and the introduction of novel immunosuppressive agents, e.g., costimulation blockade agents. Life-supporting pig kidney transplantation in nonhuman primates is now associated with excellent graft function for many months, or even more than a year, in the absence of features such as proteinuria.

A major step has been the ability to generate pigs that express none of the three known antigens against which humans have natural antibodies, so-called triple-knockout [TKO] pigs (Only two need to be knocked out for pig organ transplantation into nonhuman primates, as one of these glycans is shared with the pig). Experimental studies are now being directed towards determining whether conventional (i.e., calcineurin-based) immunosuppressive therapy is adequate to prevent a T cell-induced elicited antibody response against a TKO pig organ, which was not successful when the pig organ expressed these antigens.

Extensive testing of the sera from patients on the waiting list for a kidney transplant indicate that approximately one-third of them demonstrate no antibody binding to TKO pig cells, suggesting there should be no risk of rejection if the T cell response can be adequately suppressed. Furthermore, by no means all anti-HLA antibodies cross-react with swine leukocyte antigens (SLA), thus enabling some HLA-sensitized patients to receive a pig graft without added risk. It therefore seems timely to consider approaching the FDA with a view to initiate a limited clinical trial of pig kidney transplantation.

The careful selection of patients for the first trial will be important. There is clear evidence that older patients, e.g., >60 years of age, are disadvantaged and often wait many years for a suitable allograft to become available, particularly if the patient has any degree of sensitization to HLA. Indeed, many of these patients are never offered a suitable allograft during the years before they die. If these patients could be offered a period of time (perhaps months or years, but as yet undetermined) of
good quality life, free from the restrictions of dialysis, a pig kidney transplant might prove welcome and well worthwhile.

Why should the first trial be of pig kidney transplantation, and why not one of the other vital organs? Although the results of heterotopic heart transplantation in nonhuman primates are good, there remain problems in achieving prolonged survival after orthotopic heart transplantation that need to be resolved, and the results of transplantation of pig livers and lungs remain significantly inferior to that of kidneys.

It is uncertain what requirements will be requested by the FDA, but under the biosecure isolation conditions under which the source-pigs will be bred and housed, the risk of a pig infectious microorganism being transferred to the patient is small – significantly less than the risk of transfer of a virus, e.g., CMV, EBV following allotransplantation. Furthermore, there has been no in vivo evidence suggesting that porcine endogenous retroviruses will be problematic, which can in any case be treated by the several anti-retroviral agents now available.

The time is approaching when a clinical trial can be fully justified – indeed it could be considered unethical not to offer a pig kidney to a patient who in all likelihood is condemned to spend the rest of his or her life on dialysis. The hope is that this first small trial will open the way for all patients awaiting an organ transplant (and many others with conditions such as diabetes mellitus and Parkinson’s disease) to be treated in a timely manner.

“History tells us that procedures that were inconceivable yesterday, and are barely achievable today, often become routine tomorrow.”

Thomas E. Starzl, 1982.

Disclosure statement: The author has no conflicts of interest to disclose.
Feeling The Burn(out): Thoughts On Compassion Fatigue

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"Don’t think I ever spent a minute of any day wondering why I did this work, or whether it was worth it. The call to protect life...was obvious in its sacredness. I realized, I must first understand his mind: his identity, his values, what makes his life worth living, and what devastation makes it reasonable to let that life end. The cost of my dedication to succeed was high, and the ineluctable failures brought me nearly unbearable guilt. Those burdens are what make medicine holy and wholly impossible: in taking up another’s cross, one must sometimes get crushed by the weight.”

— Paul Kalanithi, When Breath Becomes Air

I found myself reading this book, recommended by the Medstar Washington Hospital Center’s Emergency Room Book Club. Instead of reading something mindless and relaxing on a recent vacation, I was unable to put this book down, crying freely on a beach when it concluded. Instead of vacationing to distraction, this book was the opposite. It felt like what I needed to read— heavy words in order to guide me. A literary companion to navigate the weight of the work we do as MCS providers. This passage gives me pause as I consider what we undertake every single day, helping patients and families whose lives have been devastated by chronic illness. We are not necessarily halting or reversing death, or even returning them to their previous levels of function. We are helping them exist for a “while longer,” however “longer” may be. I have never questioned how important this work is. I have always felt as though the long hours and continuous onslaught of stress was always meaningful.

