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What the COVID-19 Pandemic Can Teach Us About Resource Stewardship and Quality in Health Care

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The coronavirus disease 2019 pandemic has forever changed how we view health care service delivery. Although there are undoubtedly some unintended consequences that will result from current health care service reallocation, it provides a unique opportunity to consider how to deliver quality care currently, and after the pandemic. In the context of lessons learned, moving forward some of what was previously routine could remain reserved for more exceptional circumstances. To determine what is "routine," what is "essential," and what is "exceptional," it is necessary to view medical decisions within the paradigm of high-quality care. The Institute for Healthcare Improvement definition of the dimensions of quality is based on whether the care is safe, effective, patient-centered, timely, efficient, and equitable. This type of stewardship has been applied to many interventions already deemed unnecessary by organizations such as the Choosing Wisely initiative, but the coronavirus disease 2019 pandemic provides a lens from which to consider other aspects of care. The following will provide examples from Allergy/Immunology that outline how we can reconsider what quality means in the post–coronavirus disease health care system. © 2020 American Academy of Allergy, Asthma & Immunology (J Allergy Clin Immunol Pract 2021;9:608-12)

Key words: *COVID-19; Shared decision making; Resource stewardship*

INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic has undoubtedly changed health care in ways that may have seemed unimaginable months ago. The rapid adoption of technologies that support virtual care has demonstrated health care providers' capacity to pivot in imaginative ways to support ongoing patient care, while complying with physical distancing restrictions and health care resource reallocation. At the same time, large proportions of in-person care provision have simply ceased because they have been deemed "nonessential," or we have adapted to endure without certain services. As we strive to return to elements of normalcy around the world, the question for health care providers becomes: what is essential in our practices and what is not?

A 2017 American Medical Association survey of 2106 physicians reported that a median of 20.6% of overall medical care was unnecessary, including 24.9% of all investigations and 11.1% of all procedures.[1] The Institute of Medicine has cited unnecessary medical care as accounting for about 30% of medical spending each year.[2] The Canadian Institute for Health Information notes that Canadians have more than 1 million potentially unnecessary medical tests and treatments each year.[3] Practicing medicine in the context of the COVID-19 pandemic provides direct insight into what may be unnecessary investigations, because weighing risks and benefits of an intervention in the context of exposing an individual to the potential risk of infection can shift previously abstract ideas about risks into imminent threats. The pandemic has forced us to reexamine whether some of the care we have traditionally provided was due to clinical inertia and presents a valuable opportunity to critically assess health care delivery patterns to refine practices and enhance value.

Several studies have shown that significant reductions in care delivery have occurred during the COVID-19 pandemic, leaving much of what was previously routine care to be either restricted

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Abbreviations used
AIT- Allergen immunotherapy
COVID-19- Coronavirus disease 2019
EMS- Emergency Medical Services
SDM- Shared decision making

(because of mandated service rationing) or delayed. The Centers for Disease Control and Prevention has noted a decline in child vaccination coverage to less than 50% during the COVID-19 pandemic.[4] Centers for Disease Control and Prevention data also demonstrate a reduction in emergency department visits for acute life-threatening emergencies including heart attacks, strokes, and hyperglycemic crises.[5] Some direct or indirect harm will likely result from restricted face-to-face encounters for some patients, and there will likely be unintended consequences of health care service reduction. However, the balance of reducing the risk of transmitting COVID-19 to individuals and populations, decreased rate of overdiagnosis and overtreatment, and cost-reductions of nonessential care may balance any potential harms, and has the potential to result in greater ability to deliver cost-effective care in many circumstances.[6-8]

DIMENSIONS OF QUALITY

The incorporation of virtual care has forced clinicians to adopt new, leaner habits of health care delivery.[9,10] In the context of lessons learned, moving forward some of what was previously routine could remain reserved for more exceptional circumstances. To determine what is "routine," what is "essential," and what is "exceptional," it is necessary to view medical decisions within the paradigm of high-quality care. The Institute for Healthcare Improvement definition of the dimensions of quality is based on whether the care is safe, effective, patient-centered, timely, efficient, and equitable (Table I).[11] This type of stewardship has been applied to many interventions already deemed unnecessary by organizations such as the Choosing Wisely initiative, but the COVID-19 pandemic provides a lens from which to consider other aspects of care. The following will provide examples from Allergy/Immunology that outline how we can reconsider what quality means in the post-COVID health care system.

