

# The Infectious Diseases Physician in the Future of Healthcare: Not Only About Antibiotic Prescribing

Ronald G. Nahass<sup>1,2</sup>

<sup>1</sup>ID Care, Hillsborough, and <sup>2</sup>Robert Wood Johnson Medical School, Rutgers University, New Brunswick, New Jersey

**The uncertainties of healthcare payment and delivery reform on income and care process have created a sense of foreboding, concern, and fear that a career in medicine is not what it used to be and that a career in infectious diseases in particular may no longer be viable. Fears have been raised that the need for infectious diseases consultation and management will be curtailed because we provide cognitive services that are not perceived as being needed in a health system filled with intensivists, hospitalists, and skilled nursing facility physicians. Now is the time for us to reframe our role in the health system that is evolving to a process of care focused on population health and patient safety that pays providers for value they bring to achieve those goals. Specific suggestions are made to enhance the infectious diseases physician's profile with the intent of encouraging debate, discussion, and action.**

**Keywords.** infectious disease physician; value; healthcare reform; image.

“ID is dead!” “The hospitalists and intensivists are not calling consults because of cost containment.” “ID consults are elective.”

These statements have all been told to me over the past several years by colleagues lamenting the diminished role and challenges facing infectious diseases physicians (IDPs) in our changing healthcare delivery system. Friends, mentors, partners, and leaders in the infectious diseases (ID) community, reflecting on these concerns, worry about our collective future, our viability, and our prestige. Others cite the woeful state of our fellowship match rate as further evidence of decline and wonder aloud, “Is this the death of the specialty?” As a result, the specialty of ID and the Infectious Diseases Society of America (IDSA) are going through a time of reassessment and self-reflection. I am hopeful that

through this process we will come to realize that, far from dying or being elective in nature, ID is poised for amazing growth, high demand, and even mandatory utilization. Almost 30 years ago, Petersdorf made the statement that we are training so many ID clinicians that we will be culturing each other [1]. That never came to pass. Rather than being in decline, ID is even more vibrant, needed, and valuable. I strongly believe that we are entering a golden era for the ID clinician. To paraphrase Warren Buffet, we should be cautious when others are overly optimistic and be greedy when others are cautious. Now is the time to take advantage of the opportunity before us, but we must reframe the perspective on our role to solidify our value and position in the healthcare system of the future. With this mindset, I will explore our current circumstance and provide some reflections on how we may address this challenge.

A recent weekend on call provided me a great framework to reflect on our specialty and its special position in healthcare delivery. A patient was in the hospital for almost a week with a fever of unknown origin (FUO). FUO can be one of the most challenging diagnoses in which to identify an etiology, and this case seemed no different. Empiric antimicrobial therapy had failed to

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Correspondence: Ronald G. Nahass, MD, MHCM, FIDSA, ID Care, 105 Raider Blvd, Hillsborough, NJ 08844 (mahass@idcare.com).

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eliminate the fever, so the patient was admitted by his primary physician. He underwent the FUI workup so common in today's medical centers: cultures of blood and urine; innumerable blood tests; computed tomographic scans of head, chest, abdomen, and pelvis; and consultations with several specialists. During my evaluation, I asked him how he was doing. He said his elbow was sore. I asked, "Do any other joints bother you?" He replied, "Yes, as a matter of fact—my foot is sore, too." Indeed, his olecranon bursa was moderately swollen and warm but not red, as was his right great toe. Aspiration of the bursa identified uric acid crystals, and prednisone "cured" his FUI. His \$20 000 admission could have either been limited or avoided with prompt evaluation.

Another patient was sent to the emergency department for admission by the primary care doctor for orbital cellulitis. The emergency physician had ordered magnetic resonance imaging (MRI) of the head to work up the patient. On evaluation, the patient was comfortable and not in pain. She had a red pustule on her mid-forehead that had ruptured and drained over the last day or 2. There was mild surrounding cellulitis but no eye pain, no impingement of eye movement, and no significant swelling around the eye. There were no visual changes, no headache, and no central nervous system complaints. The diagnosis of a staphylococcal furuncle with spontaneous drainage was clear. I canceled her MRI and the admission. The patient was given trimethoprim-sulfamethoxazole and followed the next week in the office, where her condition was found to be markedly improved.

