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Ensuring equitable access to guideline-based asthma care across the lifespan: Tips and future directions to the successful implementation of the new NAEPP 2020 guidelines, a Work Group Report of the AAAAI Asthma, Cough, Diagnosis, and Treatment Committee

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The most recent recommendations from the 2020 National Asthma Education and Prevention Program Update and Global Initiative for Asthma 2021 guide evidence-based clinical decision making. However, given the present state of health disparities by age, income, and race, the equitable implementation and dissemination of these guidelines will be unlikely without further guidance. This work group report reviews the current state of the new asthma guideline implementation; presents updated evidence-based therapeutic options with attention to specific patient populations; and addresses barriers to the implementation of these guidelines in minoritized, historically marginalized, and underresourced communities. Allergists and immunologists can use practical ways to accomplish the goals of improved asthma care access and advanced asthma care across the life span, with specific considerations to historically marginalized populations. Modifiable barriers to guideline

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implementation include financial barriers, environmental factors, and allergy subspecialty access and care coordination. Various programs to improve access to guideline-based asthma care include community programs, school-based asthma programs, and digital health solutions, with an emphasis on reducing disparities by race. (J Allergy Clin Immunol 2023;151:869-80.)

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Asthma is a chronic inflammatory disorder of the airway with a complex, multifactorial disease process.[1,2] This immune-mediated inflammatory process occurs in response to a variety of stimuli, including infections, environmental allergens, pollutants, weather, exertion, and emotional stress.[3] Emerging evidence has demonstrated substantial variability in patterns of airway inflammation, affirming endotypic and phenotypic differences in asthma.[4,5] These findings ultimately led to a paradigm shift in our asthma-management guidelines.[4] The newest recommendations from the 2020 National Asthma Education and Prevention Program (NAEPP) Update and Global Initiative for Asthma (GINA) 2021 continue to guide evidence-based clinical decision making, now with an additional focus on self-management education.[4,6] Unfortunately, considerable health disparities exist. This causes guideline-based and self-management care to become unattainable for most.[6,7]

The burden of asthma uniquely affects patients across different age, socioeconomic, and minority groups.[8] This is the result of multiple factors operating at individual and community levels, which impede timely access to optimal asthma care.[8] Concurrently, disparities increase morbidity and mortality among our most vulnerable populations.[8] Social determinants of health, including socioeconomic and contextual factors, are integral to asthma management.[9,10] They must be rigorously examined and incorporated into our guidelines, not afterthoughts.[8,10] In this review, we identify these health disparities and present tangible ways to make asthma management more equitable. These include financial barriers, medication adherence barriers, and age-related considerations.

Asthma disparities have been consistently reported among patients of underserved communities in both children and adults. In the case of children, 1 in 12 school-age children have asthma,[11-15] with higher prevalence (over 20%) among children who identified as African American and/or Puerto Rican.[15-19] Uncontrolled asthma accounts for 13.8 million missed school days a year and negatively impacts children's educational and, ultimately, earning potential, particularly in minoritized populations.[20-28] These staggering statistics leave our children with asthma vulnerable as they become adults.

Similarly for adults, an increased risk of asthma exacerbations, secondary health care utilization, and asthma mortality in patients with a lower social economic status, have been described.[29,30] These communities are noted to have higher prevalence of tobacco use and obesity, less adherence to medications, poorer housing and living conditions, and suboptimal access to health literacy.[29]

Health inequities among different races and ethnic groups, such as Black and Latinx individuals, and among vulnerable minority communities such as refugees persist.[31] Black and/or Hispanic/Latinx individuals of Puerto Rican origin have the highest rates of asthma in the United States, as well as the highest asthma death rates.[32-35] In particular, Hispanic/Latinx individuals of Puerto Rican origin have the highest rate of asthma prevalence compared to any other racial or ethnic groups. Black individuals are nearly 3 times more likely to die from asthma than White individuals are. Deaths due to asthma, although decreasing overall, are far more frequent in Black populations than in White populations. Asthma-related emergency department (ED) visits are nearly 5 times as high for Black compared with White individuals.[35] Refugees and other immigrants face unique barriers in accessing the health care system, including language (difficulty communicating illnesses or understanding medical advice), unfamiliarity with the system, documentation, and cultural barriers (ie, perception/expectations of health care system).[36,37] For example, in an Italian pediatric cohort, it was seen that compared to Italians, most immigrants had a 63% to 113% increase in asthma-related hospitalizations, which is a mostly preventable occurrence.[37] Cultural beliefs, such as misinformed fears of inhaled steroids being addictive, influence medication adherence.[38-40] Furthermore, minorities with asthma are disproportionately affected by the coronavirus disease 2019 (COVID-19) pandemic, suffering greater mortality and morbidity.[35]

Therefore, in this work group report, we will review the current state of the new guideline implementation, present updated evidence-based therapeutic options with attention to specific patient populations, and address barriers to implementation by providing practical ways we as allergists can employ to ensure equitable asthma care delivery from birth through adulthood. We hope, in doing so, that these crucial goals of having a diverse workforce, improved care access, care across the life span, and specific considerations to minoritized, historically marginalized, and underresourced populations would be incorporated explicitly into future iterations of asthma guidelines and recommendations. We then conclude our report by introduction of theory related to framework building and policy implementation, all of which will help the future in addressing these long-lasting disparities in asthma care.

