

Applying the dissemination and implementation sciences to allergy and immunology: A Work Group Report from the AAAAI Quality, Adherence, and Outcomes Committee



Sujani Kakumanu, MD,^{a,b} Stanley Szeffler, MD,^{c,d} Andrea A. Pappalardo, MD,^e Anne E. Sales, PhD, RN,^{f,g} Alan P. Baptist, MD, MPH,^h Jessica Stern, MD, MS,ⁱ and Sharmilee M. Nyenhuis, MD^j *Madison, Wis; Aurora, Colo; Chicago, Ill; Columbia, Mo; Ann Arbor and Detroit, Mich; and Rochester, NY*

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Translating evidence-based practice (EBP) into real-world clinical settings often takes a considerable amount of time and resources. In allergy and immunology, the dissemination and implementation (D&I) sciences facilitate the study of how variations in knowledge, resources, patient populations, and staffing models lead to differences in the clinical care of asthma, allergic disease, and primary immunodeficiency. Despite the need for validated approaches to study how to best apply EBP in the real world, the D&I sciences are underutilized. To address

this gap, an American Academy of Allergy, Asthma & Immunology (AAAAI) work group was convened to provide an overview for the role of the D&I sciences in clinical care and future research within the field. For the D&I sciences to be leveraged effectively, teams should be multidisciplinary and inclusive of community and clinical partners, and multimethods approaches to data collection and analyses should be used. Used appropriately, the D&I sciences provide important tools to promote EBP and health equity as well as optimization of clinical practice in allergy and immunology. (*J Allergy Clin Immunol* 2024;154:893-902.)


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From ^athe University of Wisconsin School of Medicine and Public Health, Madison; ^bthe William S. Middleton Veterans Memorial Hospital, Madison; ^cthe Department of Pediatrics, Section of Pediatric Pulmonary and Sleep Medicine, Anschutz Medical Campus, University of Colorado School of Medicine, Aurora; ^dthe Breathing Institute, Children's Hospital Colorado, Aurora; ^ethe Departments of Medicine and Pediatrics, Division of Pulmonary, Critical Care, Sleep and Allergy, University of Illinois, Chicago; ^fthe Sinclair School of Nursing and Department of Family and Community Medicine, University of Missouri, Columbia; ^gVeterans Affairs, Ann Arbor Healthcare System, Ann Arbor; ^hthe Division of Allergy and Clinical Immunology, Henry Ford Health, Detroit; ⁱthe Division of Allergy, Immunology, and Rheumatology, Division of Pediatric Allergy and Immunology, University of Rochester School of Medicine and Dentistry, Rochester; and ^jthe Department of Pediatrics, Section of Allergy, Immunology, and Pulmonology, University of Chicago, Chicago.

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Corresponding author: Sujani Kakumanu, MD, 600 Highland Ave, CSC 9988, Madison, WI 53792. E-mail: kakumanu@wisc.edu.

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In 2022 alone, the National Institutes of Health (NIH) spent over \$45 billion on medical research.¹ One primary goal of the investment is to support the transition of initial research discovery into clinical trials and subsequently into guidelines for use by frontline clinicians.²⁻⁶ Despite this established infrastructure, the actual uptake of research innovation into clinical practice is low and slow, with less than 50% of discoveries reaching the real-world setting and with an often cited 17-year time lag.^{7,8} In addition, adherence to clinical guidelines in allergy and immunology is variable and is influenced by resource availability, pre-existing health inequities, clinician preferences, and environmental factors.⁹⁻¹¹ For this reason, leveraging scientific

Abbreviations used

AAAAI: American Academy of Allergy, Asthma & Immunology
D&I: Dissemination and implementation
EBP: Evidence-based practice
EHR: Electronic health record
EPIS: Exploration, preparation, implementation, sustainment
GINA: Global Health Initiative for Asthma
NIH: National Institutes of Health
PCORI: Patient Centered Outcomes Research Institute
PRISM: Practical Implementation Sustainability Model
QI: Quality improvement
RE-AIM: Reach, Effectiveness, Adoption, Implementation, and Maintenance
SMART: Single maintenance and reliever therapy

methods tailored to answering key questions like “Why are the recommendations of clinical guidelines not reaching certain populations?” or “What are the barriers to intervention success?” can lead to greater uptake of evidence-based practice (EBP).