The patient in the first case noted his elbow pain on admission, but the hospital team was distracted by the FUI workup, discounted the joint's relatively benign appearance, and failed to notice the other involved joint. Although the consultation was ordered to manage antibiotic therapy ("call the 'antibiotic doc'"), this case was anything but antibiotic management. The IDP is not an organ-based specialist and looks and evaluates each body system equally. The joints get as much attention as the heart, lungs, and abdomen. How often is the IDP called after numerous antibiotic trials, many tests, and no clear diagnosis only to find that no one palpated the neck and thus a tender thyroid in a coughing patient with persistent fever was missed, or no one removed an old intravenous line or recognized the mild liver function test abnormalities and palpable spleen of an atypical Epstein-Barr virus infection? We are not "antibiotic doctors" but rather master diagnosticians who listen, look, and apply treatments judiciously. In the evolving healthcare delivery models of integrated delivery networks, medical homes, and accountable care, our value can be compelling and far-reaching.

The second case demonstrates the value of perspective and understanding for the pathophysiology of ID. The patient had a simple staphylococcal skin abscess, albeit in an inopportune location. The mild periorbital edema was a consequence of

the taut skin on the forehead, which caused dependent migration of edema from the local infection into the eye socket. It had nothing to do with the presence or absence of orbital cellulitis. Understanding the nature of the response of body tissue to infection, the etiology of orbital cellulitis, and the role of diagnostic tests allowed the IDP to help the patient and the caregivers limit cost and inconvenience and to let the patient to be treated at home. This understanding of ID pathophysiology allows us to pick the right tests, the right venue for care, and the right therapy that will achieve the best outcome at the lowest cost.

We may consider these cases mundane and "easy." They nicely illustrate the nature of the specialty, and the importance and easily recognizable value it brings. In some regard, Petersdorf's comment reflects what I see as part of the IDP's challenge. We may think these cases do not need the IDP but, as they illustrate, we are sorely needed. What is simple to us because of our background and training is of great value to our patients and the healthcare system. Yes, we are needed to solve or treat unusual problems—complex staphylococcal bacteremia with multiple metastatic abscesses or the returning traveler with a fever and rash—but our greater value is in leading the management of the mundane and easy cases.

An additional value of the IDP is front and center in today's news. Ebola disease, Middle East respiratory syndrome coronavirus, chikungunya, dengue, methicillin-resistant *Staphylococcus aureus*, *Clostridium difficile*, antibiotic-resistant organisms, hepatitis C—the amount of concern these issues are generating in the media and the general public is extraordinary. Policy and political leaders debate and discuss our nation's response to them. Hollywood has produced innumerable movies about contagious diseases (eg, *Contagion*, *The Andromeda Strain*, *Outbreak*) that play on the public's fear about transmissible diseases. Other than IDPs, no other group of medical specialists has the authority to help society address these concerns with clear insight, strong science, professionalism, and expertise. This interest should parallel our value and prestige to the healthcare system. Given this observation, why do we feel so negative about our future?

The traditional training we receive in fellowship sets us on a path of seeing patients with possible infection problems only when asked (eg, by referral or consult). Given the cost scrutiny, you could say that IDPs are now in a wall-mounted box with a sign that reads "break glass when necessary." What is needed is a more holistic view of the healthcare system to understand how best to apply and use our skill sets. Indeed, many of my colleagues both in and out of ID medicine simply see us as the doctor to call only for antibiotic management. We must work hard to eliminate that thought. *We are not antibiotic doctors.*

We must reframe our perspective on the work we do and what it is that the health system, our patients, and our referring colleagues need. Rather than just prescribing antibiotics,

leadership of antimicrobial stewardship focused at the facility and system level is needed. Indeed, during a typical weekend call I stop more antimicrobial therapy than I begin. Furthermore, we are needed for early diagnosis, to institute early directed treatment, to achieve early resolution of disease states, to limit hospital stay, to reduce the risk of disease transmission, to reduce the use of expensive tests, and to provide reassurance and understanding. It is this leadership, understanding, and insight that distinguish the IDP from the pharmacist on the stewardship committee, from the infection control practitioner, from the hospitalist or the intensivist. Rather than feeling threatened by these professionals, we must embrace their roles to help us lead. Our number one job has to be to start with these principles. For our country, we are the expert leaders who can deal most cost-effectively with the extraordinary challenges that are contagious disease.

