Twitter Thread by Jack Iwashyna

Jack Iwashyna
@iwashyna

In the midst of all the grief + chaos of 2020, it's hard to remember there were good things

For me, an incredible group of young scholars doing highly relevant science was the #Bestof2020. Here are my favorite 2020 paper by each of several young scholars with whom I get to work

To see where some of these folks were last year see this thread

let's start this #BestOfResp2020 with @UM_IHPI K-awardees

https://t.co/xygPoUATXJ

> It's time for #BestOf2019 lists
>
> I thought I would try something new. Here are my single favorite paper by each of several young scholars with whom I get to work. They are all rock-stars. In lots of cases these were hard choices 'cause they were very productive this year...
>
> — Jack Iwashyna (@iwashyna) December 26, 2019

.@msjoding changed the way I look at pulse oximetry in @nejm, rethinking my bedside care

This paper has rightly gotten a lot of attention

https://t.co/mqiGLzq79g

> 1/ Our research letter on racial bias in pulse oximetry measurement, out today in NEJM https://t.co/6dLuNGosxp pic.twitter.com/XXsfWfc5dv
>
> — Michael Sjoding (@msjoding) December 17, 2020

But I think it is useful to look at it as an example of what makes Mike's work so interesting. A grant to build a dataset just to look at this project would, I think, have been un-fundable. Instead Mike had built an infrastructure to look at ARDS detection

When @msjoding came across Prof Amy Moran-Thomas's provocative @BostonReview essay (https://t.co/VB63h74o9U) he was able to pivot that data infrastructure to ask an important question...

because he had done a ton of bedside #COVID19 care, had a broad @ncspMICHIGAN education, + rigorous epi training in addition to his machine learning work. @UM_MiCHAMP's book group had primed him to thing about algorithmic bias. And he had MIMIC clean to rapidly replicate

Serendipity + the prepared mind -- in an environment instrumented (in terms of both technical infrastructure + colleagues) to be able to go answer questions that arise from bedside intuitions + broad reading + vigorous discussions, w enough financial + time flexibility to do that

.@tsvalley fielded a survey to every Michigan hospital in the midst of the first wave pandemic, to investigate how hospitals were helping--or not--families stay in touch with ICU patients. The results were horrifying when they came out in @ATSBlueEditor

https://t.co/XqyC8GVM9r

> Family members are integral to #ICU care but were unable to visit their loved ones during the pandemic - I'm excited to share a tweetorial on our recent #COVID19 study in @ATSBlueEditor
>
> 1/https://t.co/MCVo0rDTF6
>
> — Tom Valley (@tsvalley) August 6, 2020

.@UMichNursing superstar Sue Anne Bell was helping to organize everything from #COVID19 field hospitals to #COVID19 nursing home care while serving on an @theNASEM panel on health effects of climate change

https://t.co/7tIqhoO3pv

> Three members of the #UMichNursing community will be inducted as fellows of the AAN during a virtual ceremony tomorrow. Congrats to Sue Anne Bell, Lauren Underwood and Pamela Martyn-Nemeth, who will be inducted alongside other distinguished nurse leaders: https://t.co/S9XLQZOgyN. pic.twitter.com/AFrliqt4eU
>
> — U-M School of Nursing (@UMichNursing) October 30, 2020

I loved Sue Anne Bell's clever @PLOSONE paper that used public data on clinician's office locations to examine another threat of disasters to health -- disruptions of relationships with clinicians + diminished access to care

https://t.co/EL32uN92lP

I also work with a group of K12 scholars, supported by @nih_nhlbi training grant in implementation science in critical care

Again, great examples of @Jdos_WoT's hypothesis that universities are a reserve force whose value, in part, is their ability to meet unforeseen challenges