Abbreviations used

AAP:	Asthma action plan
CHW:	Community health worker
COVID-19:	Coronavirus disease 2019
ED:	Emergency department
EtD:	Evidence to decision
FDA:	US Food and Drug Administration
GINA:	Global Initiative for Asthma
ICS:	Inhaled corticosteroids
NAEPP:	National Asthma Education and Prevention Program
NHLBI:	National Heart, Lung, and Blood Institute
SABA:	Short-acting β_2 agonist
SEM:	Social-ecological model
SMART:	Single maintenance and reliever therapy

GUIDELINE IMPLEMENTATION

The definition of asthma, strategies for diagnosis, and approaches to treatment are dynamic.[4] In the United States, asthma management is guided by the NAEPP, an expert panel formed by the National Heart, Lung, and Blood Institute (NHLBI) in 1991.[41]

In 2014, the panel recommended a focused update of the 2007 Expert Panel Report.[41] A systematic literature review was conducted on 6 high priority topics: (1) intermittent inhaled corticosteroids; (2) long-acting muscarinic antagonists; (3) fractional exhaled nitric oxide in diagnosis and monitoring; (4) strategies for allergen reduction; (5) subcutaneous and sublingual immunotherapy; and (6) bronchial thermoplasty.[42,43] Systematic reviews performed on these 6 topics were examined when updating these recommendations, with the updated guideline recommendations officially published in December 2020.[42,43]

Another widely used set of international recommendations is GINA, which produces a global strategy on asthma diagnosis and management.[44,45] GINA recommendations are updated annually. These are based on new asthma literature published within the preceding 12 months and reviewed by an expert panel to reach consensus on key questions deemed imperative to address in the preceding year.[41] Each of these entities are funded by distinct entities. In the case of the NAEEP guidelines, the funding is provided by the NHLBI of the National Institutes of Health, and GINA is funded by sale of its reports and resources. Lastly, the selection of participants for each of these panels is distinct. The NAEEP creates an expert panel of scientists and clinicians with expertise in clinical management and then requests the review by 40 organizations prior to eventual publication. With GINA, there is a standing Scientific Committee that uploads a detailed, updated report annually based on an algorithm to review the world's literature on asthma management.[41]

Ideally, these 2 important recommending bodies, along with their other international counterparts, would be clearly synced and their data aligned. This would provide a clear and actionable path to guideline implementation that makes sense to asthma clinicians and researchers worldwide. However, this is not always the case, leading to confusion and in some instances, conflicting recommendations between the 2 expert panels.[41,42] An example of this is with inhaled corticosteroid (ICS)/formoterol therapy recommendations. In its use as Single maintenance and reliever therapy (SMART) and/or as a reliever: GINA recommends ICS/formoterol as the preferred rescue therapy children above age 6 and for those 12 and above through all steps of therapy, while the NAEPP recommends ICS/formoterol only for steps 3 and 4 for ages 4 and older.[42,44] Another instance of discordant recommendations includes intermittent high-dose ICS in preschoolers: the NAEPP recommend this as the preferred treatment, but GINA considers this a nonpreferred, alternative.[38,42-44] Discrepancies remain in how to manage severe asthma and the use of biologic agents, making a consensus on treatment approaches difficult.[41,44]

In the United States, applying NAEPP updates is further limited by the US Food and Drug Administration (FDA), payers, pharmaceutical companies, and pharmacies where medication approvals often lag.[42] Despite new recommendations, clinicians are often unable to practically implement them. For example, institution of SMART is limited if an insurance company's formulary does not allow for 2 ICS-formoterol inhalers per month to be dispensed. Changing formularies can affect patient adherence.[46] Lobbying and advocacy bodies need to align with asthma guidelines and recommendations. GINA has similar limitations, and each individual country must approach the GINA guidelines within the scope of their federal regulations and resources.[44,45] GINA's Scientific Committee is not able to fully represent all countries to help mitigate some of these limitations. This may limit the report's reach to countries that are not represented. Each individual who sits on either committee has their own influences and disclosures that may influence, even if implicitly, their recommendations. However, an international perspective to guide essential pieces of national guidelines is critical.