Let's be clear: ID consultation should not be considered elective. In fact, I would argue that ID consultation/participation should be mandatory for the reasons outlined. The failure to do so risks bad outcomes including death, increased cost, increased complications, and greater risk for disease transmission [2–4]. Mandatory involvement in the intensive care unit by intensivists has become commonplace because of similar rationale [5]. We would not consider managing cancer without the oncologist. The perception of the IDP as an antibiotic doctor has devalued our specialty. We must fix this.

By the very nature of our specialty, we are focused on population health. The management of contagious diseases must consider the transmissibility and risks to others. This population perspective is part of our training. Indeed, for many of us, the need to address the concern of the individual in the context of the concern for the population was part of what attracted us to the field. The tremendous impact of this is seen in the work we have done with human immunodeficiency virus (HIV), the eradication of polio, and our ongoing efforts for patient safety and infection prevention.

Step back and consider all the factors: the critical need for early engagement to take full advantage of intellectual capital of the IDP, the heightened awareness for antimicrobial stewardship, the importance of the perspective on population risk through the diseases we treat, the emphasis on patient safety, the sheer numbers of patients with infection-related problems, the concerns for pandemic disease exemplified by films and books, the ongoing emergence and reemergence of serious infections, the urgency of our multidrug-resistant organism epidemic—the value of the IDP is unique and cannot be placed in the same frame of reference as other physicians. In a fee-for-service model, these activities reduce revenue or income for the ID service, resulting in one of the lowest fair-market values of any physician. Despite that, we have pursued those activities fervently for decades. However, if one looks at the combined

costs for the 5 highest ID admissions, they are more costly to our health system than cardiovascular disease [6, 7]. Furthermore, a number of the “never events” listed by the Centers for Medicare and Medicaid Services (CMS), which are not reimbursable, are infection-related events [8]. The failure to properly value and pay for ID services has limited the realization of the benefit the service offers and made the field less attractive as an area of study.

I would make the following 4 suggestions to address these issues and hopefully serve as a catalyst for discussion and debate among our ID colleagues:

1. Ensure that our fellowship programs are highly desired and produce leaders who are expert diagnosticians and “systems thinkers.” We need to consider novel approaches to achieve this, such as focused efforts on marketing the specialty, specific training for faculty on mentorship, experiences that demonstrate the importance of the concepts discussed above, loan forgiveness, and a concerted effort to raise the incomes for IDP.

2. Establish a clear value proposition of the IDP. To do this, we must engage our stakeholders including payers, health system administrators, physician colleagues, patients, and political and policy leaders by educating them and reframing their perspective on the role of the IDP. We have to bring into focus the imperative of early engagement, including but not limited to mandatory consultation. We must emphasize our distinctive competencies that address the concerns of healthcare delivery and payment reform—the triple aim of cost, outcomes, and population health.

3. Develop a true value of our intellectual capital. Our leadership, indeed our intellectual capital, is desperately needed to address emerging and reemerging disease, antimicrobial resistance, stewardship, patient safety, and resource management, but we must develop a true value for this not based on an evaluation and management model. We may need to use business models that incorporate return on investment, margin improvement, typical nonphysician professional advisory service models, and other financial metrics to achieve a proper determination of that value.

4. Initiate studies to allow a database to be created that measures value in a unique model. The model should incorporate gain sharing, co-management, alternate site care, and cognitive support of population health. These types of activities have been funded through the Innovations program of CMS, private payer initiatives such as Horizon Healthcare Innovations, or the Agency for Healthcare Research and Quality.

Work is beginning in all these areas. The clinical affairs committee of the IDSA has been addressing the fair market value of the IDP. The issue of fellow recruitment is being investigated by the board of the IDSA and numerous other committees.

Our organization has developed a gain-sharing model for stewardship and infection prevention. Patient-centered medical home models of care for IDPs providing HIV care have been established. Episode-of-care payment models that IDPs can direct are being developed for certain disease states such as diverticulitis, cellulitis, and pyelonephritis. We need to develop a registry to provide a forum for IDPs to show and compare their performance on critical areas over time. These examples are the start of a process that needs to develop and evolve.

I believe that we are looking at a unique opportunity to recast our position as a specialty in the healthcare delivery system. This opportunity is available because of the focus on patient safety, lower cost, and population health, all of which have been part of the IDP's DNA for decades. We the IDPs have always focused on those 3 key issues, "the triple aim." The concern about multidrug-resistant organisms and emerging and reemerging diseases adds further urgency. Now is the time to seize the opportunity.

## Notes

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