.@RyanPBarbaro showed @TheLancet that initial pessimism about role of #ECMO in #COVID19 was wrong: ECMO outcomes for #COVID19 were quite similar to those for other causes of respiratory failure--full ICU support saves COVID lives

https://t.co/5GCg69MPrL

https://t.co/YUeFuxV6PC

.@jpdonnepi showed @JAMA_current that #COVID19 does not always end at hospital discharge--readmission + post-discharge death are ongoing problems, comparable to other conditions for which readmission prevention is a major focus

https://t.co/M2ieJE1G9B

https://t.co/E3jWFcVdjw

.@JenniferNErvin published a definitive review of 20 Evidence-Based Practices in mechanical ventilation in ARDS in @accpchest, just in time to help counter somer of the CRAZY things that were being proposed on twitter

https://t.co/L2BGuWGALN

https://t.co/hnq8ZeqgrC

In this midst of #COVID19, @L_ViglianiMD submitted a superb #K23 to @nih_nhlbi and earned a "highly promising" score (comfortably inside the funding line, NOGA awaited), and provided #COVID19 surge care, and was still writing

.@L_ViglianiMD continued her pathbreaking work on #PersistentCriticalIllness -- rethinking why patients get stuck in the ICU in terms of cascading complications rather than simply non-resolving respiratory failure

This piece in @yourICM, for example

https://t.co/CKQ1OcMiCZ

> Excited to share our newest publication @yourICM on persistent critical illness by looking beyond the patient and focusing on how hospitals may contribute to its development. https://t.co/50kVruJuye pic.twitter.com/oqgmieMsiI
>
> — Elizabeth Viglianti (@L_ViglianiMD) June 5, 2020

#COVID19 emphasized the importance of @L_ViglianiMD's clinical + epi + HSR work, as I wrote in support of her back in May (which seems an eternity ago, doesn't it?)

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19 May 2020

To my colleagues:

When SARS-CoV-2 approached southeast Michigan, we planned our surge staffing on the assumption that it caused a slowly resolving case of the Acute Respiratory Distress Syndrome. Our mental model was that of chronic critical illness—what Prof Louise Rose characterized as "relative clinical stability, but continu[ing] to require prolonged ICU stay and (usually) prolonged mechanical ventilation." We assumed the critical care physicians could serve as consultants, tweaking vents on dozens of patients as they slowly healed.

We were wrong.

Within a few weeks, ICU physicians had taken over primary management of COVID-19 patients. Night after night these patients decompensated—new renal failure, new pulmonary embolism, cytokine storm causing distributive shock. We had to staff them because they were clinically unstable, with cascading new problems day after day, even weeks into their hospitalization.

In fact, the right mental model for COVID-19 proved to be that persistent critical illness. Dr. Viglianti has defined *persistent critical illness* as "ongoing illness and some degree of instability that is no longer directly attributable to the original organ dysfunction for ICU admission." She has argued—for example in her first-authored invited editorial in leading British specialty journal *Thorax* last year—that persistent critical illness's cascade of new problems better represents the modern experience of long-staying ICU patients. (I must note that she was invited to write this due to her own reputation, not as a result of my sponsorship.) COVID-19 patients fit this pattern—they presented with respiratory failure, but many stayed because of cascading shock, renal failure, liver dysfunction, and coagulopathies.

