Key Factors in Designing the Health System–Community Pathways Program for African American/Black Children and Young Adults

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About This Report

This report describes the development of key factors in framework design for the Health System–Community Pathways Program (HCPP), which aims to increase representation of African American/Black communities in the health care system workforce. Called the HCPP framework of key factors, it is informed by an environmental scan, interviews, focus groups, and an expert discussion panel session. The ultimate goal of the HCPP framework of key factors is to increase both the number of African American/Black individuals successfully pursuing careers in health care and the quality of their educational and work experiences. The report’s authors come from diverse backgrounds; the team included African American/Black physicians and members of other historically marginalized communities. Moreover, the qualitative research that serves as the foundation for the HCPP framework of key factors drew insights from a diverse set of African American/Black community stakeholders, including health care providers, youth educators, local leaders of community and grassroots community organizations, parents, and activists. Finally, the report itself was reviewed by many of the stakeholders. All of these efforts were meant to ensure that the design of the research and the end product resonate with and maximally benefit the community on which they focus.

The Centers for Disease Control and Prevention (CDC) defines health equity as “the opportunity to ‘attain [one’s] full health potential’” regardless of “social position or other socially determined circumstances” (CDC, 2022). A commitment to health equity demands an ability to set aside past beliefs about how research is supposed to be conducted and an openness to acknowledging that the very methods that researchers use might create barriers to equitable processes in research, including methods for clinical trial recruitment, inclusion of only peer-reviewed literature in academic work, and lack of diversity in research teams, to note just a few examples. Furthermore, a simple understanding of existing health inequities and a passion to help develop and implement solutions for change are not enough. The purpose of the research and research design needs to be rooted in existing evidence and center the voices of communities in ways that recognize the history of racial inequities and racism in the United States. This acknowledgement must come first, before any data is collected or interventions designed.

This research was carried out within the Access and Delivery Program in RAND Health Care with support from the RAND Center to Advance Racial Equity Policy. The Center to Advance Racial Equity Policy aims to develop and apply approaches and solutions that build racial equity into systems and policies for the future. The key objectives of the center are to use research, engagement, and policy development activities to identify and apply effective approaches for building systems and policies that center racial equity; to foster dialogue about advancing racial equity in systems and policies, both within and outside RAND; and to promote the development of current and future policy leaders with the skills to advance racial equity-oriented systems and
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We dedicate this report to African American/Black communities across the United States with the hope that the Health System–Community Pathways Program framework of key factors can inform health systems along their journey toward diverse, equitable, inclusive environments for patients, health care providers, and communities.
Summary

Background and Objectives

Many of the ethnic and racial workforce inequities in the United States are present in health care systems. Low representation of African American/Black individuals in the health care system can be traced to a history of exclusionary practices that leave such individuals less likely to pursue health careers. Low representation, in other words, is driven by inequities in health, education, and employment that are a result of structural racism (Boyd, 2019).

Pathways programs (previously referred to as pipeline programs) have been identified as one of the methods to increase recruitment, retention, and promotion in health-related fields for African American/Black individuals. For our research, with input from the study team’s experts and community members, we used the term pathways—removing the stigmatizing language associated with the “school-to-prison pipeline” (Hill, 2019).

Pathways programs are defined as programs that recruit and support the graduation of students from underrepresented communities at all educational stages to increase their representation in specific fields (Katz, Barbosa-Leiker, and Benavides-Vaello, 2016). These programs use innovative models for recruiting and mentoring and nontraditional models for improving education opportunities and faculty development. Despite these efforts, African American/Black populations continue to be underrepresented in U.S. health care settings. For example, African American/Black physicians comprised only 5 percent of the national physician workforce in 2018 even though African American/Black individuals make up 13 percent of the U.S. population. This underrepresentation has implications for health equity, or “the opportunity to ‘attain [one’s] full health potential’” regardless of “social position or other socially determined circumstances” (Centers for Disease Control and Prevention [CDC], 2022). Furthermore, this underrepresentation has been shown to adversely affect both patient health and provider outcomes, such as job satisfaction (Noguchi, 2020). For example, African American/Black patients have reported lower quality of patient-provider communication; less information-sharing, partnership-building, and joint decisionmaking; shorter office visits; physicians who were more verbally dominant; and worse outcomes on assessments of nonverbal communication, respect, and support.

This report describes efforts to develop a framework of key factors to increase the representation of African American/Black professionals in the health care workforce by (1) attracting children and young adults to careers in health care and (2) supporting that interest over time. We call this the Health System–Community Pathways Program (HCPP) framework of key factors. Developed within the context of an equity framework and drawing on both the research
literature and community perspectives, the HCPP framework of key factors identifies how best to approach the following: (1) student recruitment, admission, and retention; (2) mentor recruitment and training; (3) programming; (4) program outcome measurement; and (5) long-term program sustainability strategies.

Methods

The development of the HCPP framework of key factors was informed by the following research activities:

- environmental scan of peer-reviewed and gray literature to evaluate understanding of best practices for pathways programs
- 12 interviews with pathways program administrators, former and current mentors, leaders and organizers of education and diversity programs, and diversity, equity, and inclusion (DEI) experts to fill in any gaps from the environmental scan around best practices for pathways programs
- two multistakeholder focus groups with community members, including young adults, parents or caregivers, representatives from community and grassroots organizations, and activists to understand community preferences around pathways programs at the interface of health care systems and communities
- a discussion panel with representation from African American/Black health care providers and DEI experts who focused on understanding the role of pathways programs in increasing DEI in health care systems
- inclusion of a four-member advisory group—consisting of African American/Black physicians and DEI experts—to provide input on the research design, execution, and analysis; the HCPP framework of key factors; and this report.

Many of the study participants were recruited in Michigan, where the project lead is based. However, some interviewees were located in other states.

We applied an equity lens at every step of the research design and execution (Valenzuela, 2017). This lens informed the research team’s composition, composition of the project’s advisory group, incorporation of analysis of gray literature in addition to peer-reviewed literature, and the sampling framework for the interviews, focus groups, and stakeholder discussion panel.

HCPP Framework of Key Factors

Our environmental scan and qualitative data analyses informed the development of the HCPP framework of key factors. Furthermore, we identified key framework factors weighted by the strength of evidence—how frequently the factor was supported by the environmental scan and qualitative analyses. As noted earlier, these factors fall into the following categories:

- student (e.g., kindergarten through 12th grade; undergraduate) recruitment, admission, and retention
- mentor recruitment and training
• programming (longitudinal programming and community engagement)
• program outcome measurement
• long-term program sustainability strategies.