The dissemination and implementation (D&I) sciences comprise fields of study that prioritize the study of how and how well we are implementing EBP into real-world clinical settings. Although the D&I sciences are well recognized by the NIH and have gained traction in other medical disciplines, their use in allergy and immunology has lagged.¹²⁻¹⁷ As a result, allergists and immunologists are frequently tasked to develop local protocols to deliver care that is based on new evidence within their individual clinical settings. Although implementation strategies are occasionally included in more recent guidelines, there is still a need to improve the implementation of EBP within the field of allergy and immunology.¹⁸⁻²⁴ In this American Academy of Allergy, Asthma & Immunology (AAAAI) work group report, we advocate for a greater awareness and understanding of the D&I sciences as distinct fields of study compared to quality improvement (QI), practice improvement, health services research, and GRADE (Grades of Recommendation Assessment, Development, and Evaluation) based guideline development. We also provide examples of where the D&I sciences can improve the care of allergy and immunology patients.^{15,25-27} Dissemination science is the study of how information and intervention materials are distributed to a specific audience; implementation science is the scientific study of methods to promote the systematic uptake of proven clinical treatments and practices as well as organizational and management interventions into routine clinical practice.¹⁵ We refer to these fields of study together as the D&I sciences.

ALIGNING D&I SCIENCES WITH OTHER FIELDS OF STUDY

In recent decades, there has been increased focus on quality and value-based care and practice improvement. These approaches have been invaluable in defining processes and measurable outcomes to iteratively improve patient care. Furthermore, within the context of QI and broader health services research, there is a particular emphasis on defining processes and systems that improve patient-reported outcomes and patient safety and that minimize unnecessary health care costs. While these core tenets

are shared, the D&I sciences add an additional lens that prioritizes the study of underlying (contextual) factors that serve as barriers or facilitators to implementing an EBP and the mapping of processes and outcomes to study how effective we are at disseminating and implementing the EBP. For example, a QI project may focus on developing an intervention to increase screening for primary immunodeficiency in primary care and work to iteratively improve the intervention using a focused plan–do–study–act (aka PDSA) cycle approach. A D&I study may approach this observed care gap differently and use a systematic approach to identify and address key factors affecting the interventions, including individual features (what are the attitudes and knowledge of frontline clinicians?), organizational aspects (are there adequate nursing and laboratory supports and equipment?), cultural considerations (how will we discuss this intervention in various populations?), and financial climate (will payors restrict screening lab payments?). Specifically, the D&I sciences provide a validated, systematic approach to study the intervention itself as well outcomes relevant to successful and widespread use of the intervention, including effectiveness (is the intervention working as intended?), reach (are we reaching the intended patient populations or clinical settings?), fidelity (is the intervention deployed as intended?), and sustainability (can we maintain our intervention over time?).²⁸⁻³¹

Another value of the D&I sciences is to develop processes to discontinue interventions of low value, such as deimplementing steroid therapy to prevent late-phase reactions in anaphylaxis. Although the D&I sciences promote EBP, the field is distinct from developing or grading clinical practice guidelines. However, the D&I sciences can be used to show how existing guidelines may not be effective or feasible in real-world practice.³²⁻³⁶

PROGRAM JUSTIFICATION, PARTNERSHIP ENGAGEMENT, AND CONVENING THE STUDY TEAM

As a new and quickly evolving field, D&I sciences can be difficult to conceptualize and the breadth of available frameworks, which use multilevel and mixed methods approaches, are often overwhelming.^{29-31,37,38} For the field of allergy and immunology, the D&I sciences could be leveraged to study factors leading to failures to implement impactful research findings and guideline recommendations for asthma and allergic disease, including, early introduction to peanut-based foods in infants, penicillin allergy delabeling initiatives, and delivery of single maintenance and reliever therapies (SMART) in asthma.^{36,39-52} In addition, D&I studies could be used to develop strategies to provide consistency and equity in biologic therapies and allergen immunotherapies across clinical settings (Table 1).