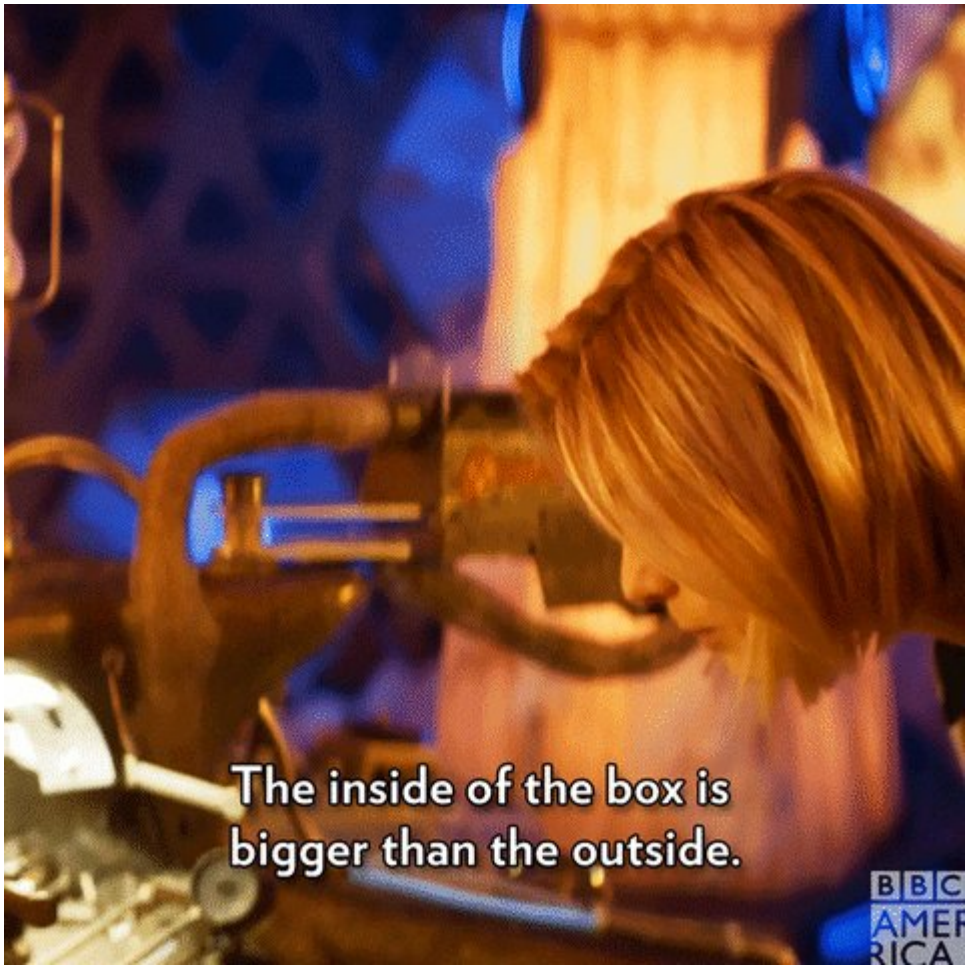
Intellectual Contributions

The core of Dr. Viglianti's intellectual agenda is reconceptualizing, and thereby improving, the care of patients with "persistent critical illness". In a careful series of studies, she has demonstrated that *even before* COVID-19, most patients with prolonged ICU stays were not simple failure to wean—although there is such a subset, perhaps 20-25% of long-staying patients, according to 3 independent but single site studies. Instead, she has shown us, the hallmark of most patients with long ICU stays is the development of new and cascading organ failures. She has shown us that these patients account for a disproportionately large fraction of critical care resources—although a mere 5% of patients, they consume over 20% of ICU bed days in the Veterans Affairs system nationwide. Liz's work represents an important reframing of our understanding of these patients. The traditional focus on ventilator weaning is revealed as insufficient. Instead, the focus becomes on multi-organ support and prevention of new dysfunction.

And while I do not get to work closely enough with @abrnurse to get even any reflected glory--@AnneSales4 + @DeenaKCosta are her amazing mentors--I must bring to your attention in this thread her nationwide work rethinking burn center staffing

https://t.co/ODP1e1sDrj

All of that science was made possible by @nih_nhlbi's support for clinician scientist, plus the incredible environment of @UMIntMed + @UM_IHPI + @VA_CCMR + @MichiganPulmCC @UM_MICReW + @ncspMICHIGAN -- we benefit from multiple mutually supportive institutions