The HCPP framework of key factors can be tailored to local needs in communities across the United States using input from the community and local data. Furthermore, in such states as Michigan, where public institutions are banned from using affirmative action programs that extend preferential treatment for public employment, education, or contracting purposes to groups or persons based on race, gender, color, ethnicity, or national origin (University of Michigan, Office of Diversity, Equity & Inclusion, undated), use of the HCPP framework of key factors would need to be evaluated (and extended, where indicated, to populations beyond African American/Black communities).
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1. Background and Objectives

Introduction

Workforce inequities in health care systems and hospitals across the United States often reflect inequities present in the broader society, which are driven by the differential access that people of certain sociodemographic, racial, and ethnic backgrounds have to economic, political, and social capital. African American/Black health care providers and community members often do not have a seat at the decisionmaking table in hospital and health care system c-suite conversations and are generally underrepresented in the health care workforce (Livingston, 2018). Arguably, more-equitable representation of African American/Black providers is essential in all U.S. hospitals and health care systems—especially those that serve the African American/Black population at higher rates. Increasing the number of underrepresented groups in positions of power can facilitate communication at the interface of underrepresented communities and health care systems to ensure that these populations’ preferences in seeking health care services are represented and that their health care needs are effectively met (Smith et al., 2009; Stephenson-Hunter et al., 2021).

Physicians from underrepresented backgrounds often provide care in settings where it is most needed (Marrast et al., 2014) because many value the “opportunity to serve vulnerable and low-income populations” (Mitchell and Lassiter, 2006). Furthermore, racial concordance between health care providers and patients is correlated with improved patient health outcomes, patient satisfaction, and communication because the health care provider is more likely to understand patients’ culture and historical events affecting them (Shen et al., 2018). However, only 23 percent of African American/Black patients have a physician who shares their race or ethnicity (Collins et al., 2002; Wilbur et al., 2020). Efforts to increase the representation of African American/Black physicians have been widely endorsed, yet the actual progress has been disappointing.

There is limited evaluation of well-designed health care pathways programs. Among programs that have been evaluated, several potentially important variables (e.g., cost-effectiveness) have not been assessed because of expenses and technical complexities in outcome-oriented evaluation (U.S. Department of Health and Human Services [DHHS] et al., 2009). Various interventions in the health care pathways have been implemented to improve problems with representation from historically marginalized communities. These interventions include innovative recruiting and mentoring models and nontraditional models for education opportunities and faculty development (DHHS et al., 2009). In spite of these efforts, in 2018, African American/Black physicians accounted for only 5 percent of physicians nationwide (Ryan...
and Siebens, 2012). Such disparities in representation affect both patient health and provider outcomes, including job satisfaction (Noguchi, 2020).

It is argued that pathways programs should be built on a foundation of cultural understanding, history, collectivism, and intergenerational sharing of knowledge that is often present within African American/Black communities (Green et al., 2017). Furthermore, programs ought to provide a combination of social support, academic support, and financial support (Wilbur et al., 2020). Given this context, the overarching goal of the Health System–Community Pathways Program (HCPP) framework is to facilitate a future in health care practice, leadership, or both for African American/Black children and young adults within a racial equity context.

Early exposure to health care fields can raise awareness of opportunities and empower African American/Black youth to consider such careers (Kolade, 2021; Smith et al., 2009). Through experiences in outpatient clinics and hospital care settings, participants can be exposed to many aspects of health care and various types of providers and specialties. The goal is to introduce participants to as many aspects of health care systems as possible, including the emergency department (ED). The ED offers a 360-degree view of the health care system—emergency medical services, urgent care, ambulatory care, and inpatient care. Many types of health care providers work in the ED (e.g., physicians of various specialties, nurses, technicians, and pharmacists), allowing the participants to observe various health care professions in one setting. Program participants would shadow health care providers in various health care settings and receive ongoing mentorship from health care providers through such a program.

Through this research, we developed a framework of key factors for a pathways program at the interface of health care systems and communities, leveraging the strengths and resources from both. The HCPP aims to increase both the number and quality of experience of African American/Black learners in health care settings, so those learners aspire to education and careers in health care and return to their communities as health care providers. The development of the HCPP framework of key factors was informed by an environmental scan of peer-reviewed and gray literature and analysis of interviews, focus groups, and an expert discussion panel. Although many of the interviewees were based in Michigan, the framework of key factors is intended to inform programs in African American/Black communities across the United States. Communities might leverage (and build on) this framework, keeping the local pathways needs of their youth in mind. The study design explicitly applied an equity lens at every step (Valenzuela, 2017):

- The study team included African American/Black physicians and members of other historically marginalized communities.
- The study’s four-member advisory group included African American/Black physicians and diversity, equity, and inclusion (DEI) experts.
• The environmental scan included a review of gray literature to capture relevant and potentially important information that might not have made its way into peer-reviewed literature.
• The study’s expert discussion panel included physicians and DEI experts who are African American/Black and from other communities of color.
• Recruitment of key informant interviewees purposefully included African American health care providers and DEI experts.
• The study’s focus groups included African American/Black community members: young adults, parents or caregivers, representatives from community and grassroots organizations, and activists.

Valenzuela, 2017, reports strategies for recruiting and retaining educators of color through emphasizing equitable approaches, roles of “homegrown” teachers, culturally relevant curricula, and social justice principles in addressing achievement gaps for students of color. We extrapolated concepts from Valenzuela’s work as follows: Engagement of African American/Black individuals as part of the research team served to keep the project rooted in the needs of this community and informed by individuals’ cultural knowledge and experiences. Race-consciousness informed recruitment of interviewees and creation of the interview protocol. Lastly, including members of advocacy groups and grassroots organizations with a social justice mission helped get perspectives on pathways programs from a social justice lens (Zeichner, 2016).
2. Environmental Scan

Overview

We engaged in an environmental scan focused on characteristics of successful pathways programs geared toward health sciences to inform the development of a framework of key factors for a pathways program for African American/Black children and young adults. We focused on the following key program factors that emerged from the environmental scan: student recruitment, admission, and retention; mentor recruitment and training; programming (values, curricula), program outcome measurement, and long-term program sustainability strategies.

Methods

To ensure that we applied an equity lens to the environmental scan, we included a review of both peer-reviewed and gray literature. Inclusion of gray literature review was intended to help capture relevant, and potentially important, information that might not have made its way into peer-reviewed literature. It is important to include gray literature in this environmental scan to reduce the likelihood of publication bias given that studies with null results are less likely to be published in the peer-reviewed literature (Hopewell et al., 2007). Gray literature can also give helpful context regarding how—and the populations for which—certain interventions are most effective (Craig et al., 2008; Pappas and Williams, 2011). Furthermore, gray literature can help elucidate which interventions (or components of evaluations) have undergone evaluation work to identify the most-promising interventions and areas where additional interventions are needed (Adams et al., 2016).

The peer-reviewed literature was sourced from PubMed, Scopus, and ERIC databases. The gray literature review targeted pathways program information from relevant government and academic websites, including those of the Association of American Medical Colleges, U.S. Department of Education, Health Resources and Services Administration, and National Institutes of Health.

The search strategy (Appendix A) used terms that help capture U.S.-based educational pathways programs, particularly programs focused on historically marginalized communities, those from disadvantaged socioeconomic backgrounds, diversity programs with a mentorship component, or programs with measurable outcomes. Our search strategy used the term pipeline because it is the most commonly used term in the literature to refer to the programs of interest. We included qualitative, quantitative, and interventional studies published in English between October 2000 and October 2021 but excluded editorials and letters to the editor.