To improve this gap, NAEPP recommendations should consider undergoing more frequent updates to allow a timely response by regulation agencies.[42] Implementation is further complicated as only 3 of 19 recommendations are identified as "strong recommendations," leaving much uncertainty about how much evidence supports the recommendations in practice.[42,44,45,47,48] Lastly, keeping up with the literature is not an easy task, particularly for primary care providers who are responsible for updates in various areas, especially in regard to biologic therapeutic options using multiple biomarkers.[49] Many patients without T_H2 cell–influenced asthma may see relief from these biologics that are mostly targeting T_H2 cell–related cytokines.[49] How do we treat asthma that is still uncontrolled despite maximally available therapy? How do we define mild asthma and treat it to minimize risk? How do we consistently report asthma-related trial data to influence guidelines in a standardized way that will be more easily applied, accepted, disseminated, and equitable? How much should we as clinicians and researchers be mindful in our treatment decisions of costs and pharmaceutical company influence?[50] These are all questions that need to be addressed in future iterations of national guidelines and international asthma recommendations.

Despite differences, there is an overarching and notable paradigm shift in asthma management that shifts away from albuterol as the only reliever and allows for more specific options for shared decision making at all steps of asthma therapy.[47] We now focus on optimizing asthma control in multiple domains to improve symptom control, minimize future risk, reduce loss of lung function, reduce adverse side effects, and incorporate lifestyle changes and patient-centered decision making.[47,51] A driving force for a shift to redefine asthma and encourage self-management is now prominent, including phenotypic and endotypic distinctions into asthma control evaluation.[47] It is important to note that there is often a discrepancy between guideline criteria for control and patient perception of their own asthma.[52,53] This leads to many people suffering from asthma on a regular basis who do not consistently take their controller medicine. There is also underrepresentation and other inequalities related to enrollment into randomized clinical trials. The expectations of the clinician, researchers, and patients must be reconciled. Although there are critical changes made in these guidelines that should lead to swift implementation, remaining questions, difficulties. reconciling discrepancies, and serious logistical challenges remain.

MODIFIABLE BARRIERS TO GUIDELINE IMPLEMENTATION

Lack of uptake of most recent guidelines

Insufficient uptake and implementation of the newest NAEPP guidelines and GINA recommendations affect patients at multiple levels of the health care system. These include multiple entry points to the health care system such as primary,[54] subspecialist,[55] ED,[56] and school-based care.[57,58] Generalists and ED physicians may not be able to keep up to date on the most recent asthma guidelines due to limitations in time and funding for continuing medical education opportunities.[48,59] Even asthma specialists have shown

low adherence to guideline implementation with asthma action plans (AAPs), peak flow monitoring, and inhaler technique assessments.[55] Lack of implementation of guidelines may be due to the complexity of asthma care and the evolving recommendations, making it hard for many clinicians and researchers to keep up.[42,60] To maximize education, guidelines should remain concise and easy to follow for generalists, but also detailed enough for specialists to garner the necessary information to make complex treatment decisions in complicated asthma cases. Perhaps having clinician guides that are targeted to each of these populations could aid in a better uptake of the guidelines.

Financial barriers

Patients may face significant financial barriers to obtaining asthma treatment based on the current guidelines.[61] Working with public health insurance for authorizations and referrals is challenging. SMART is recommended for many patients with moderate-to-severe persistent asthma because it decreases asthma exacerbations, short-acting β_2 agonist (SABA) use, and total corticosteroid dose over time.[62-64] However, patients may not have access to SMART due to a variety of reasons. These include lack of insurance coverage for ICS-formoterol when prescribed as maintenance and reliever therapy,[65] increased out-of-pocket cost compared to standard ICS,[66-68] little mention of ICS-salmeterol,[69] and school-age patients' inability to obtain separate ICS-formoterol inhalers for home and school use.[65] This is further complicated by the fact that those individuals who are publicly insured and/or of ethnic minority backgrounds are less likely to be prescribed biologics for severe asthma, despite having disproportionately more uncontrolled asthma.[70] A recent open-label trial (PREPARE [Person Empowered Asthma Relief]) randomly assigned Black and Latinx adults with moderate-to- severe asthma to use a patient-activated, reliever-triggered inhaled glucocorticoid strategy (beclomethasone dipropionate, 80 μg) plus usual care or to continue usual care. This form of intervention led to decreased exacerbations in these high-risk patients. The benefit of PREPARE is that it may be easier to implement in real-world setting, but we will need to see combined inhalers and FDA approvals become a reality in the United States, prior to more widespread implementation.[71] The MANDALA (Study to Assess the Efficacy and Safety of Budesonide/Albuterol Metered-dose Inhaler [BDA MDI/PT027] in Adults and Children 4 Years of Age or Older With Asthma) trial also showed that a fixed-dose reliever of albuterol combined with budesonide fared better than an albuterol-alone reliever in adults and adolescents. This trial similarly allows for an alternative reliever option to albuterol alone, but guidelines, payors, and the FDA must catch-up to quickly allow for these results to be disseminated into practice.[72]