Safe

Safety is perhaps the easiest dimension from which to view the COVID-19 restrictions as physical proximity exposes patients and clinicians to risk of viral transmission. But the risks of often routine investigations are not always immediately apparent. For instance, preemptive screening before peanut ingestion in high-risk infants has been recommended in the United States as a means to reduce initial allergic reactions in infants.[12] However, allergy screening tests are poorly specific, do not alter the natural history of food allergy, are not cost-effective, and can result in overdiagnosis of peanut allergy.[13,14] An Australian study estimated that preemptive screening of infants considered at high risk for peanut allergy would result in screening 16% of the infant population and still miss 23% of peanut allergy cases.[15] The current pandemic may further the narrative already being established in favor of a less medicalized, at-home food introduction, instead of potentially unnecessary preemptive screening.[16,17] Safe medical care can also be viewed more broadly from the patient perspective to incorporate direct risks of health care and indirect risks of health care access. Some situations exist in which the everyday risks of accessing the required "routine" health care may eclipse the risk reduction this access provides for a subset of patients.[18,19] For example, in addition to allergen screening before peanut introduction, recent analyses have suggested that, for some patients, routine clinic observation for omalizumab administration and immunotherapy could do more harm than good in patients with low-risk features.[14,20-24]

Effective

To know what is effective is to understand what needs to be at the front of the line for prioritization of routine, nonessential, and exceptional health care delivery. As stated by the Institute for Healthcare Improvement, it requires both "avoiding underuse and misuse."[11] Anaphylaxis guidelines have traditionally recommended immediate activation of emergency medical services (EMS) after epinephrine use for anaphylaxis to allow for observation in case of a biphasic reaction.[25] However, biphasic reactions are rare (~12% of anaphylaxis cases in children),[26] the risk of fatal anaphylaxis is extremely low (1 in 10 million persons when considered from the perspective of the general population),[27] automatic EMS activation is not cost-effective (costs of hundreds of millions of dollars to save a single life year or billions of dollars to prevent 1 fatality),[28] and caregiver hesitancy to use epinephrine autoinjectors has been associated with the requirement of EMS activation.[29,30] EMS activation is more necessary for anaphylaxis that does not respond to a single dose of epinephrine.[28,31] However, current recommendations during the COVID-19 pandemic have suspended automatic EMS activation if symptoms promptly resolve with initial epinephrine use, motivated in part by many cities' EMS and emergency departments being at or over capacity, as well as concern for patient exposure in emergency departments.[31,32] Moving forward, reevaluation of anaphylaxis guidance in favor of a "wait and see approach" (assuming immediate use of epinephrine, prompt resolution of symptoms, availability of a second dose, and close monitoring for symptom recurrence) might be more acceptable to stakeholders. That approach is more cost-effective, and should have negligible impact on anaphylaxis morbidity or mortality.[28] Similarly, the routine practice of extended observation for nonsevere, resolved anaphylaxis has also been shown to be poorly cost-effective, and consideration of a risk-stratified approach may be appropriate when considering the disposition of the patient when anaphylaxis is resolved with a single dose of epinephrine after an hour of observation.[33-35]

Patient-centered

Patient-centered care incorporates an element of shared decision making (SDM), ensuring that the values and needs of the patients are integrated into health care decisions. As the initial public health measures intended to limit spread of COVID-19 are loosened, there has been some resumption of in-person services, and a deemphasis on virtual care. Although some allergy/immunology visits are more essential (new diagnosis food allergy, moderate to severe asthma with recent hospitalization), others (such as well-controlled asthma) may not require an in-person visit.[31] An element of SDM regarding type of visit (in-person vs virtual), especially for lower priority visits, may be initiated, allowing for patient preference to influence how care is provided.[10] Again, it is important to understand the direct and

TABLE I. Six domains of health care quality[11]

Domain	Description
Safe	Avoids harm from care that is intended to be helpful
Effective	Services based on scientific knowledge; avoidance of services that are not beneficial
Patient-centered	Care that is based on individual patient needs and values and guided by these needs and values
Timely	Reducing wait and delay as much as possible
Efficient	Avoiding waste of medical equipment, supplies, and time
Equitable	Consistent quality of care across personal characteristics

indirect benefits and harms from both health care access and health care delivery.[10] In considering a paradigm of SDM as it relates to decisions of clinician access (virtual or in-person), an appreciation is needed of both perceived and actual risk. The need for risk framing, information exchange, option talk, values clarification, and decision support may be present in simply determining the most appropriate visit type.[10,36,37] Furthermore, when considering a myriad of options patients and clinicians face every day in terms of evaluation, diagnosis, and management, SDM can provide a partnership to navigate the right care for each patient.[10,35,38,39]

Timely

Across North America there is inequitable distribution of timely care. Patients living in large urban centers with socioeconomic advantages in both Canada and the United States wait less than rural and socially deprived counterparts.[40] Many of the innovations prompted by the COVID-19 pandemic may help to narrow this disparity; however, the need for access to internet-ready devices and high-speed internet may still pose a challenge for socioeconomically disadvantaged populations.[10,31,37] During the initial months of the COVID-19 pandemic, clinicians and patients struggled to access timely care to common allergen procedures, such as allergen immunotherapy (AIT).[31,37] AIT is a treatment for allergic rhinitis and asthma (with environmental allergies) that has a disease-modifying effect and is usually administered in a physician's office (with a period of observation after the injection because there is a risk of anaphylaxis).[41] However, the COVID-19 pandemic has resulted in reduced access to AIT in some areas, and has prompted evaluation whether maintenance AIT could be administered at home in select patients (with specific entrance criteria such as lack of anaphylaxis comorbidities and no history of a systemic reaction to immunotherapy in the past) as a way to enhance access in unique situations (such as shelter in place orders, or government-mandated rationing of services).[20] AIT in a home environment allows for potentially more timely access for a broader population, especially with reductions and redistribution of care during the current pandemic and beyond.