The D&I sciences typically bring together disparate fields such as clinical services, implementation, organization, policy, and economics.⁵⁶ The aims of D&I scientific teams require engagement of frontline clinicians, public health agencies, health system payors, patients, and other community organizations in the research process and incorporation of a team science approach.⁵⁷ As these diverse teams convene and collaborate, they will need to endorse recommended strategies, including (1) setting clear expectations and roles in conducting research, (2) promoting and modeling effective communication, and (3) establishing shared goals and missions.⁵⁷ Because of the diverse and varied team

TABLE I. Allergy and immunology examples suitable for implementation science interventions

Disease state	Allergy and immunology EBP	Possible intervention targets
Asthma	<ul style="list-style-type: none"> ● 2020 focused NAEPP guidelines update⁵³ ● 2024 GINA guidelines⁵⁴ 	<ul style="list-style-type: none"> ● SMART and ICS/SABA inhaler regimens ● Real-world use of asthma biologics
Chronic rhinosinusitis	<ul style="list-style-type: none"> ● Rhinitis 2020 practice parameters update⁴⁰ 	<ul style="list-style-type: none"> ● PID screening in patients with recurrent sinusitis ● Sleep disorder screening in chronic rhinosinusitis
Atopic dermatitis	<ul style="list-style-type: none"> ● Atopic dermatitis guidelines⁴¹ ● Atopic Dermatitis Workgroup Report 2022⁴² 	<ul style="list-style-type: none"> ● Unification of skin barrier management ● Food avoidance risks and benefits in patients with atopic dermatitis
Drug allergy	<ul style="list-style-type: none"> ● 2022 drug allergy update to practice parameters⁴³ 	<ul style="list-style-type: none"> ● Penicillin delabeling interventions ● Cephalosporin treatment of penicillin-allergic patients ● Targeted use of drug desensitization protocols
Food allergy	<ul style="list-style-type: none"> ● Early introduction to peanut and allergy prevention guidelines/consensus reports^{39,44-48} ● Anaphylaxis practice parameters 2023³⁶ 	<ul style="list-style-type: none"> ● Survey of barriers and facilitators to food allergy guideline implementation ● Study of shared decision-making approaches to early food introduction and oral food immunotherapy ● Implementation of epinephrine injection training in schools and community settings
Health disparities	<ul style="list-style-type: none"> ● 2021 health disparities in allergy and immunology work group report¹⁰ 	<ul style="list-style-type: none"> ● Increased patient representation in clinical trials ● Use of culturally competent and culturally sensitive patient education ● Study of equity-focused, EHR-based algorithms to identify PID in vulnerable populations ● Study of increased referrals to allergy and immunology in vulnerable populations to promote equal access to immunotherapy, intensive medical management, and biologics to treat severe allergic rhinitis, atopic dermatitis, and asthma
School-based care coordination	<ul style="list-style-type: none"> ● 2023 work group report for equitable access to guideline-based asthma care⁹ ● SA³M³PRO and Environmental Protection Agency guidelines for school asthma management^{49,50} 	<ul style="list-style-type: none"> ● School-based asthma management programs ● Home and school air quality management
PID/inborn errors of immunity	<ul style="list-style-type: none"> ● Immune Deficiency Foundation diagnostic and clinical care guidelines⁵¹ ● 2015 practice parameter for the diagnosis of PID⁵² ● 2022 practical guidance for the diagnosis and management of secondary hypogammaglobulinemia⁵⁵ 	<ul style="list-style-type: none"> ● Timely administration of vaccines in PID ● Screening in patients at risk of PID using Immune Deficiency Foundation tool kits ● Judicious use of γ-globulin replacement in patients with secondary hypogammaglobulinemia

ICS/SABA, Inhaled corticosteroid/short-acting β -agonist; NAEPP, National Asthma Education and Prevention Program; PID, primary immunodeficiency; SA³M³PRO, School-Based Allergy Asthma and Anaphylaxis Management Program.

composition and scope of projects that can span multiple scientific disciplines, partnership building are key initial steps in the D&I sciences.^{31,57,58}

To effectively engage in D&I research, it is crucial to understand the following: (1) the contextual factors driving the evidence-to-practice gap (including resource allocation, structural racism, workflow design, political pressure, scientific misinformation, and access to care); (2) the population and participants involved; (3) the need to develop and adapt impactful interventions; (4) the role of behavior change (at both the individual and population levels) in constructing implementation strategies; and (5) the need to evaluate the intervention's efficacy, reach, fidelity, and sustainability.⁵⁹ In addition, studying an observed clinical gap in care may require using qualitative and quantitative data collection (mixed methods) and multilevel analyses of the broader clinical, societal, and environmental context (Fig 1).