This scan was not designed to be a formal systematic review of the literature; rather, it was intended to be a rapid analysis of relevant pathways and diversity programs within the past two
decades that could inform the framework of key factors for the HCPP. Our research was determined to be exempt from oversight by the RAND Corporation Human Subjects Protection Committee.

Results

The environmental scan yielded 1,232 peer-reviewed articles and 30 reports from the gray literature. A team of six researchers conducted a title review to remove articles that were irrelevant to pathways programs; after this review, 742 articles were excluded. The team then reviewed the remaining 520 abstracts. Of these, 422 were excluded based on topic relevance, population targeted, and potential for informing the framework of key factors. Finally, team members reviewed the full text of the remaining 98 relevant articles from the peer-reviewed literature and nine from the gray literature. They extracted information into an Excel matrix with the following contents from each article: population, date, mentor recruitment strategies, student recruitment and selection, outcome measures, sustainability strategies, and program description.

Many programs have been established to address the lack of African American/Black representation in the health sciences and health professions. The programs incorporate diverse populations, structures, and designs and cover a wide spectrum of pathways stages: middle school, high school, college, and postbaccalaureate levels. Moreover, they prepare students for a variety of health professions and health science careers, such as medicine, nursing, and biomedical research. We compiled pertinent environmental scan results from various programs to provide a general idea of best practices for the HCPP framework of key factors; these results will be described next. Overall, few studies had an evaluation of programs or program components. Throughout this chapter, references that had an evaluation component are noted with an asterisk.

Students

In the following sections, we outline the various strategies used in student recruitment, selection processes, and retention.

Student Recruitment Strategies

Depending on program goals, individuals are recruited at different periods, from precollege to collegiate and graduate school. The programs evaluated in our review used a variety of recruitment and selection strategies. These activities are usually carried out by diversity officers, principal investigators of established enrichment programs, program directors, research faculty mentors, or institutional research officers (*Byrd and Mason, 2021).

Targeted Recruitment Activities

Local high schools and undergraduate institutions—especially schools that have substantial enrollment of students from underrepresented groups—are all pools of potential students. High
school and college students can be reached through communicating with teachers, principals, professors, collegiate offices of diversity or student support services, student guidance counselors, deans, and department chairs (National Institute of General Medical Sciences [NIGMS], 2021; Wadenya and Lopez, 2008). In one program, high school students and their parents were invited to a two-day program to review admission requirements, receive information about financial aid, and have discussions with underrepresented students and faculty (Wadenya and Lopez, 2008). In a different program, every eligible student from the participating middle schools was mailed an informational packet that had program details, application materials, and a return envelope with postage paid (Boelter et al., 2015). In other instances, students were invited to visit academic institutions offering programs, meet with faculty, and receive an introduction to available resources. Another suggested recruitment activity was having program representatives attend and be active in recruitment fairs, seminars, national meetings, societies, and organizations (NIGMS, 2021). Peer recruiting was also a strategy used to recruit community college students from underrepresented groups by word of mouth (Drew et al., 2015).

Building Partnerships

Some medical schools and academic institutions have partnered with institutions that (1) serve marginalized communities or (2) enroll a substantial number of students from underrepresented groups. Methods to establish partnerships included having faculty from the academic institutions that offer pathways programs teach summer courses in biomedical topics for high school or undergraduate students or bringing in high school students for summer research and other academic experiences (NIGMS, 2021).

Publicizing the Program

Raising awareness about the program was noted as essential to drawing the attention of potential applicants (NIGMS, 2021). Representatives from some undergraduate pathways programs presented at meetings of scientific societies or in campus publications of colleges or universities with substantial enrollment of students from underrepresented groups (Drew et al., 2015). Furthermore, social media was noted as a way to strategically engage with underrepresented communities. Media outlets were one way that pathways program students and faculty broadcasted statements to help spread the message about their program experiences (NIGMS, 2021).

Comprehensive Selection Process

Several programs tailored to high school or college students required applicants to demonstrate high potential for fulfilling the social and educational goals of the program through their personal statement, references, and academic record (Avent et al., 2018; Martos et al., 2017; Qua et al., 2020; *Roche et al., 2021). However, other programs suggested that the admission requirements needed to be reexamined to ensure that the existing criteria were not
unintentionally screening out otherwise qualified students (NIGMS, 2021). Pathways program admission personnel need to be educated just as university admission committees are on implicit bias; they need to implement admission practices that reduce biases and have members who identify as underrepresented (*Bliss et al., 2020; NIGMS, 2021). The undergraduate application process had a variety of metrics including (but not limited to) the candidate’s research knowledge, letters of recommendations, grade point average (GPA), and standardized test scores. In some programs focused on high school students, consideration was given to the environment in which grades were obtained (such as level of household income and parents’ level of education), students’ interest in health or the sciences, disclosure of personal adversity, type of school or community (e.g., underserved), level of knowledge about the college admission process, whether the applicant was from a group traditionally underrepresented in the U.S. health professions, or students’ participation in a previous pathways program (Gates, Ganey, and Brown, 2003; McClain et al., 2013; Rocha et al., 2021). For example, in two programs, applicants were invited to attend tryout courses during which applicants’ arrival time, interaction with peers, homework completion, participation in ethical debate and a role-play scenario, individual interviews, and poster presentation were used as part of a holistic review process to select the students (Mains, Wilcox, and Wright, 2016). One program that focused on high school and college students did not require applicants to disclose their GPAs, provide letters of recommendation, or disclose any information that might have hindered their application. However, once the students were admitted into the program, advisers had access to this information to identify students’ needs and address student gaps throughout the program (McClain et al., 2013). Students were selected based on their potential to succeed rather than their past academic achievements.

Student Retention

Low self-esteem, low self-confidence, the inability to envision themselves as health care professionals, and the need to work to financially support their families are challenges that often affect high school and college students’ grades and progress through the program (McClain et al., 2013). Sustaining student interest and commitment throughout the program requires that institutions work to improve the environment on campus and offer comprehensive retention services, such as counseling, tutoring, academic support, and financial support (NIGMS, 2021). Furthermore, a program for middle school students showed that it is important for the program to be culturally aligned with African American/Black individuals’ experiences with being the target of discrimination in areas including education, employment, and the political process to prevent history from repeating itself and ensure opportunity equity (Rocha et al., 2021).