Environmental factors

Asthma control may be more challenging for underserved patients because they are more likely to be exposed to asthma triggers in the home such as cigarette smoke, dust mites, mold, pests, and pollution.[73,74] The NAEPP guidelines discussed the mitigation of allergen triggers, but many patients lack access to home visit programs and specialist care for trigger reduction because of limited insurance coverage for this service.[73-75]

AGE-RELATED CONSIDERATION IN SOLUTIONS IN PROVIDING GUIDELINE-BASED CARE: CHILDREN

Allergy subspecialty access

Patients treated by asthma specialists showed improved disease control with higher quality of care, improved physical function, and fewer ED visits as well as hospitalizations.[76-79] Yet, allergy and immunology is one of the specialties that children often have only limited access to, with disparities in specialist care most pronounced for children who are Black, live in an urban area, and/or have a lower socioeconomic status.[79-81] Children's hospitals should partner with community clinics to improve the availability of pediatric allergy services locally. For rural and underresourced areas, telemedicine has been successful in increasing access to care, reducing missed school days, as well as improving exacerbations and adherence.[82,83] Ensuring ubiquitous access to appropriate technology infrastructure and continuing expansion efforts of technological applications will help further reduce health inequities.[84-87]

Care coordination

Multidisciplinary team approach with care coordination among home, school, community, and physicians has demonstrated success when targeting children with uncontrolled asthma.[88-90] Community-based health workers are integral to its success by providing home-based education, environmental assessment, and connection to community resources.[84-86,88-90] Because children with asthma can be eligible for state- and Medicaid-funded programs, specialists can use these payment structures to obtain social services and improve care coordination.[85,88,91] School-based care has also been successful at improving asthma control.[92] Novel sites of care are also a strong consideration and are further detailed below, including mobile care options.[93-95]

Childcare centers and preschool

Because young children spend much time in daycare, childcare centers can be an essential focus to implement the recommendations by the NAEPP's plan for asthma preparedness.[96,97] Availability of asthma medications, current AAPs, and asthma policies can enhance asthma management and increase cooperation with clinicians and childcare centers in low-income areas.[96] Without a nurse in most daycare facilities, a multilayered approach providing education to staff, parents, children, and primary care providers can strengthen asthma control in preschoolers.[98]

School-based asthma programs

School-based asthma programs such as SAMPRO (School-based Asthma Management Program) can effectively reach at-risk children and improve asthma outcomes.[73,99-101] Through legislation, schools have ensured access to rescue medicine by stocking a single albuterol inhaler for multiple use with disposable holding chambers.[100-102] For students on SMART, policies will need to be amended to include stock ICS-formoterol in schools. Schools will also need to be aware of updated AAPs with as-needed SABA, as-needed ICS-formoterol, and as-needed concurrent ICS with SABA.[60] School-based interventions