PROJECT PLANNING: FINDING A FRAMEWORK AND DEVELOPING A ROAD MAP

The D&I sciences comprise rapidly evolving fields, and early approaches in D&I research were often empiric. In recent years, the use of tools or frameworks to provide a structured, validated approach to design and to evaluate and adapt implementation

strategies has been developed. These frameworks can serve as templates or road maps for program planning and implementation. Broadly speaking, D&I frameworks can be categorized as follows:

1. Process frameworks. These include EPIS (exploration, preparation, implementation, sustainment) and PRISM (Practical Implementation Sustainability Model), which aim to primarily describe or guide the workflow for how EBP is translated into practice.
2. Determinant frameworks. A consolidated framework may be used for implementation research, whereas a theoretical domain framework aims to help us understand what factors influence the implementation process. These frameworks are multilayered and inclusive of system-based factors (ie, barriers and facilitators) occurring at national, regional, and organizational levels; individual components related to clinician and patient behaviors are also key.
3. Evaluation frameworks. These include the RE-AIM (Reach, Effectiveness, Adoption, Implementation, and Maintenance) framework, which focuses on evaluating key implementation outcomes.⁶⁰⁻⁶³

Importantly, there is no single or perfect framework; in various phases of a study, multiple frameworks can be used.^{64,65} Frameworks provide a validated scientific process to ensure that the