Efficient

The goal of efficient care is to avoid waste, whether it be supplies, equipment, or physician/patient time.[11] Efficient health care delivery requires a clear understanding of risk and value of risk-mitigation strategies. Across the spectrum of medical care, perceived antibiotic allergies represent a significant barrier to efficient care delivery, and a situation of where risk and risk-mitigation is variably understood.[42] Although up to 10% of children are labeled as beta-lactam allergic, approximately 90% to 99% of them tolerate amoxicillin after allergy evaluation.[43,44] The label of beta-lactam allergy is associated with significant unintended consequences including higher health care costs.[45] A systematic review found that the label of beta-lactam allergy was associated with an average excess of $1145 to $4524 in patient costs per patient.[46] An antimicrobial stewardship program in a single tertiary care hospital noted that evaluation of penicillin allergy, with removal of this label from 145 charts, resulted in an annual savings of $82,000.[47] Although there is near-universal consensus on the importance of delabeling beta-lactam allergy in children, there is lack of consensus on the ideal means to accomplish this goal.[48] If there is a history consistent with a possible immediate (IgE-mediated) reaction to penicillins, multiple allergy guidelines have recommended skin testing before drug provocation testing in children.[49] However, skin testing has poor sensitivity (<20%) and poor positive predictive values (<10%), and skin test reagents are costly, can be difficult to obtain, and have short half-lives once diluted.[43] In addition, a drug provocation test without prior skin testing is safe and effective in diagnosing beta-lactam allergy without skin testing.[50] There is a push for direct provocation testing without prior skin testing, especially in lower risk patients in whom the mechanism of suspected reaction is unlikely to be IgE-mediated.[43,48,51] More utilization of direct drug provocation challenge can provide more efficient care without sacrificing safety, and is easier to implement both during the pandemic and afterwards. Antibiotic delabeling provides a vivid example of how patterns of medical practice and habits of health care delivery can be reexamined during the pandemic, and the value of health care improved.[52]

Equitable

Equitable care is care that does not vary on the basis of sex, ethnicity, income, geographic location, or other potential disparities.[53] Before COVID-19 there were striking differences in access to asthma care based on race, ethnicity, and household income.[54] In a study of 648 urban minority children, 83% had no asthma specialist and 62% used the emergency department as their source of asthma care.[55] Broad racial and ethnic disparities have been noted in access to medical care across the United States, beyond the realm of asthma.[56] Many of the same social determinants of health including poverty and race/ethnicity can have a considerable effect on COVID-19 outcomes.[57] The COVID-19 infection rate is 3 times higher in the United States in predominantly Black counties, and the mortality rate is 6 times higher.[58] In Chicago alone, more than 50% of COVID-19 cases and almost 70% of COVID-19 fatalities are among African Americans (who make up only 30% of the overall Chicago population).[58]

Virtual care and telemedicine provide the possibility, moving forward, to help reduce these disparities, in particular as they relate to access to care. It has been noted in the consensus-based expert panel on contingency planning for allergy/immunology during COVID-19 that the benefits to virtual care/telemedicine include limiting exposure to potentially COVID-19–infected patients for both clinicians and other patients, and it can provide access to rapid evaluation for potential COVID-19 infection.[31] However, it also provides the opportunity for ongoing care for conditions that do not require immediate in-person visits (such

as well-controlled asthma). It is less known how virtual care and telemedicine could be used once the threat of COVID-19 is lower, but one could imagine it would also allow more equitable care for some populations for whom in-person visits are difficult, or where access to specialists, such as an allergist/immunologist, is very limited.[10] Still, understanding the broader impacts of virtual care during the pandemic on the equity of underserved populations requires further research and can likely be improved with greater attention to improvements in information technology infrastructure, access in both urban and rural settings, and attention to those populations most underserved currently.

CONCLUSIONS

The COVID-19 pandemic has taken almost a million lives and will change health care delivery forever. But it will cost countless more if we do not learn the lessons this experience has taught us and use them to improve the care we deliver now and in the coming months and years. With deliberate effort, these experiences can be used not only to inform our preparedness for future pandemics and national emergencies but also to accelerate the evolution of care we provide every day to maximize value in health.

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