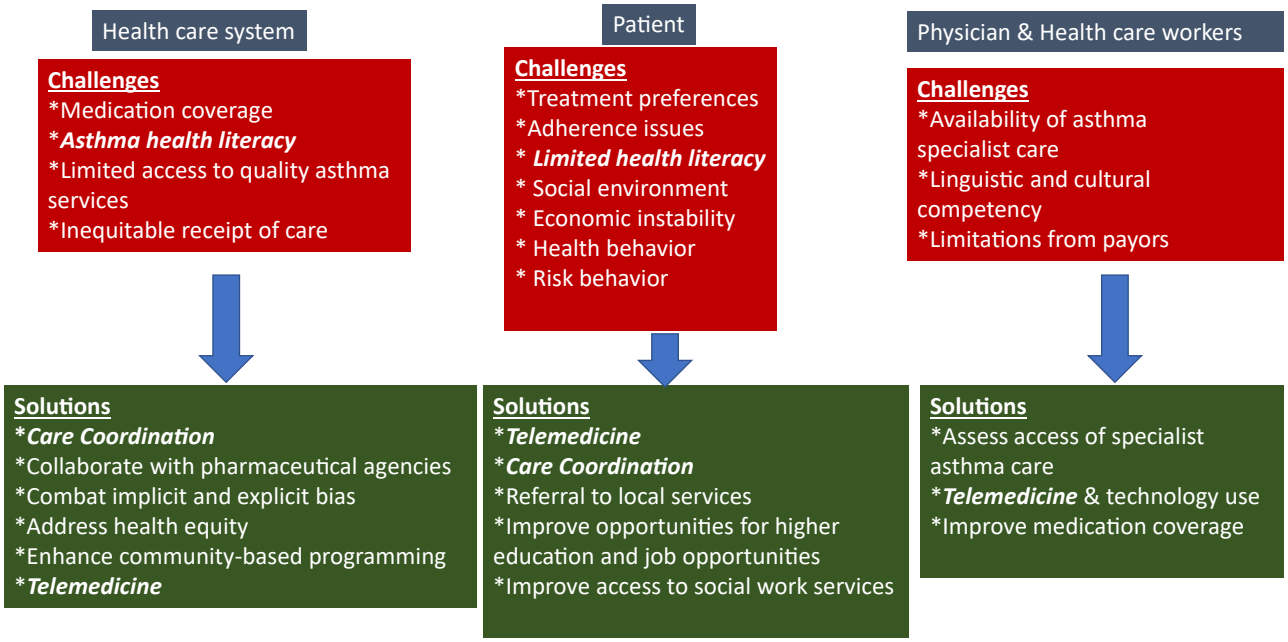

FIG 1. Ensuring equitable access to guideline-based asthma care across the life span. (Common themes are bolded and italicized.)

using text messages during COVID-19 school closures and school-based telemedicine primary care visits with directly observed preventative therapy have helped overcome barriers to guideline-based care.[103,104]

SOLUTIONS FOR ADULTS

Access to care

Free clinics often provide medical services to uninsured or underinsured patients who have barriers obtaining asthma medications or seeing asthma specialists. Empowering asthma programs at these clinics and supplying their need with asthma medications and staff/faculty education may help improve guideline-based care implementation. Narrow health plans restrict access to asthma specialists particularly among the underserved. Collaborating with private and public insurance networks would help improve access to specialized care and reduce asthma disparities.[36] Collaborating with these networks and with major public health insurers advocating for universal access to high-quality care would have a major impact on reducing asthma disparities. Overcoming the reliance on the ED for routine asthma care is equally essential; However, there should be options for people to access that deliver equitable guideline-based care.[105-108]

Medication access and monitoring

Collaborating with major pharmaceutical companies to expand free drug programs and financial assistance programs is another approach to improve access to asthma medications. Digital health interventions showed substantial promise for asthma disease monitoring. There should be a focus on a patient's adherence to their medications through dose and prescription-fill reminder systems. There should also be a focus on behavior change as a result of education and motivation, with increased access to health care professionals through telemedicine platforms. Evidence of improvement in both adherence and patients' impairment due to asthma were seen with interactive interventions involving 2-way responsive patient communication.[109] The use of digital inhaler systems to collect objective real-time data on medication-taking behavior via electronic medication monitors and feeding this data back to patients on their mobile asthma app showed positive outcomes.[110]

Exercise and gym memberships

Other interventions include facilitating access to gym memberships to encourage exercise and improve overall health and well-being. Engaging in regular, moderate, physical activity improves asthma outcomes (ie, quality of life, asthma control) and reduces asthma health care use.[111-114]

Health literacy and asthma education

Improving health literacy through culturally competent community-based asthma education programs that incorporate cultural norms, values, and beliefs are effective. When used to explain disease processes and therapeutic goals, studies have shown improvement in asthma-related outcomes such as medication adherence, cost- effectiveness, asthma knowledge, and ED visits, especially for ethnic minorities.[7,30,51,115,116]

OLDER ADULTS

More than 17.7 million adults suffer from asthma in the United States, with adults over 65 years of age being the most affected age.[117] Older adults with asthma die from the disease 14 times more frequently than younger adults (ages 18-35) do.[100] Poor air quality and allergen exposure contribute to lack of asthma control.[118] Studies have shown that older adults are more sensitive to

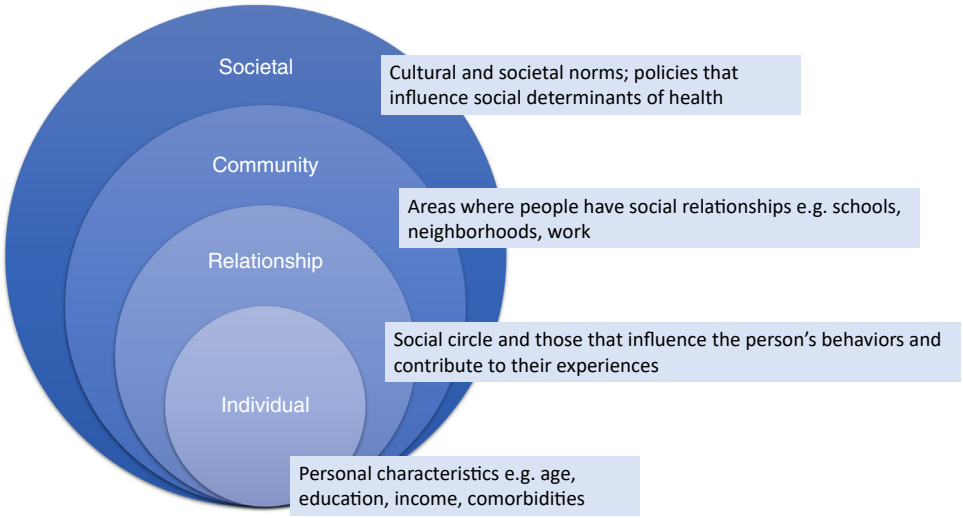

FIG 2. SEM of medical access.