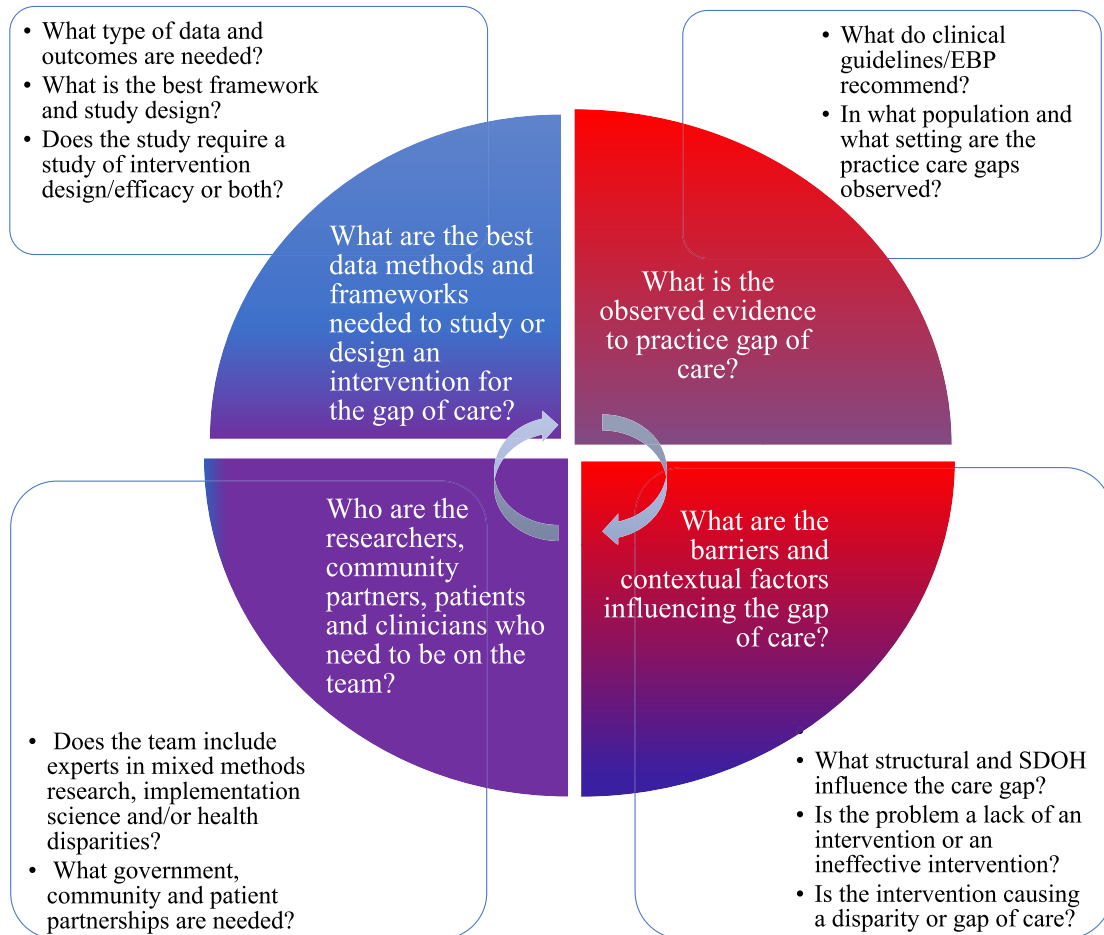


FIG 1. Key steps and questions in D&I research planning process. Process begins with observed evidence to practice care gap and involves study of contextual factors, assembly of multidisciplinary team, and mixed methods data approach. Choosing a D&I framework is crucial to study planning and execution.

study of an intervention focuses on equity, fidelity, effectiveness, penetration, reach, and scalability. Extensive discussions of methods and frameworks have been previously published.^{27,28,31,60,61,66-76}

Although the D&I sciences can improve reach and use of clinical innovations, they can also exacerbate health disparities. For example, populations that are more likely to successfully adopt new interventions are more likely to participate in D&I research and often have greater access to the health system and better health literacy. In addition, commonly held biases—such as beliefs in how historically marginalized populations may use digital interventions such as telemedicine or mobile health applications, or how English proficiency or prior labels of nonadherence may affect health care system navigation—may influence which patient populations are assessed to be ready to adopt new interventions or which populations are recruited.

To address this, a study of structural and social determinants of health influencing the EBP being studied should be integrated into the study planning phase; these are promoted by health equity frameworks such as the Health Equity Framework and the Equity-Based Framework for Implementation Research.^{29,31,76,77} With use of these focused frameworks, and with careful integration of a health equity lens at the outset of study planning, D&I research can uncover how population and setting variations affect

reach, adaptation, and fidelity of the EBP to historically marginalized populations.⁶⁶⁻⁶⁸ A full discussion of the role of the D&I sciences in addressing health disparities in asthma, allergic diseases, and primary immunodeficiency is beyond our scope here, but there is a well-recognized need to promote health equity in allergy and immunology.^{10,78}

APPROACHES TO STUDY DESIGN

There are a number of ways to classify study design, which can be broadly categorized as observational, experimental, quasiexperimental, hybrid, and pragmatic trial designs.⁷⁹ Observational studies focus on collecting data, often utilizing both qualitative and quantitative approaches, to identify the barriers and facilitators influencing an implementation strategy's efficacy and use. In experimental study designs, typically either an intervention or implementation strategy is tested in a randomized, controlled approach. The stepped wedge design, a popular example of an experimental design, consists of dividing intervention sites into equal numbers (or wedges) and then randomly allocating each wedge to a time period for the same intervention delivery.⁷⁹⁻⁸² In many cases, randomization is not possible as a result of real-world limitations; in these cases, investigators can use quasiexperimental designs that use statistical methods to minimize bias