Academic Support and Mentoring

High school students can benefit from standardized test preparation and academic coaching from high school science teachers or from program stakeholders (Rocha et al., 2021). In addition,
college application guidance, career counseling, discussions about college, campus tours of local universities and health centers, and opportunities to shadow various health care professionals were incorporated into pathways programs for high school students (Mains, Wilcox, and Wright, 2016). Other pathways components pertained to college-level biology, chemistry, and physics courses; basic lab safety; and technical skills (Mains, Wilcox, and Wright, 2016). Academic advising can help students achieve and sustain the academic success required for health care fields. Academic and faculty advisers should be committed to informing students about additional instruction or tutoring opportunities and monitoring their progress through frequent meetings and assessment of milestones (NIGMS, 2021). Advising students on how to write emails, set goals, and present themselves as budding health care professionals was also part of pathways activities. Understanding high school students’ academic standing and interests was noted as a key component for effective program networking. Finally, effective programs gathered helpful resources for students and promoted program development and implementation to meet student expectations and needs (Mains, Wilcox, and Wright 2016; Rocha et al., 2021).

Social Support

Encouraging social support and creating a sense of community to ensure students stayed engaged along the health care education and career journey was key to keeping students on track (Mains, Wilcox, and Wright, 2016). To this end, programs used different approaches to create a supportive environment, such as organizing an annual symposium or an end-of-year barbecue. In addition, some program connected high school students to organizations of underrepresented scientists in the students’ fields of study. Programs also connected students with role models, affinity groups, and program alumni and encouraged them to share their experiences, challenges, and prospects (Mains, Wilcox, and Wright, 2016; NIGMS, 2021). Motivational lectures, seminars, or workshops that demonstrate the accomplishments of scientists from underrepresented backgrounds could be effective strategies to inspire students and give insights into various career paths. African American/Black health care professionals can speak to students about the challenges they have faced throughout their lives, reasons they continue to pursue their goals, and the impact they have on patients’ lives (Mains, Wilcox, and Wright, 2016). In some programs focused on high school students, family support at home was critical to students’ success, so quarterly sessions to discuss strategies to help caregivers embolden and motivate scholars were held (Mains, Wilcox, and Wright, 2016; Rocha et al., 2021). Networking and creating lifelong connections are important aspects of pathways programs. These relationships foster determination and resilience among college and postbaccalaureate students, enabling them to pursue their goals and to overcome personal or institutional obstacles (Taylor et al., 2019).
Financial Support

Financial constraints and the need to work hinder disadvantaged students from pursuing educational opportunities. The literature identified financial strategies for supporting high school and college students, such as providing (1) full scholarships for tuition and room and board, (2) travel-related funds to attend workshops or conferences, (3) public transport passes, and (4) additional stipends for cocurricular aspects of the program (e.g., food and activities; Fuchs et al., 2016; Martos et al., 2017). Students might be discouraged from accumulating substantial student debt to obtain their degrees. To mitigate this, programs should reinforce the importance of students investing in their future and highlight federal loan repayment options (Fuchs et al., 2016; NIGMS, 2021).

Student Participation in Decisionmaking and Leadership

Students need to have a seat at the table where decisions are made about pathways programs (e.g., task forces, federal oversight boards, and local graduate education curriculum committees). Frequent meetings between pathways program students and leadership from such groups can enhance awareness and sensitivity to issues raised by students. Participants in academic pathways programs need to have the opportunity to express their voice in “brave and safe spaces” that allow debate with civility and respect (Arao and Clemons, 2013). Furthermore, safe spaces can inspire movement and activism; tertiary-education level alumni of pathways programs can challenge program policies and decisionmaking processes (*Byrd and Mason, 2021).

Mentors

Mentorship is a key component of most, perhaps even all, pathways programs. *Byrd and Mason, 2021, define a mentor as “an influential individual with a higher ranking in the work environment who has advanced experience and knowledge so they can give support, guidance, and advice for development.” Academic pathways programs use many different types of mentors—both those with a higher ranking than that of the student and those with a similar ranking. *Byrd and Mason, 2021, assert that one of the many reasons mentorship is crucial in pathways programs is because of the passing on of social and cultural capital. Mentorship is key to social integration and community-building and helps graduate-level mentees succeed (Green et al., 2017; Kolade, 2021). Mentors have been described as advocates and confidants who play integral roles in college students’ goal setting (Apprey et al., 2014). Past program evaluation has shown that mentoring increases the success of pathways programs and that many different successful mentorship models exist (*Byrd and Mason, 2021). Many of the qualities and resources that successful mentors need (e.g., protected time) do not vary by age of the mentee, and those qualities (e.g., willingness to mentor, previous experience with mentoring) were associated with effective mentorship whether the mentee was an elementary school or
postgraduate student. Although the literature offers robust information about mentor strengths, there is a lack of research on mentor weaknesses (Chopra, Edelson, and Saint, 2016).

Types of Mentors

Regardless of the intended mentee population, mentors can be divided into peer-peer, near-peer, or senior. In addition to these formative one-on-one relationships, we discuss the concepts of tiered mentorship, clustered-mentoring, and mentor networks. Peer-peer programs are those in which participants provide guidance to one another. Near-peer programs are those in which past participants act as mentors. Senior mentors are those who have significantly more experience in their field and use this experience to mentor those who are not as far along in their specialty. A couple of pathways programs for undergraduate students used peer mentorship (Apprey et al., 2014; *Bliss et al., 2020), while other programs, including those for school-aged children, used near-peer mentorship as a modality (Knowledge Is Power Program Public Charter Schools [KIPP], undated; University of Maryland, Baltimore County [UMBC], undated). In tiered mentorship structures, there are mentors at multiple levels, as well as near-peer and senior mentors. Pathways programs have seen success with all such mentorship models. Many programs used a mix of peer and senior mentorship (*Byrd and Mason, 2021). Success of this model was attributed to its ability to provide both a present-day and long-term view of an individual’s future.

Senior mentors (often faculty mentors when in an academic setting) were also included in many programs, especially those focused on graduate students (Smolock and Robert, 2020). One program for undergraduate students credited faculty involvement as one of the main reasons for success (UMBC, undated). Underrepresented high school and undergraduate students are often interested in working with professors of color (*Stephenson-Hunter et al., 2021). We note that some program initiatives engaged solely underrepresented faculty mentors, while others employed faculty mentors of all demographics. There is evidence in the literature of the importance of having African American/Black faculty mentors to provide social support and academic guidance for graduate students of color (Green et al., 2017).

Strategies for Mentor Recruitment and Selection

Pathways program mentorship recruitment strategies vary, and many programs have streamlined processes. A program designed to prepare promising underrepresented graduate students to advance in their pursuit of biomedical research used faculty leaders as champions of the program. These faculty leaders contacted chairpersons of all research departments in the corresponding school of medicine to identify researchers with sufficient mentoring and training history who could be included in the programming (Smolock and Robert, 2020). Other mentors in programs for college students were contacted through direct invitation by a named faculty member (Apprey et al., 2014). However, in this model, all who applied became mentors; this factor indicates that the selection criteria had already been met at the level of the initial interview.
invite. Some programs had very rigid selection criteria. For instance, prerequisites for mentoring graduate students included having active research with extramural funding, previous experience working with advisees, a one-year commitment, and an overall willingness to mentor (Odedina et al., 2019). When recruiting near-peers for college programs, institutions had different approaches (Apprey et al., 2014). In one example, enewsletters and referrals from the Office of African American Affairs, deans, and peer advisers were used (Apprey et al., 2014). Concerning selection, the student peer-mentor applicants had to submit a short application and essay explaining why they wanted to be a mentor.