poor indoor air quality, which is particularly important given that older adults spend up to 90% of their time in their homes.[118] Ensuring equitable access to guideline-based asthma care across the life span is critical to reduce health disparities. There are several problems and barriers related to the health care system, patients, physicians, and the health care workers that can worsen health disparities in asthma care (Fig 1). A concerted effort by the local communities, public health officials, health care providers, insurers, and payors is needed to improve access to care and quality of care, to provide social and economic support and equitable access to medications, especially biologicals, to use technology including telemedicine, to develop networks to help the underserved, and to deliver home care to the needy elderly, which can help achieve equity of care for every citizen (Fig 1).

Home care and assisted living

Home care, especially by community health care workers with social and cultural competency, has the potential to be among the main therapeutic strategies for underserved and socially disadvantaged elderly patients with asthma, especially those with limited mobility.[119-121] Studies have confirmed the role of community health workers and community health supervisors, who are able to deliver multifaceted care in the patient's home, including providing education about asthma, avoidance of allergen and environmental triggers, the importance of medication adherence, self-monitoring, AAPs, and assist with access to medications.[119,120,122,123] Extensive literature supports the adaptation of home environments to improve the quality of life, which significantly reduces ED visits and hospitalizations.[124] Similarly, several studies show that patients who receive home care have less asthma-related morbidity and reduce overall costs.[125,126,127] Despite this positive data, most public and private health care payers do not reimburse home asthma services.[128]

Community programs

Park districts, which provide local recreational options in many states in the United States, may offer several programs across the life course, from young children to older adults to improve social engagement and reduce disparities. Improving health equity and reducing health disparities is a key focus of successful initiatives such as the Chicago Park District programming.[129] Chicago has a program for those with diabetes that can serve as a model for other conditions.[129] Asthma health disparities among older adults can be unfortunately compounded by intersectionality. These compounding factors could be reduced if park districts or other similar community partners or group of partners came together to address key access points in asthma care: diagnosis; education; self-management; and access to guideline-based care. Senior community centers, or similar programs, could also be potentially used for this purpose. Although asthma health disparities are well documented across socioeconomic status, race, ethnicity, and in childhood,[29,30,74] age-related disparities in older adults are less well documented and understood. Public policy is a good starting point to ensure that our older citizens are also able to access equitable, guideline-based asthma care. One way to address specific populations on a larger scale is through public policy that influences the health care system at the federal, state, or local level. This can help necessitate change in a multilevel fashion if deployed properly. The Affordable Care Act and provisions such as the dependent coverage expansion provide the opportunity to address health problems, including disparities, at the federal level.[127] As the goal of the public health care system is to deliver high-quality health care that is patient-centered, significant attention to how health-related public policy changes that affect how we can provide care to those with asthma across the life span is essential.[130] Implementation science is a methodology of translational research that could be optimized to overcome health equity concerns on multiple levels of the health care system.[131]

SPECIAL CONSIDERATIONS FOR ALL AGES

Although many of these interventions can be applied with some adjustments to most ages, there are certain approaches that may particularly work well for children and adults of all ages who require more support and/or are less likely to referred to an asthma subspecialist. Two examples of these approaches to care include

mobile care units such as asthma vans and community health workers (CHWs). Mobile care units focus on addressing the social determinants of health by meeting families and providing care where they live and play. This eliminates the transportation barrier that many families face in finding subspecialty care in tertiary academic centers that accept their insurance. An example of this intervention is evidenced by the results of the Breathmobile (Children's Hospital of Orange County, Orange, Calif), where their services resulted in decreased ED visits, improved asthma medication ratio, and a good return on investment.[94,95] Furthermore, they saw that in those with labeled severity of "mild, intermittent" were not found to be controlled in 31%, and that targeting community-based services could mitigate risk in even those who are considered to be "mild."[93] Similar findings in a different region of the country have seen similar, unpublished findings, such as at Mobile Care Chicago (www.mobilecarechicago.org). CHWs have been called many different names; they essentially provide a service that we as clinicians cannot consistently and frequently provide. CHWs are public health workers who are generally recruited to work from the same community in which we are hoping to improve health outcomes. Their ability to translate complex information into meaningful changes in someone's health is a unique niche. CHWs have been shown to be helpful in improving asthma-related health outcomes in adults and children in a variety of settings, with special consideration given to their ability to connect with families and to meet within the home.[89,90,119-121,123,132]