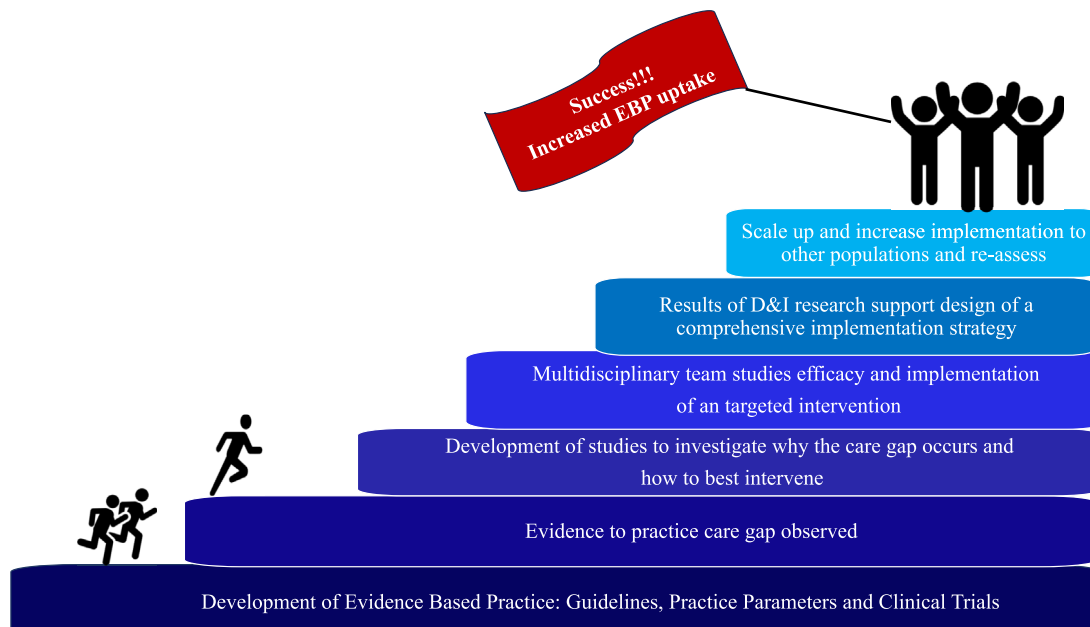


FIG 2. Process from development of population-based EBP guidelines to large-scale adoption of implementation strategy to improve EBP uptake.

and strengthen validity. Hybrid designs are increasingly used in the D&I sciences; these investigate both the clinical effectiveness of an intervention and the implementation strategy itself. With this dual focus, hybrid designs are well designed to accelerate the translation of EBP in routine clinical care and affect public health.^{15,66,81}

Pragmatic trials share similarities with hybrid studies and are also designed to account for the real-world constraints in patient selection, outcome collection, and implementation evaluation within a frontline clinical practice.^{82,83} For example, pragmatic trials that study how to improve asthma medication adherence have recruited patients from clinical practices and randomized them to receive an intervention, such as a digital or phone reminder, asthma education, or access to a community health worker liaison.⁸⁴⁻⁸⁶ In these trials, patient selection and medication delivery occur within routine clinical practice. Pragmatic trials reflect a tenet of the D&I sciences, which at their core are concerned with understanding how new evidence is applied to routine practice in the real world.⁸³ Broader scopes of study designs with examples used in the D&I sciences have been published elsewhere.^{27,79,81,87}

MIXED METHODS AND MULTIMETHOD APPROACHES

Combining quantitative and qualitative methods into a well-designed trial is likely to result in greater validity and generalizability of study findings.⁸⁸ D&I research encourages mixed methods or multimethod approaches, which use qualitative (ie, focus group, interview, survey-based data) and quantitative (ie, outcomes related to disease-based metrics, discrete measurement of intervention processes) because these methods provide important information about how an intervention is delivered.

D&I research often involves the collection of real-time and/or digital data to assess clinical efficacy and implementation outcomes. These data sources include electronic health record

(EHR) data, which are critical for understanding key processes (eg, prescribing behavior) and outcomes (eg, asthma control by reviewing emergency department visits). In addition, metrics related to patient experience, clinician time, and use of the EHR and data related to clinical outcomes can provide powerful contextual measures of the organizational and social systems where the clinical care is delivered. A widely used EHR data strategy is audit with feedback, which uses aggregated health data to describe the performance of a health care provider or health system. These are sometimes called report cards or dashboards and can be presented to individuals and organizations at the point of service within their clinical practice.⁸⁹⁻⁹³

APPLICATIONS OF D&I RESEARCH IN ALLERGY AND IMMUNOLOGY

D&I research that focuses on translating EBPs into clinical practice with an emphasis on equity, fidelity, and sustainability for asthma and allergic and immunologic disease is a growing need. A general process of how D&I can be used to help elevate EBP of an allergic and/or immunologic concern is provided in Fig 2. Table I highlights some examples of evidence-based allergy and immunology practices that may benefit from the D&I sciences to improve uptake or dissemination and/or increase equitable access to such practices in the real world.