But what do you do when the weight of your work is not enough to allow you to live your own life? To spend time giving your own life meaning, outside from the dry wall and sterile fluorescent lighting of your institution? What do you do when you are beyond compassion fatigue, and at a totally new destination: compassion failure, or collapse? What do you do when you are struggling with burnout and are unable to give your best to your patients? Unable to provide to your team that deserves you at your best performance level, or—worst of all—to your family and the people you actually choose to spend your time with?

We are a group of intelligent, ambitious providers caught between the proverbial rock and hard place. We yearn to achieve, recognizing the finite amount of time we have to pick at the dream of status for ourselves, our work obligations, and also climbing the ladder of success and life goals in parallel. We live to work over working to live, not only because we are passionate about this field and what we do, but because to us, the call to protect life and mitigate suffering is the best and most moral thing to uphold.
There is emerging research and anecdotal literature calling for attention to compassion fatigue and burnout in clinicians across the field. There are more recognitions of this as a prevalent issue across many areas of healthcare — the emergency response field, critical care and primary care. It is no longer a problem that plagues physicians exclusively, but all providers in every area of the healthcare continuum. There are even less discussions about our culture as healthcare providers. The "suck it up" mentality and the lack of time to grieve or process loss and trauma is omnipresent. There is always another patient waiting to be helped, another patient who is struggling and needs to be seen. We laugh, somewhat derisively, at those who say "work-life balance," because for us, it doesn’t exist. Work bleeds into life, especially when your work deals with life and existence itself.

Additionally, there is the moral hazard we incur in medicine, stemming from patients who continue poor behaviors despite their illness. These behaviors are societal and personal and can perhaps be treated, but not ever cured. The quest of those bright-eyed and bushy-tailed, wanting to help, only contribute to the exhaustion and disillusionment. We continually encounter obstacles along the way — administrative, political, financial, and interpersonal.

This is a resilient community that wants and strives for solutions, data and interventions. There is no coddling or effort recognition when the stakes are high and the outcomes concern living and quality of such. Recognizing and identifying a problem is one thing, but how to prevent or manage it? Often times, we read literature identifying complications, and the conclusions all say the same thing: we need more data, more discussions, more analysis. The impact of burnout on healthcare professionals is an insidious leak outward from the individual, affecting retention, field advancement and society as a whole.

Compassion fatigue is not a one-time event, but a process. Values are constantly in flux. Solutions are not formulaic, but highly individualistic. We must identify then revise what is important to us again and again.

Disclosure statement: The author has no conflicts of interest to disclose.

References:


EDITOR’S CORNER: Alchemy, Chymistry and Chemistry to Obliterative Bronchiolitis, Bronchiolitis Obliterans Syndrome and Chronic Lung Allograft Dysfunction (Obstructive vs Restrictive): It’s Just Terminology

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The evolution of terminology, organization and classification is an effort to find truth and improve understanding for knowledge. Focusing on the evolution of chemistry as a respected science may help us today as we use or develop new terms reflecting our increasing understanding and not feed into our biases with regard to chronic lung allograft dysfunction. Looking back to the middle ages, alchemy dealt with the study, treatment, refining and production of specific material substances. The prefix “al-“, an Arabic definite article, indicates the origin of Alchemy from the Arabic world. The Greek word “chemia” is the root word for Chymistry then later chemistry. Over time, the article “al-” slowly faded away. This may have been due to the philology of the humanists from the Renaissance in an effort to purge the intrusions of “Arabisms,” who were believed to be polluting the purity of Greek words. Despite this, many Arabic contributions remain with us today: alcohol, alkali and aluminum just to name a few. Dig deeper into the word, al-iksir – still with us today as elixir. Although, alchemy devolved into chemistry over hundreds of years, the practical chemical processes of distillation for brewing, crystallization and sublimation were improved by Arabic alchemists beyond the rudimentary past prior to the middle ages.

Turning to the 17th century, there were several competing theories in the world of Chymistry or Chemistry. The chemical matter theory believed that all metals were composed of two substances: mercury and sulfur- a medieval dyad theory. Paracelsus, a Swiss Physician and alchemist who pioneered the medical revolution, is considered the father of toxicology, and believed physicians require a solid academic knowledge in chemistry. He added salt (the solid, initially permanent then fragile and separable principle) to sulfur (the combustible principle) and mercury – aka quicksilver (the fluid, volatile and vaporizable principle). This triad is composed of the three primary ingredients of everything, the tria prima making up the Paracelsian Theory. The triad later expanded to the pentad: mercury, sulfur, salt, Earth and phlegm. Other theories including the Water Theory and the ancient, Aristotelian Quaternary Theory of Earth, Wind, Fire and Water. All five of these theories were in place and chosen by particular practitioners according to their personal biases. Probably not much different from the distant past or today.