TECHNOLOGY

There are several telehealth and technology initiatives for asthma care that have been observed to improve asthma outcomes in minorities such as medication adherence, symptoms, quality of life, and the understanding of asthma.[125] Studies did not observe a strong clinical benefit in ED visits and hospitalizations related to asthma, except in few studies that involved computer/web-based applications.[125] This lack of strong benefit from acute care services is likely stemming from concentrating on deescalation of an acute worsening instead of focusing on an individually tailored, long-term asthma self-management plan that considers daily medications and trigger reduction strategies. Technology, when properly deployed and equitably considered, can serve as an essential tool to help implement guideline-based asthma management across populations.[125] The AAP is a tool designed to help patients understand and self-manage their chronic disease.[128] In fact, the NAEPP/NHLBI guidelines recommend that all patients with asthma receive an AAP that instructs the patient on how to manage asthma daily and to recognize and act in the event of an asthma crisis.[128] The AAP can also be incorporated with remote spirometry. This technology, mostly implemented in pediatric asthma care, involves automated voice recognition phone calls, text messages, or e-mails, when combined with an electronic health record to identify eligible patients, has the potential to be used as a low-cost reminder system. Similar technology in older adults with asthma can improve adherence to ICS.[110,133,134]

FRAMEWORK TO ADDRESS RACIAL DISPARITIES IN GUIDELINE-BASED CARE

The NAEPP guidelines used an evidence-to-decision (EtD) framework to provide a methodical and explicit approach to implementing each recommendation.[135] The EtD framework was created by the GRADE (Grading of Recommendations Assessment, Development, and Evaluation) Working Group to provide more structured system to support moving from EtDs for clinicians, insurers, health care, and public health systems. A notable component of the EtD framework is the equity content area that includes the impact of a particular recommendation on health equity. GRADE has a previous evidence review system used by hundreds of organizations such as Cochrane Collaboration and the National Institutes of Health, and there is increasing uptake of this new approach.[135] For example, the World Health Organization described the use of this framework in decision making in emergencies and urgencies during the COVID-19 pandemic and the Canadian Society of Nephrology in the clinical practice update for mineral and bone disorders in chronic kidney disease.[136,137] The intentional inclusion of the guidelines' impact on equity is critically important as guidelines affect clinical decision making and resource allocation.[138] If equity is not included in guideline implementation, there is risk of worsening or introducing disparities in historically marginalized groups at the expense of improving health outcomes for others.[139] Despite the inclusion of the equity content area in the NAEPP guidelines, clinicians and others involved in guideline implementation are not aware of this content area. Second, the NAEPP 2020 guidelines did not consistently provide strategies or facilitators to ensure equitable implementation. We hope that this report will increase awareness of this content area, but we also would like readers to consider well-established equity frameworks to guide the use and implementation of the new NAEPP guidelines.

Social-ecological model

The social-ecological model (SEM) (Fig 2) is a framework conceptualizing the factors or levels— individual, relationship, community, and society—that influence health.[140] These levels encompass the personal, interpersonal, physical, social, and political environments. The SEM recognizes the complex role of these different contexts in developing health outcomes but also in implementation of guidelines. Guidelines users should use the SEM to identify facilitators and barriers to use of a particular recommendation. For example, for recommendation 9, the panel recommended daily ICS at the onset of a respiratory tract infection in children 0 to 4 years old with recurrent wheezing and no wheezing between infections. In the corresponding EtD for recommendation 9, the panel deemed that it was unable to state the impact of this recommendation on equity. Using the SEM framework, one could hypothesize that on an individual level, insurance could impact this recommendation's implementation due to inhaler cost. On a societal level, certain cultural norms regarding illness perceptions and medication beliefs in Black and Latinx communities could play a role in uptake of this recommendation.[141]

Policy

The policy implications of the NAEPP 2020 guidelines are a critical aspect of uptake among users and health systems. Historically, clinical guidelines such as the NAEPP influence insurance coverage decisions, and the development of clinical policies and performance measures.[142] Unfortunately, the impact of policy on guideline implementation is mentioned briefly in the

guidelines. These latest recommendations should serve as a ripe opportunity as allergist-immunologists to be engaged in strategic advocacy through our professional organizations, institutions, or as individuals to ensure that these latest NAEPP 2020 recommendations are supported by local, state, and federal policies.[143] It is well documented that asthma places a significant economic burden in the United States where ~50% of direct costs are due to prescription medications. Furthermore, greater medication cost sharing or out-of-pocket medication cost is associated with reduced medication adherence and increased asthma-related hospitalizations.[144] If there is no comprehensive policy approach to the reduction of medications costs, these updated guidelines will be unequally implemented as our historically marginalized patients will be unable to afford the medications. We believe that our specialty organizations should conduct a strategic review of the guidelines and work with legislators to ensure these recommendations are accessible, particularly for our publicly insured patients.