School-based health studies have been early adopters of D&I methods. The intersecting environment of school-based health and educational staff, clinicians, parents, children, and public health staff requires a study of human behavior, health inequities, and organizational pressures. Data have shown that childhood asthma significantly affects health and educational outcomes, yet replicable and comprehensive programs to address this problem are not well established. A comprehensive school-based asthma program in the Colorado public schools was developed using the EPIS and RE-AIM frameworks.^{57,94} In this case study, the EPIS framework was used to: (1) assemble a study team from the

health, school, and community settings, (2) examine the pertinent context and social determinants of health, (3) prepare an implementation strategy informed by this contextual data, and (4) implement a multilevel program with a focus on clinical efficacy and implementation outcomes. In their evaluation stage, the team used the RE-AIM framework to measure clinical outcomes such as childhood asthma control and health care utilization affected—and, importantly, the penetration, fidelity, and sustainability of their intended intervention.^{85,95,96}

In the development of the 2020 focused asthma guidelines update, the National Heart, Lung, and Blood Institute recognized the need to create tools to aid with education and use in the clinical setting.⁵³ During development of the guidelines, collaborations with partner organizations resulted in the development of educational materials and an asthma clinical decision support tool, but these collaborations did not provide a comprehensive implementation strategy for frontline clinicians.⁹⁷ Studies have also found that most clinicians were unaware of updates to the asthma guidelines and were not widely using the provided tools in their clinical practice.^{9,98-101} In addition, although the asthma guidelines were constructed using the best available evidence-based medicine at the time, they did not address important contextual factors such as US Food and Drug Administration medication approval or insurance coverage.⁵³ Because payors are less inclined to approve costly medications such as combination inhaled corticosteroid–formoterol inhaler therapies that are not FDA approved, even clinicians aware of guideline recommendations were unable to consistently apply them.^{101,102} Recent updates to the Global Initiative for Asthma (GINA) guidelines have included additional implementation strategies in 2024, including a checklist for integrating GINA guideline recommendations into a health system.⁵⁴ Future D&I research studies that investigate and address barriers to application of clinical guidelines may lead to more consistent incorporation of SMART into clinical practice and improved national policies for asthma management.

Translation of guidelines and practice parameters related to other allergic diseases such as drug allergy, chronic rhinosinusitis, and atopic dermatitis, as well as primary immunodeficiencies, faces similar obstacles. Real-world studies have cited the need for the D&I sciences to address accepted evaluation strategies for penicillin allergy and primary immunodeficiency.^{103,104} The benefits of large-scale penicillin allergy delabeling initiatives are well recognized, but barriers such as lack of trained personnel, need for professional role clarification and team building, and inadequate staffing and communication systems, along with a lack of endorsed quality measures, have prevented effective interventions to delabel patients who have been erroneously designated as having a penicillin allergy.^{21,105} In addition, a clinical care gap requiring deimplementation of conventionally held practices, such as indiscriminate avoidance of cephalosporins in patients with penicillin allergy, can also be the subject of future D&I scientific research. Recent work has cited the role of mixed methods data collection, team science, and a focus on best practices for implementation to translate algorithm-based penicillin allergy evaluation to diverse clinical settings and patient populations.^{55,103,104,106-108}

National Institute of Allergy and Infectious Diseases guidelines focused around early food introduction recommendations have been available since 2017, although barriers to their widespread use have been described.³⁹ Furthermore, survey data have documented variability in clinical practice and systemic

concerns for timely patient follow-up and access to oral food allergy challenges.^{18,20,109} Similarly, delays in epinephrine injection before emergency department arrival and within the ED are well recognized. Future D&I studies that identify factors influencing the uptake of early introduction to peanut guidelines and delays in epinephrine autoinjector deployment for suspected food allergy–induced anaphylaxis can promote and bridge uptake of food allergy–focused EBP among the fields of primary care, emergency medicine, and allergy and immunology.