Although many of the programs sought mentors from within the institution (i.e., faculty mentors for undergraduate or postgraduate students), others contracted with outside organizations. One program had a partnership with a nonprofit organization called iMentor, through which participants in kindergarten through 12th grade could apply for one-on-one mentoring programs (KIPP Public Charter Schools, undated).

A challenge that was apparent when recruiting mentors was that in seeking out African American/Black mentors, programs often experienced a lack of African American/Black representation in the workforce. Given that underrepresented individuals make up about 11 percent of full-time faculty at two- and four-year institutions, this often means that underrepresented faculty are tapped to provide a lot of support in these roles, which might lead to burnout (Williamson, Goodwin, and Ubel, 2021). To that end, developing appropriate mentorship capacity is key to program success (Clewell, Cohen, and Tsui, 2010; Rodríguez, Campbell, and Pololi, 2015). Faculty development was identified as a key component for building mentorship capacity.

**Mentor Experience and Training**

Mentor training was highly variable depending on the resources available to the program and the programming itself. Particularly for faculty mentors who are not underrepresented, important training components included microaggression, unconscious bias, and cultural understanding. Other components pertained to professional development opportunities and orientation (e.g., reviewing norms, expectations, structures, goals, and protocols). Peer advisers underwent extensive training on such topics as assuming personal responsibility; building positive peer relationships; coping with homesickness; learning about the university’s honor code, housing, course selection process, and resources (e.g., precollegiate training, standardized test preparation, writing workshops, financial aid, counseling services, and research workshops); and learning about the community (e.g., transit, library, nonprofit groups; Apprey et al., 2014). Some undergraduate programs did not require peer mentors to undergo training and considered their lived experiences as students in the program as training for becoming a mentor (*Bliss et al., 2020*). Some programs relied on external resources to secure mentors from outside the pathways program institution.
Strategies for Mentor Retention

In one program, high school student mentors were transient and busy with their own curricular demands. They often had difficulties with scheduling time for mentoring because they were focused on their own academic coursework (Martos et al., 2017). One approach to ensuring that student mentors remain motivated is to offer them paid positions. Faculty mentors indicated that they wanted to participate in pathways programs to enhance their mentoring skills, while others were deeply committed to the ideals of the programming (Fuchs et al., 2016). For faculty, important mentoring incentives included receiving additional protections for their time and having the ability to publish on such activities (Fuchs et al., 2016).

Pairing Mentors and Mentees

In some models, mentors filled out a form or short questionnaire so that they could be paired with mentees who were appropriate matches. In others, the mentees selected the mentors by ranking up to three mentors in order of preference (*Rumbeiha et al., 2020). In one successful pairing model, a group of underrepresented students in high school partnered with mentors from a medical school to promote underrepresented students’ exposure to medicine over a one-year period. Mentors and mentees met monthly for a one-hour lunch. Mentors would then attend a capstone presentation held at the students’ high school (Odedina et al., 2019).

Programming

The programs evaluated in this environmental scan encompassed all science, technology, engineering, and mathematics (STEM) fields and a variety of the health professions, such as medicine, dentistry, nursing, public health, and pharmacy; thus, the programming was quite diverse. A common characteristic of the most-successful programs was that they offered community engagement and mentorship (as opposed to just academic coursework) to keep individuals motivated and inspired to attain their goals (Martos et al., 2017).

Time Frame

Time frame of pathways programming varied greatly. Some programs were structured on a limited time frame (e.g., half-day or summer), while others had longitudinal programming (e.g., ten years). Despite the demonstrated value of both short- and long-term programming, research has shown that the longer the pathways programming for high school students the higher the academic success rate (Martos et al., 2017). Even those programs that were longitudinal in nature often had some form of summer programming to bolster the initiatives.

Location

Some programs were in the communities where participants were recruited (e.g., local schools) and others were located in other settings (e.g., campuses, hospitals) to increase exposure of high school students to STEM fields or “academic ivory towers” (*Roche et al., 2021).
Structured exposure to health care professionals in clinical settings could motivate early decisions by high school students with a strong interest in STEM areas of study to pursue careers in health care (*Roche et al., 2021). Cross collaboration and site visits to practical settings were noted as important when thinking about sustainable student involvement and pathways creation (*Derck et al., 2016).

**Experiences and Curriculum**

Programs reviewed in this environmental scan included such components as college application process review, courses relevant to pathways programs, mental health and wellness support, financial aid management, professional development workshops (e.g., grant writing, publishing, presentation skills), conference attendance, specialized training (e.g., lab techniques, statistical skills), training in the responsible conduct of research, professional development, and program meetings and events (Pokphanh and Augusto, 2011; *Roche et al., 2021). Other programs gave high school students the opportunity to participate in a variety of interactive and clinical activities on the medical school campus with the purpose of introducing high school students to the basic science and clinical components of medicine and providing insight into what graduate medical training entails (*Roche et al., 2021).

Our review showed commonalities between programs that targeted similar age groups, populations, or both. Among precollegiate programs, many offered application assistance, academic counseling, research-oriented summer experiences, and social and financial support. These programs were sometimes housed in academic enrichment programs or summer bridge programs. These programs focused on helping with the transition to college and college retention. Other programs employed experiential and immersed learning experiences for high school students through exposure to health care professions and biomedical research (*Roche et al., 2021). Many programs for college students had pilot projects, capstone projects, or both, which gave students experience with presenting their ideas to an audience (Odedina et al., 2019). For collegiate and postcollegiate programming, there was high emphasis on exposure to faculty, career development, and networking (Taylor et al., 2019). Institutions of higher learning are natural homes for pathways programs that model themselves after liberal arts colleges by facilitating (1) close interaction with faculty, (2) exposure to fieldwork and laboratories, and (3) opportunities to engage in networking, research, campus culture, and interactions with other students, scholars, and administrators (*Byrd and Mason, 2021). Components cited as most valuable in high school and college pathways programs included clinical experience, mentorship, career exposure, and research opportunities (*Stephenson-Hunter et al., 2021).

The review showed that successful programs need to be diverse and comprehensive in their programming, which requires substantial funding that programs often do not have. Important programming components for high school students included academic counseling and homework help, American College Testing (ACT) boot camp and test preparation, College Level Examination Program preparation, college application help, financial aid and scholarship search
assistance, career exploration, monthly Saturday program sessions, home visits and family check-ins, and high school transcript reviews (*Byrd and Mason, 2021). Some programs were narrow in scope because of limited funding.

DHHS sponsors many pathways programs to improve racial and ethnic diversity in health professions. Programs offer academic support, professional opportunities, scholarship, mentorship, and financial support. These pathways programs range from kindergarten through doctoral studies. They are located all over the country in academic and nonacademic settings. However, agencies appear to operate their pathways programs in silos, with few opportunities for coordination across agencies or the development of a learning community among agencies to share best practices and other insights (DHHS et al., 2009).