Forms: adjusting reliever options in AAPs

AAPs are individualized management plans detailing daily and acute management of asthma. As the NAEPP 2020 guideline updates include a recommendation using SMART, in patients ≥4 years old.[145] Current AAPs used by numerous medical institutions, schools, nonprofit organizations, and local governments have not been updated to consider this critical guideline change. However, the American Academy of Allergy, Asthma, and Immunology SA3MPRO (School-based Allergy, Asthma, and Anaphylaxis Management Program) has incorporated these recommended guidelines, which are publicly available and soon will be translated into multiple languages.[145] We propose that legislation should be created to ensure that there is equitable implementation of this critical management change.

Education

For the NAEPP 2020 guidelines to be implemented and used, potential users must be educated about the recommendations and practical guidance on uptake in the clinical setting. Moreover, gaining a greater understanding of the impact of these recommendations among historically marginalized groups may also increase dissemination. In regard to SMART, Reddel et al[146] provide practical guidance on implementing SMART, including specific messaging clinicians can discuss with patients. Israel et al[71] demonstrated the feasibility and effectiveness of implementing PARTICS ([Patient-Activated Reliever-Triggered ICS], which is similar to SMART but instead adding short-acting rescue inhaler to ICS use) in a Black and Latinx cohort with moderate-severe asthma and ~20% of participants with low/marginal health literacy. Besides clinicians, patients should be educated on guidelines to allow informed health care decisions. Creators and developers of asthma educational programs should use updated materials accordingly to ensure patients are receiving the most recent recommendations, with particular emphasis on the development of content integrating cultural beliefs, illness representation (patient's beliefs and expectations about their illness), and health literacy.[141]

TABLE 1. Resources for clinicians for more equitable access to asthma guidelines

NAEPP guildelines[41]
GINA guidelines[44,45]
Mobile care options (ie, Breathmobile)[93-95]
School-based asthma programs (ie, SAMPRO)[73,99-101]
Exercise/gym programs[111-114]
Mobile asthma applications[110,133,134]

TELEMEDICINE

Likewise, in-person clinician visits can potentially be reduced with the implementation of virtual visits/video calls with the doctor. With the COVID-19 pandemic, telemedicine became a ubiquitous and effective means for health care, including utilizing video-based multimedia tools tailored to enhance asthma education and technique training of different inhalers.[87,147] Policy that incorporates long-term use of telemedicine with equitable reimbursement will continue to allow easy access to the population, especially older adults, who are more vulnerable. However, technology skills of some adults, including older adults and caregivers, may be limited.[87] Therefore, a variety of reimbursed forms of telehealth must be provided by payors to ensure access to patients with asthma and ensure their continued care. In addition, there is a need for studies among the older underserved minority adults on the impact of telehealth and technology on health care use, asthma impairment, and adherence to medications and guidelines. Minority patients had a positive feedback about use of telehealth and technology[134] in their asthma care, including improvements in their knowledge about asthma, understanding about asthma medications and improved medication adherence, reduction in asthma symptoms, and improved quality of life.[147] Lastly, activating telemedicine platforms may benefit patients in rural underserved communities.[125] Further studies are needed to develop and adopt guidelines on technology in improving health care use among all the age groups.

CONCLUSIONS

Asthma remains a substantial burden across our communities. Despite rapid advancements in our understanding of asthma and its management, there are substantial barriers to applying them in practice. One of the key determinants to reduce health disparities would be to have a diverse subspecialty workforce and an equitable, accessible, and comprehensive health care system.[148] Specifically, increasing the number of underrepresented minorities in the physician workforce has shown that health care access to the minorities improves because many of these physicians choose to work to the benefit of their community.[37,51] Similarly, addressing health care access barriers and the social determinants of health and ensuring evidence-based guideline implementation in all entry points of care are essential starting points toward improving our allergy-immunology subspecialty's approach to health equity in asthma care across the life span. To address this, it is important that guidelines are frequently updated and concordant across entities. A resource list for clinicians is listed in Table I.[41,44,45,73,93-95,99-101,110-114,133,134] Insurance companies should be held to the same standards in ensuring that their customers are receiving the most up-to-date care.

Furthermore, clinicians must have guidance in interpreting and implementing guidelines equitably for distinct populations, particularly those that are most vulnerable. Health disparities are innate aspects of a patients' disease. Therefore, social determinants of health and approaches to patient-centered decision making must be incorporated into every aspect of asthma management. This review intends to present tangible resources for clinicians to help accomplish this difficult task. We urge clinicians to act now by leveraging telehealth, home care programs, and advocating for the reimbursement of these resources.

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