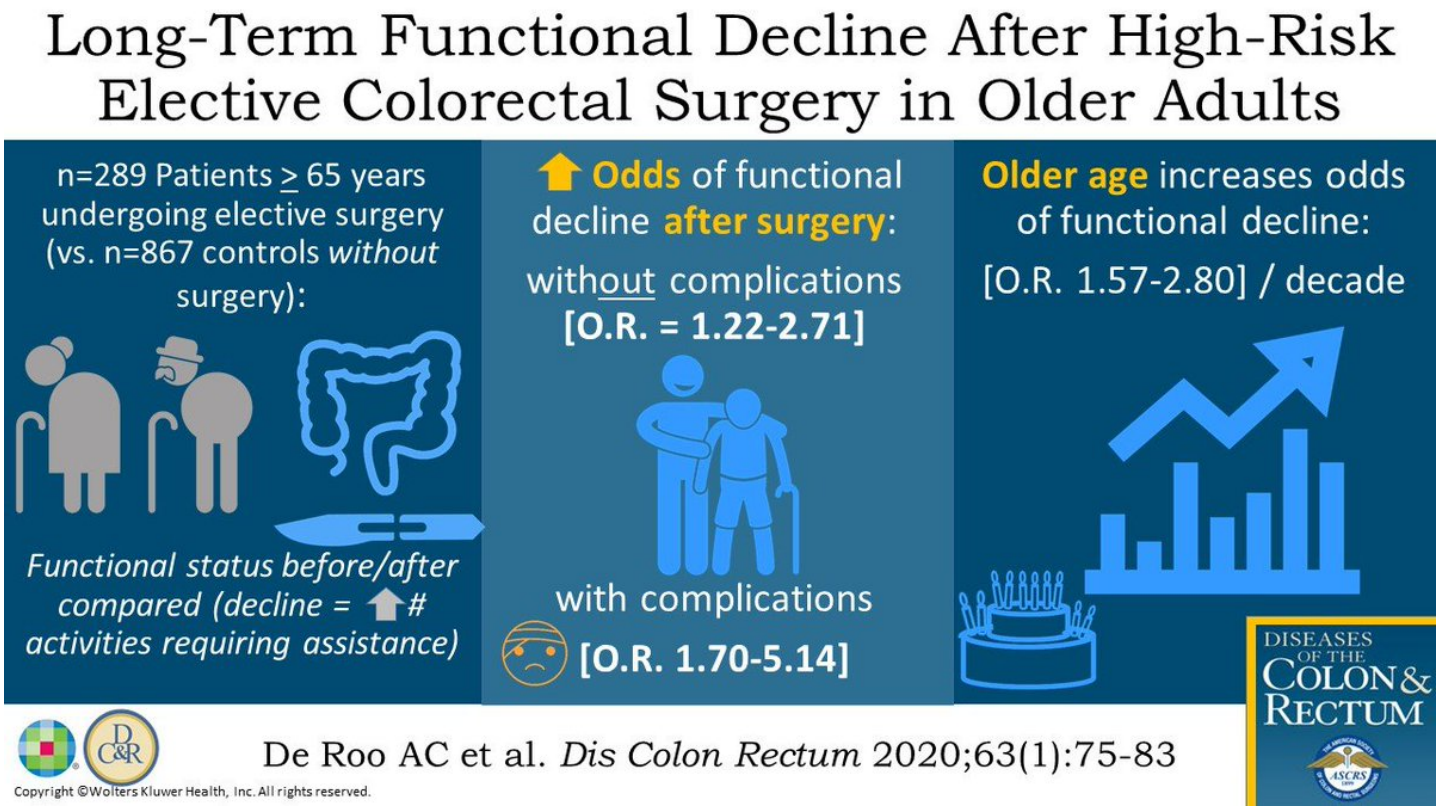
But that's not all! There are an amazing group of @ncspMICHIGAN Scholars (and those in the associated @UM_IHPI Master's Program) that I get to work with

Before she returned to yet more hand surgery training, @BilligJessica capped her @ncspmichigan series on potentially inappropriate #gabapentin use with a lovely paper looking at its role--and there should be almost none--in carpal tunnel syndrome

https://t.co/6kdhrtiaum

And @ncspMICHIGAN Scholar @ADeRooMD showed results that ought to fundamentally change the way we assess the risks + benefits of some surgeries

https://t.co/qpSlYYQI5B
and also
https://t.co/HzwwwDM2Iy



Nurse @ashleevance_phd is primarily mentored by @DeenaKCosta and continues her amazing line of work on the impact of medical complexity in neonatal ICUs and parenting -- for #PedsICU, taking the family rather than the organ as the unit of analysis/care

https://t.co/ARk1Gd1i6K

> Just in time for #NursesWeek2020, my last 2 dissertation papers are published! \U0001f929 This work made possible by amazing mentorship @DukeU_NrsngSchl and support from @ncspMICHIGAN @UMichNursing. Links to pubs in thread 1/ pic.twitter.com/wRwYy3kfFs
>
> — Ashlee J. Vance (@ashleevance_phd) May 6, 2020

(@ashleevance_phd has a SUPER COOL project on the incoherent variation in children's hospital visitation policies under review that I can't wait for you to see, too)

.@DrHuerto, primarily mentored by @chang_tammy, continues to be an unflinching voice for racial equity in care, from @ConversationUS (https://t.co/PD8FiowUbt) to @Health_Affairs (https://t.co/GT6oBHg2U2)