**Program Outcome Measures**

Some programs track quantitative and qualitative data aggregated before, during, or after program administration and through feedback from students and alumni. Some program evaluation activities used a mixed-methods approach—quantitative data from surveys and qualitative data from students, faculty, and administrators.

Evaluation plans for programs identified through this review that focused on high school students, college students, or both included such items as keeping track of student dropouts (DHHS et al., 2009; *Evans et al., 2013; Fuchs et al., 2016; Pokphanh and Augusto, 2011; *Roche et al., 2021); assessing students’ interest in the field after program completion (Boelter et al., 2015, Fuchs et al., 2016; Qua et al., 2020); tracking applications to, college matriculation for, and graduation rates from health profession programs (DHHS et al., 2009; *Evans et al., 2013; Fuchs et al., 2016; *Stephenson-Hunter et al., 2021; Taylor et al., 2019; Wadenya and Lopez, 2008); noting student career choice (*Stephenson-Hunter et al., 2021); tracking standardized test scores and GPA (Apprey et al., 2014; DHHS et al., 2009); and tracking the number of individuals who return to serve their communities (*Evans et al., 2013).

In some programs, high school students were asked to rate the most- and least-useful program components, make recommendations for future program years, and evaluate staff, activities, resources provided, and overall program logistics (e.g., length, pace; Avent et al., 2018). Other outcome measures included changes in knowledge, self-efficacy, and perceived gains in relevant skill sets (DHHS et al., 2009; Fuchs et al., 2016). One program did one-year follow-up telephone interviews with parents to hear their perspectives on the challenges that their children faced regarding staying competitive for college (Wadenya and Lopez, 2008). Collection and analysis of qualitative data facilitated the identification of effective mentorship practices for academic support, social support, career advice, and role modeling (*Stephenson-Hunter et al., 2021). Understanding high school and college student perceptions and experiences with programs and experiences of faculty of color with campus climate were also noted as important (*Stephenson-Hunter et al., 2021).
**Program Sustainability Strategies**

Our review showed that the sustainability of programs hinges on securing multiple and diverse program funding streams, institutional commitment, and community engagement and support.

**Longitudinal Financial Support**

Budgetary constraints and grant expirations are cited as factors that can hinder pathways program continuity. Several programs partnered with sponsors, including specific academic institutions, corporations, and foundations, in addition to fund matching, underwriting small grants, independent fundraising efforts, and endowment campaigns to provide emergency loans and long-term scholarships for students as ways to ensure program continuity (Green et al., 2017). Comprehensive funding sources for faculty, administrators, and institutions to support underrepresented students’ programming included federal (e.g., National Institutes of Health, National Science Foundation, U.S. Department of Education) and foundation funding sources (e.g., Andrew W. Mellon Foundation).

**Institutional Commitment**

Increasing representation from African American/Black students at colleges and universities requires intentional institutional reforms and strong commitment from leadership, along with increasing diversity among faculty and administration through resource allocation and antiracist institutional practices (Whittaker and Montgomery, 2014). Faculty, administrative representatives, and other stakeholders need to collaboratively develop pathways programs. Such an approach ensures more-effective program planning and greater likelihood of successful implementation through adjusting the academic goals and activities of high school students to desired program outcomes (Martos et al., 2017). The success and longevity of academic programs supporting underrepresented students are tied to creating support staff, such as chief diversity officers, diversity recruitment officers, and institutional research officers who can provide access to the necessary data to demonstrate program need (*Byrd and Mason, 2021).

**Community Engagement and Support**

Community engagement and support are essential components of a successful pathways program (Levin et al., 2021; Krauss, 2022). Program partnership with the community is important for nurturing high school students and helping address health and academic challenges faced by poverty-stricken communities in which some graduates live and work (*McKendall et al., 2014). In one program, community engagement was sought through recruiting volunteers from the community, local schools, local health care professions, parents, and students into the program’s governing body and involving them in program development. The expectation was that local youth, after receiving academic or professional degrees, would return and serve their communities. A component of these programs rests in the communities’ sense of ownership and
in the trust that is built through the long-term partnerships with higher education entities that house pathways programs (*McKendall et al., 2014).
3. Key Informant Interviews and Focus Groups

Overview

We conducted two focus groups with community members from Flint and Detroit, Michigan, to understand their perspectives around the characteristics of pathways programs that would be most valuable to African American/Black children and young adults. We also conducted 12 key informant interviews. We interviewed leaders from existing pathways programs and other education stakeholders to understand their experiences, successes, and challenges. We also interviewed potential mentors to understand what kind of support they would need to successfully mentor students in the program. We held a panel session with health care providers of color and DEI experts to discuss the cost to the health care system and communities (e.g., patient care satisfaction and provider job satisfaction) from lack of DEI. Interview, focus group, and discussion panel participant backgrounds are listed in Table 3.1.
Table 3.1. Interview, Focus Group, and Discussion Panel Participants

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<tr>
<th>Interviews</th>
<th>Participant Background</th>
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<td>Policy program manager</td>
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<td>DEI officer</td>
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<td>Resident in pediatrics, program founder</td>
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<td>DEI officer</td>
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<td>Physician, program founder</td>
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<td>DEI officer</td>
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<td>Dean, college of medicine</td>
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<td>Physician, adviser</td>
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<td>Program founder</td>
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<td>Program founder</td>
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<td>Program director, data science and risk management</td>
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<td>Physician policy researcher</td>
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<th>Focus Groups</th>
<th>Participant Background</th>
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<td>Participant 1: University community liaison</td>
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<td>Participant 2: Community program manager</td>
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<td>Participant 3: Public health expert</td>
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<td>Participant 4: Grassroots community organization member</td>
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<tr>
<td>Participant 1: University faculty member</td>
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<td>Participant 2: Senior student at a local high school</td>
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<td>Participant 3: School parent engagement coordinator</td>
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<td>Participant 4: University pathways program administrator</td>
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<tr>
<th>Discussion Panel</th>
<th>Participant Background</th>
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<td>Participant 1: ED physician and DEI officer</td>
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<td>Participant 2: ED physician</td>
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<td>Participant 3: Health system social work manager</td>
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<td>Participant 4: Health system director of community health services</td>
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Methods

Two-hour focus groups and one-hour interviews were conducted from December 2021 through January 2022 using the Zoom virtual platform. Individuals were recruited through a snowball sampling approach (Parker, Scott, and Geddes, 2019). We sought to include members of the African American/Black community in the focus groups. The resultant participant pools for each focus group included male and female participants with representation from members of the African American/Black community. The same semistructured guide (developed by researchers and content experts on the project team) was used to moderate the discussions (see Appendix B). The guide was informed by the findings from the project’s environmental scan and had open-ended questions. Topics included inclusion criteria for program participants and for program mentors, and frequency, duration, and type of experiences for participants in the program. Respondents were also asked about success metrics for both individual participants and the broader program, the governance structure for the program, program funding, and long-term sustainability. Additionally, individuals were asked about the role of pathways programs in addressing trauma and the role of the community in programs.