HOW THE D&I SCIENCES CAN IMPROVE RESEARCH IN HEALTH EQUITY IN ALLERGY AND IMMUNOLOGY

Applying the perspectives and tools of the D&I sciences has the potential to significantly affect the study of health disparity and improve health equity in the field of allergy and immunology. A 2021 work group report identified several areas of health inequities in allergy and immunology, including allergic rhinitis, atopic dermatitis, and primary immunodeficiency.¹⁰ In allergic rhinitis, gaps in care in minoritized populations were related to disease underdiagnosis as well as to lack of access to guideline-based care. In this case, an application of the D&I sciences—such as building a team of key stakeholders with community organizations and community primary care providers and using qualitative (focused groups, structured interviews) combined with quantitative (analysis of pharmacy and clinical encounter data) data to determine barriers to diagnosis and receipt of allergen immunotherapy—may lead to better and more equitable adherence of EBP for allergic rhinitis in minoritized populations. Further study may involve the investigation of how to best to deploy mobile health clinics to provide specialty care in historically marginalized communities, or how to best train community primary care physicians to administer immunotherapy. In addition, implementation studies that study how social determinants of health affect patients with asthma—including proximity to air pollutants, housing availability, school policies, and access to medical care—can inform the development of interventions to better reach and treat asthma patients with greater equity.^{9,10,110,111}

Similarly, addressing the observed disparities in early introduction to peanut initiatives, as recommended by current food allergy prevention guidelines, will require a systematic assessment of individual and structural barriers in underserved populations, as well as study of how to adapt best practices by utilizing D&I health equity frameworks.¹⁰ Future work could also harness technological innovations, such as developing nonbiased EHR or artificial intelligence algorithms that identify patients at high risk for severe allergic disease and/or primary immunodeficiencies. In these endeavors, it will be important to include a multidisciplinary team of researchers to prevent propagation of bias in these algorithms.^{9,10,112}

CHALLENGES AND FUTURE DIRECTIONS FOR THE D&I SCIENCES

The D&I sciences are rapidly emerging as fields of study that share core tenets with practice improvement, EBP, and health services research; they can be key drivers to establishing best practices for intervention uptake. To date, sections of the National Institutes of Health (NIH) and the Patient Centered Outcomes

Research Institute (PCORI) have shown interest in funding D&I research. The NIH and PCORI, the Veterans Health Administration, AcademyHealth, and the Agency for Healthcare Research and Quality have a strong history of supporting health services and D&I research.

For the D&I sciences, a study's cost could be high if multiple sites are involved, and it may be complicated by competing operational costs and pressures from health systems when conducting research in real-world settings. A useful process in conducting such studies is to start with a planning phase inclusive of a systematic analysis of the clinical gap of care. Convening a multidisciplinary study team as well as a scientific advisory board inclusive of health organizational leadership and community advisors is a critical initial step and promotes the development of sustainable partnerships. Subsequent study progression would involve careful consideration of research design, the D&I framework, and study sites. Research results should be applied to inform future implementation strategy—and, when appropriate, the development of consistent local or national policy (Fig 2).

Goals of the D&I sciences are to spread EBP and inform strategies promoting the uptake of scientific discoveries and to translate clinical guidelines into real-world clinical settings. To effectively achieve this, we, as a scientific community, need to understand and apply scientific methodologies as we study how clinicians, patients, communities, and health care systems use EBP in their everyday lives. The D&I sciences provide us with comprehensive approaches that prioritize intervention efficacy, fidelity, sustainability, and health equity as we translate EBP for asthma, allergic, and immunologic diseases into real-world clinical settings. For clinicians, policy leaders, health care systems, and payors, the findings of D&I research offer strategies to improve delivery of evidence-based asthma, allergy, and immunology care. Allergists and immunologists should be receptive to practice changes based on findings from D&I studies and should leverage this area of research to develop and adapt health care interventions. While the D&I sciences can provide effective tools to address health inequities, careful study of the contextual factors leading to a specific disparity is important and can be achieved through community collaboration and effective stakeholder engagement.^{31,70} Increasing grant support, improving training opportunities, and emphasizing the need to broaden research networks to include implementation scientists and health disparities researchers will further promote translation of EBP, thereby promoting health equity and a future evolution of the D&I sciences in allergy and immunology.

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