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Editorial

Academic Pathology's "Spiderless Network": The power of a professional society, its listserv, and its journal during a public health emergency

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Down the road, many stories will be told of the COVID-19 global pandemic, woven over time into diverse histories. Crafted from multiple vantage points, the most compelling narratives of what unfolded will undoubtedly emanate from the medical community itself. Much will be at the macro level (governing, regulatory and advisory bodies, at global, national and regional levels), but much will also be at the micro level. What played out at ground level in hospitals, clinics and health systems? How were decisions made on the frontlines—by whom, how and when? In probing this dimension of an unprecedented health crisis, one subject area is rife with lessons to be learned: how local decision-making evolved in the face of disjointed and incomplete information.

The information deficit loomed especially large for the academic pathology community, whose lifeblood and currency are multi-dimensional data—big and small, granular, and synthetic. The information challenge was amplified for those academic pathology leaders who, as perceived masters of complex diagnostics, were immediately called upon to assume broader roles in developing laboratory diagnostics, testing policies and action plans for their home institutions and their regional communities. Given its positioning at the nexus of clinical information flows, academic pathology offers a case study for post-pandemic analysis of how medical decision-making evolves at the ground level in the context of acute and pervasive uncertainty.

Wherefrom the information? The pandemic, especially in its earliest phases, was literally adrift in a sea of observations—disconnected, amidst a swirl of anecdotes and data points. Pathology proved up to the task at hand. After all, pathology is a field grounded at its core in observation whose experimentalists and practitioners alike are adept at translating observation into correlation, and then, into mechanism or diagnosis, thus generating reliable, coherent and actionable information.

Pathologists, however, brought more to the table than just their keen observational and investigative skills. They drew upon a tradition of collaborative information sharing. Academic pathologists leveraged well-cultivated relationships, across geographies and disciplines, to collectively delve into issues. Steeped in a "details matter" tradition, they displayed their typical relentless attention to particulars, in crafting a best-practices, virtual "how-to" book on the fly. Thus, the pathology community proved to be an enormous asset for academic medical centers in specific, and the medical community at large, in helping thread together workable pandemic policy pastiches.

How did academic pathology pull this off? In this issue of *Academic Pathology*, Bailey, and Sanfilippo[1] approach, the question from an intriguing angle: the *Association of Pathology Chairs* (APC) listserv, by examining how it was leveraged for the cultivation and dissemination of real-time, action-oriented information. Their comprehensive analysis of listserv entries, and associated publications in the society's journal and elsewhere, demonstrates convincingly just how effective the trifecta of a professional society, its listserv, and its associated journal, can be amidst the early fog of a public health emergency.

Network theory, now in its renaissance, may provide a useful framework for understanding what played out—specifically, the *spiderless network* meme.[2] Networks, with their webs of nodes and links, can emerge in the absence of a 'spider' as a purposeful and meticulous designer. That is, such networks have no controlling party or hierarchy at the center to facilitate network formation and maintain stability. Instead, oftentimes with vague and fluid membership, such webs self-organize, with a hierarchy of hubs within a scale-free topology. A fundamental premise of spiderless networks is that network members create positive relationships for themselves and others in the network through repeated interactions, even though there are no contractual ties linking network members together.[3] Their emergent behavior can feature dynamism, and at times, flexibility and tolerance to internal failure. Remove a single node, and the web persists, unbroken. In technology-intensive settings, spiderless networks can serve as repositories of technical information, refined iteratively, and as the information diffuses through such networks, it drives not just significant information exchange, but also further knowledge co-development.

In a sense, the APC COVID-19 listserv fits the bill. Though nested under the organizational APC umbrella, early in the COVID-19 pandemic the network of pathology thought-leaders self-assembled, organically, into what was, in effect, a spiderless network. Collective know-how was emergent, scale-free, and not dependent on any one individual. An interconnected sub-world was instantiated, clustering a deep reservoir of insight and experience in the clinical laboratory and anatomic pathology testing, clinical data analytics, viral pathogenesis, and clinical immunology, not to mention academic medical center organizational dynamics. As a by-product of this remarkable cooperative activity, local decision-making was empowered for all plugged into this discipline-centric social web. Importantly, beyond bringing knowledge forward for streamlined decision-making in a moment of crisis, this network served yet another purpose: alleviating the enormous stress on the decision-makers, as they coped with the pandemic's manifold uncertainties. Thus, the network itself became therapeutic, with the sharing of emerging frontline data and insights serving to alleviate some of the angst of those on academic pathology's frontlines, and of those knowing

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that they soon would be on the frontlines. Finally, the sharing of information through this network promulgated new ideas, approaches, and discoveries, many of which subsequently led to major publications in the peer-reviewed literature, including in the APC journal *Academic Pathology*.[4]

The human story behind this network cannot be overstated. The medical world, and to a striking extent, public policy makers, turned to academic pathology leaders both to make sense of diagnostic testing for the new pathogen that was SARS-CoV-2 and understand how health care could be provided in the midst of the evolving pandemic.[5,6] Under dire circumstances, the real-time sharing of frontline information helped prepare academic pathology leadership across the continent (U.S. and Canada) for the emergency command meetings occurring within their own institutions, their interactions with regional civic and public health officials, and perhaps most importantly, for making the decisions that had to be made for their own laboratory operations. In the words of one academic pathology leader, this network "helped save lives".

Perhaps this is now worthy of coining a dedicated term: *Academic Pathology Spiderless Network (APSN)*. As the larger pandemic story is assembled in coming years, the APSN will almost certainly be recognized as itself having been part-and-parcel of a larger matrix of interconnected spiderless networks, across both health and non-health domains. Though transient and serving a time-limited purpose, the listserv-based APSN of the pandemic could serve as a prototype for shaping future network collaborations, wherein the academic pathology community fosters critical information flows in tackling ever more complex and even more daunting healthcare challenges.

Conflict of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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