Our team took detailed notes and verbatim accounts using the auto transcription feature in Zoom. Five study team members then analyzed the transcripts manually in Microsoft Word using
a rapid qualitative analysis technique to identify emerging themes (Watkins, 2017). Using the initial set of interviews, the team of analysts developed a data template to capture key themes and direct quotations through consensus among team members. The consensus process served as the foundation for data extraction, organization, and analysis.

The panel discussion was conducted in October 2021. We used the method described earlier to analyze the discussion transcripts.

Finally, to ensure that we applied an equity lens to the qualitative work, we took the following steps:

- sought input from the study’s four-member advisory group (that included African American/Black physicians and DEI experts) on the interview guide questions
- purposefully included African American/Black health care providers and DEI experts when recruiting key informant interviewees
- included African American/Black community members in the study’s focus groups: young adults, parents or caregivers, representatives from community and grassroots organizations, and activists
- included physicians and DEI experts who are African American/Black and from other communities of color in the study’s expert discussion panel.

**Results**

**Student Factors**

**Facilitators for Careers in Health Care**

Several key informants noted that African American/Black children and adolescents would be interested, motivated, and inspired to pursue their studies in health-related fields for a variety of reasons. Facilitators that participants identified included being exposed to these fields at a young age, having opportunities for shadowing and apprenticeship, making these professions more visible to children and young adults, and providing role models, rigorous preparation in science subjects, and success stories from within their communities. The importance of racial concordance during exposure was commonly mentioned by the interviewees. One participant, for example, noted that it was important to have examples of success from their own community, within their families. People that they value that [they] identify with. I think for some kids, especially as they see someone reflecting their own identity markers in an individual . . . it really influences them if they see someone making a difference who’s from a similar community as them.

**Barriers for Careers in Health Care**

Lack of awareness of careers in health care and lack of exposure to these careers because of lack of representation were cited as key barriers by our interviewees:
If the only thing that is projected on your community is to be a National Basketball Association (NBA) player or National Football League (NFL) player, then you don’t even understand that there’s other options other than to be, you know, a service worker or a factory worker. And so the exposure to additional career options [and] fields is something that is definitely lacking in urban settings.

Financial burden was noted as another major deterrent by participants (i.e., rising educational costs and the lack of sufficient scholarship opportunities and reimbursement support). They noted that African American/Black students are often stressed by the notion of carrying a financial burden upon graduation. Furthermore, medicine is a career field of delayed gratification. Interviewees noted that this is especially challenging in the context of facing financial struggle, needing expensive test preparation courses, lacking structural support, and having dependents.

The interviewees shared their observations that the education system was created to serve White students and does not consider how African American/Black children learn or their lived experiences. Furthermore, interviewees expressed that prerequisites for a STEM career particularly disadvantage students of color:

I don’t think we’ve necessarily caught up to how children really learn well, how Black children like to be engaged in the classroom . . . all of those pieces, like the curriculum education, exposure, mentorship, having relationships with role models. I think that limits their ability to see themselves in those roles as adults.

Do we really need two years of organic chemistry? If you are a first-generation college student and you get a C in organic chemistry, you’re going to go to your professional advisor and they’re going to say, “Yeah, forget it.” But if you are a kid in a private or an Ivy League school and you’re [getting a C in] organic chemistry . . . they’re going to say, “Let me get you a tutor and you can retake the class.”

Moreover, interviewees shared that African American/Black parents perceive an additional societal burden of preparing their children to thrive in a hostile environment. They noted that this added layer of protective training and teaching and the fear of how racism could affect their children’s future distracts parents from spending more quality time with their children:

One study posed the question, “Why don’t Black parents read as much to their children as White parents do” . . . and a common response in the focus group from Black parents was that they had to prepare their children for being part of a racist environment. What that meant was that they had to spend time on those things which detracted from doing the things that one might do if one didn’t have to spend time doing that.
Student and Mentor Selection and Mentorship

Criteria for Accepting Students and Mentors

A majority of the interview participants agreed that the criteria for selecting students for the pathways program should go beyond academic merit. They shared how some programs select top-performing students only. If the goal is to have a broad number of students and promote equity, then the selection criteria must shift from the traditional GPA and testing scores to more-holistic considerations. Participants expressed that emphasis should be placed on exploring students’ interests, readiness, curiosity, and motivation beyond their academic performance. Furthermore, they said that a genuine interest and a willingness to commit to the program should be weighted higher than essay writing skills or academic achievement:

We want to encourage kids already thinking and having that growth mindset. We also want to unlock that growth mindset . . . and other kids who have been ignored, whether it be by teachers, or [who] have already been in the bucket of the lower achieving students so they don’t have access to the same opportunities.

When discussing the criteria for accepting mentors into the program, interviewees largely agreed that racial concordance is important for the relationship between mentor and mentee. Additionally, they thought that a mentor should ideally have a connection to the community that the mentees are from and be intimately involved, not just commuters or “transplants”:

And many of them had either at their institution or at another institution [a] mentor with whom they shared racial concordance, and a lot of them confirmed that they really need it [and] that they really miss that match.

However, irrespective of racial identity, mentors need to have a fundamental understanding of racism and its impacts, a commitment to mentorship of African American/Black students, and, most importantly, a demonstrated application of that understanding beyond the verbal commitment through their research, private practice, and clinical activities. Mentors need to be genuinely interested in pathways work and have integrity, compassion and empathy, cultural understanding, and demonstrated investment in equity. The impact of their role on mentees should be empowering, unharmful, and void of microaggression:

[I]rrespective of your racial identity, you have to have a fundamental understanding of the ways that racism impacts, not just racial disparities in health, but how racism impacts emotional, psychological, physical health. So I think anyone who is committing to mentorship . . . needs to not just have a cognitive understanding but apply that understanding in some way in their work and in their practice.

Participants noted that use of near-peer mentors might be an effective strategy for students at school. They added that if physicians were to be mentors, bandwidth, availability, and realistic expectations need to be considered in the mentorship model. Faculty are typically good for sponsorship while students provide more time-relevant mentorship. One of the mentors’ roles is to allow mentees to build a rainmaker network of people and build their social capital.
One key informant noted that the relationship with the mentor can be dynamic, whereby students are assigned an initial mentor and move to another mentor depending on where they are in the pathways program. Furthermore, when it comes to selecting program mentors, several key informants agreed that it is important to **elicit feedback from students and mentees** themselves:

> I think we could ask the students themselves, “What would you like your mentor to look like? How would you like your teacher to treat you? What words would you like not to ever hear from a teacher to encourage you?” I mean this is like education 101.