The chemists, better known as chymists of the 17th century, provided important proofs for a particulate matter theory. For example, they would dissolve silver in nitric acid resulting in a clear solution. This clear solution was passed through filter paper. A fine white powder precipitates out of this solution when salt is added to it. When heated in a crucible with a little charcoal, this powder will return the original silver. In summary, when this silver dissolves into a transparent fluid, it
must dissolve into such tiny particles that is capable of being passed through the pores of the filter paper without destroying its original identity, supporting the atom or corpuscular theory.

In this era of the Scientific Revolution, chymistry did not have a high intellectual status. Originally, it remained embroiled with the problems of swindlers practicing chrysopoeia, the transmutation of metals into gold. There were also contrived mechanical corpuscular theories that were not too convincing to some. There was a belief that acid particles were pointy and pricked our tongues imparting a sour taste, alkalis were fluffy and sponge-like. Acids and alkali neutralize each other when the pointy acids are stuck in the spongy alkalis. The search for the philosopher stone that substance for the means of metallic transmutation to gold was aggressively pursued, along with the “elixir of life” in the 17th century. Royal and princely courts also had their own alchemists. There were clearly many frauds and con-men throughout the 17th century whose fates were met at the gallows.

Along with its tendency for charlatanism, the low professional status of chymistry existed because it was not part of university education, but instead practiced by workers from a low social status. Chymists were getting their hands dirty and working with stinky materials not much different from the chemists of today. An enhanced status for chymistry came about through professionalization in pedagogical reform. It had to be taught. Textbooks on chymistry proliferated. One of the first chemists at a university was actually hired as a chemical pharmacist. The belief at the time was that many substances from the earth came in the form of toxins and poisons. The role of chemistry was to purify these substances from their toxic admixtures and extract their medicinal essences. Consequently, many of the early chemists were actually pharmacists. The teaching of these topics and practical applications occurred then advanced when the crown-funded garden of medicinal plants matured at the Jardin des Plantes in Paris, where a professorship in chemistry emerged with publications. Most of these publications focused on practical pharmacological preparations with minimal theory stressing the utility of chemical medicinal preparations with various recipes, thus emphasizing the basic foundations of chemistry developed by alchemists: distillation, crystallization and sublimation.

The status of chemistry was improving and further enhanced when it became part of learned societies professionalization, particularly with the Academie Royale des Sciences in Paris founded by Louis XIV. But all of this came at a price. Chemistry had to be purified or cleansed from its less desirable links with alchemy –a quest for transmutation, which remained a prime breeding ground for fraud. In essence, the Royal Academy pushed alchemy aside as the social status of Chemistry was elevated. Chemists wanted to improve their status with a rational intellectual focus, not the work of mere artisans. The educated social group rose above artisans for being honest and upright whereas alchemy unintentionally encouraged swindling from a longing for gold and fantastic medicines – the cure-all. Artisans who worked with their hands weren’t valued in the social hierarchy. Chemists expanded the craft tradition by adding a rational approach, giving it a new intellectual status. Many natural philosophers were either members of the clergy or from the class of the third estate. The third estate were those who worked, not clergy or not nobles. Those educated in the third estate developed a higher status. With focus on understanding and reason,
chemists began making a claim that alchemists couldn’t, elevating the chemists above the third estate.

It was in the 18th century when the major schism of chemistry from alchemy came from Georg Ernest Stahl. Stahl hypothesized that a common “fiery substance” was released during combustion, respiration and calcination, which was also absorbed when these processes were reversed. This was his theory of rational enterprise confirming the growing separation of chemistry and alchemy. Stahl was trying to discredit alchemy by erecting a rational chemistry to oppose it. Alchemists were more interested in the successful procedures of distillation, crystallization and sublimation, rather than why they worked. Ignoring the why, may have been the most important reason for the bit of magic, mystery and myth of alchemical procedures. Stahl and evolving chemists were questioning why, and wanted to give a reason. Rationalizing processes, rather than accepting what works.

As we refine our understanding of chronic lung allograft dysfunction, we will maintain our composure rationalizing this nemesis of lung transplantation in our quest to improve long-term outcomes.

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