Dr @v_valbuen of @ncspmichigan has written powerfully about our moral and professional obligations as clinicians in this hard, hard year

https://t.co/fVy9ycljiT

even as her emerging Stata skills have some great new data almost ready for submission

And @lcagino of @MichiganPulmCC capped her first 6 months of protected research time (after so many months of extra #COVID19 care) with an important new paper @AnnalsATS with @dulcetarpeggio and @JackieKercheval on benefits of tracheostomy in #COVID19

https://t.co/MhsiWhZvAr

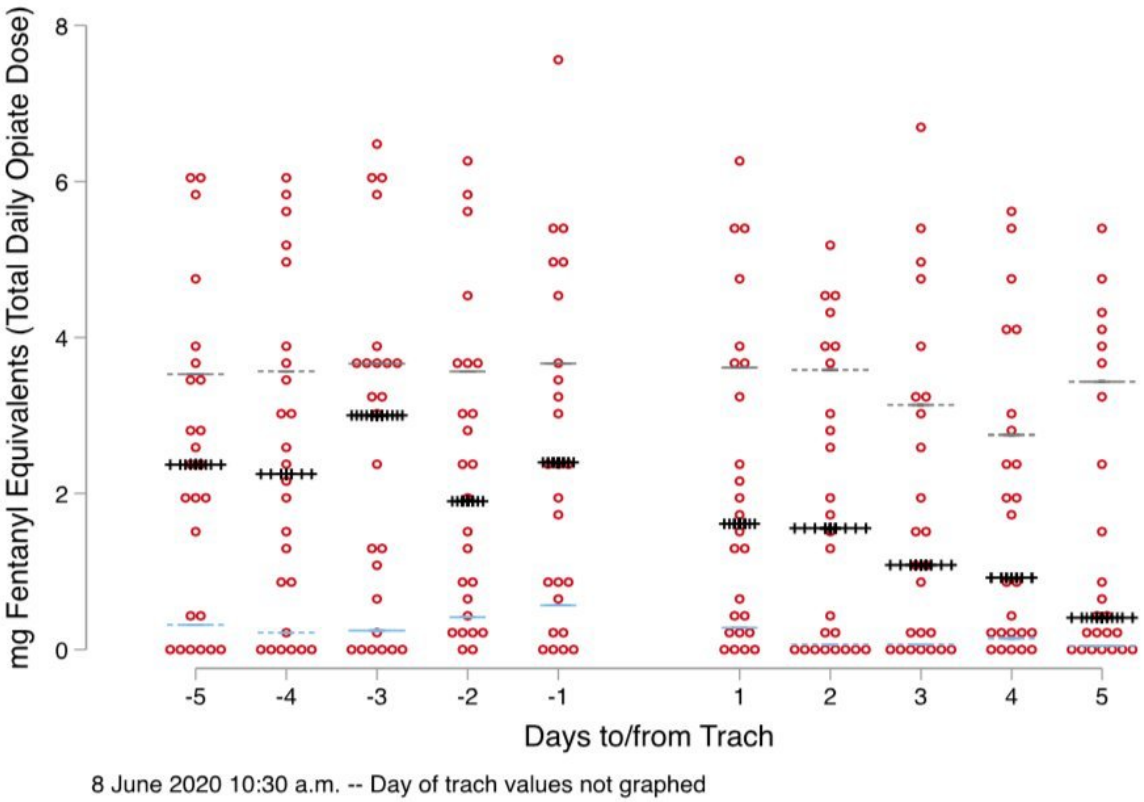


Figure 1: Fentanyl equivalents pre- and post- tracheostomy placement. The median is indicated by the crosses, the dashed lines indicate the 25th and 75th percentiles.

That analysis by @lcagino, @JackieKercheval, @dulcetarpeggio certainly moved my thinking in 2 different directions--redoubling my commitment to re-implement A2F bundle w @dclaar22 even in #COVID19, but also supporting earlier trach given the very long arc of #COVID19 recovery

somehow I screwed up the threading on this... reconnecting here

https://t.co/0xNCm6wD4u

> Have I mentioned I get to work with the best people?
>
> This is so much fun pic.twitter.com/wr72aPV7MH
>
> — Jack Iwashyna (@iwashyna) December 29, 2020