**Program Outcomes**

Interviewees shared that a program is deemed successful when children have enough exposure, capacity, knowledge, and information to make their own long-term choices and to enter any profession they would like. Interviewees added that, ultimately, it is the creation of opportunities and changing power structures that make those choices a reality for African American/Black people:

> I just want them to have the choice, enough information, enough knowledge, enough experience, enough exposure, enough practice in a particular area to make an informed, thoughtful long-term choice . . . I actually do want to see a significant increase in the numbers of Black physicians and nurses and administrators and researchers . . . So it’s like the numbers increase, but I also think like the opportunities and the decisionmaking and the power structure begins to increase, or change . . . and everything else that improves the quality of life for Black folks in the community.

Participants noted that other markers for success can be program completion percentage, participants’ ratings of the program, knowledge and skills gained, number of people who pursued a career in health care, matriculation to health-related fields, and the impact the program might have had on community health outcomes. Furthermore, interviewees said that success could be extended to include increased representation in any other field not related to health care.

It was noted by a few interviewees that evaluation is a missing piece in some pathways programs because of a lack of time, connections, and resources. Furthermore, they noted evaluation metrics should track program objectives—for example, the growth mindset of middle school students:

> [T]he most difficult thing to do is the evaluation piece just because of the bandwidth . . . It really is a disservice to your program if you’re not able to know what’s working, what’s not working, and what to fix in a more rigorous way.

For short-term markers of success, interviewees noted that programs should have pre- and postassessments of capstone projects to see how much the students absorbed from the program. Participants also noted that curriculum feedback from students after program completion can inform improvements.
**Insights for Pathways Program Framework of Key Factors**

The interview, focus group, and discussion panel participants offered the following suggestions for creating a successful pathways program:

- **Be intentional in the promises** the program makes and the expected outcomes; otherwise, it can be a disservice to the participants. Students should clearly understand what they are getting out of the program and be able to articulate this information by submitting goals at the beginning of the program.

- **Introduce a tailored and longitudinal program** that enrolls children early in their development and tracks them from kindergarten through college periodically to make sure that the students are on track academically to continue with their career trajectories. Targeting younger students, filling knowledge gaps, and enhancing students’ reading skills will affect their performance in science coursework. Partnering with a school district can be helpful for long-term engagement.

- **Create opportunities for exposure, shadowing, research, skill-building, and practice beyond didactic learning.** These experiences should be developmentally appropriate and draw ties to both coursework and future implications in career. Exposure to health care professions should happen within students’ communities and with people they can identify with. In instances where exposure to Black faculty is not feasible, the participating faculty need to be committed to helping students secure funding, identify opportunities, and achieve their overall goals. Regardless of racial identity, it is essential for mentors to be trained around issues of inclusion and cultural understanding:

  The best bet is to bring the exposure to [the children]. Bringing it to their communities versus bringing them out of the communities. Expose them to people in their community that they can identify with. You can’t expose them to people that don’t talk like them or look like them and expect good results—[we] want people as close to home as possible. Someone they can trust. If you can’t find people as close to them as possible, then the program has to have a “long runway” in order to develop trust.

- **Build in capacity to provide support beyond academic goals**—that is, the program should also be able to **address participants’ mental well-being** and provide emotional support to help students who are experiencing trauma by being a safe space wherein they feel valued and respected. Programs should have a well-defined protocol to mitigate trauma experiences through a therapist or social worker associated with the program. It is understandable that programs with limited resources might not be able to address student trauma, hence the need for having referral systems for those in need:

  [A] program would ideally serve as an antithesis to trauma. It would mitigate some of those experiences. I think a very innovative thing would be if there is a social worker or therapist associated with a program . . . then they can help facilitate things . . . trained professionals that are available and accessible to those students.

- **Seek out students instead of having students seek out the program,** and make genuine outreach efforts to potential participants **with a commitment toward community development.** Moreover, such programs should be scaled up whenever feasible and offered to large numbers of youths. Programs with a small number of students can have a
panel open to students who are not in the formal program but who are in the school setting:

Shadowing and other programs work for twenty kids, but can this be scaled up? Resources must be made available in order to let more people know about more opportunities and funding to get these resources to where the kids are.

- **Engage with community-based organizations.** Community involvement garners more interest, participation, and program sustainability:

  The other thing I would add is [to] work with the community. You can even work with juvenile facilities. There’s a lot of students who have made a wrong choice. Churches, pastors, and then after school programs like Big Brothers and Big Sisters . . . or it could even be coaches, you know, not to discount any athletes, either.

- **Engage parents** of the enrolled students actively and frequently and provide digestible feedback in a timely fashion. This will allow parents to be more proactive in supporting their children:

  [Have] some kind of communication on like a quarterly basis depending on the length of the program. If it’s a summer program, each month. If it’s a year program, then each fiscal quarter. This is what your children, not just everybody, has done in the program. This is what his, her, their mentor are saying; these are the next steps of the project and things to look out for.

- **Offer structural and financial incentives for mentors** to compensate for opportunity costs and provide transportation and other logistical support as needed. For faculty, it might be helpful to include mentorship as a consideration in promotion, while, for students, it might be beneficial to offer academic credit. Mentorship is an altruistic activity; however, it should be compensated either financially or valued in a similar way as publishing, through work accolades, letters, or any other way that might help professionally. Focus group participants said that generally speaking, faculty mentors are “burned out and spread thin.” At some institutions, a *minority tax* (Rodríguez, Campbell, and Pololi, 2015)—or a burden of greater responsibilities (e.g., time and effort)—is put on African American/Black faculty who are typically partnering with these programs. Financial compensation does not prevent the burnout but might help reduce stress. Moreover, potential mentors are often maxed out on efforts to help their communities without adequate compensation. Stipends are a more appropriate incentive than a “pat on the back” and might help to reduce compassion fatigue:

  We all have our own struggles that we’re still fighting racism in our institutions and community, and so most of us are underpaid, or we’re doing volunteer work because of our heart and compassion for our youth, but also thinking about the mentor’s capacity, mental health, and just fatigue, from being Black . . . so, though we mentor, there’s no incentive for us, other than a pat on the back.

  Consider compensating students for their achievements in the program; in addition to learning, they will also earn a wage and learn about responsibility.

- **Regarding program funding,** funding entities should include sponsoring institutions that could provide financial support through endowments, supplies, or fundraising. Another option would be establishing funding schemes similar to those used in public education
or offsetting program costs by having students who can afford to pay the tuition. However, in the long run, funding and commitment to students from larger institutions (i.e., medical schools, universities, government) would be more sustainable.
4. Key Takeaways and Program Framework

Key Takeaways

The environmental scan, key informant interviews, focus groups, and expert discussion panel highlighted and reinforced key program factors necessary to support African American/Black children and young adults in pursuing health sciences education and careers in health care. The findings from the project environmental scan and qualitative work informed the development of the HCPP framework of key factors (Figure 4.1). To boost the number and quality of experience of African American/Black learners and ultimately their representation in health care, the following key factors should guide the design of the HCPP framework: (1) student recruitment, admission, and retention; (2) mentor recruitment and training; (3) programming; (4) program outcome measurement; and (5) long-term program sustainability strategies.

This work is limited in that many of the interviewees and all focus group and discussion panel participants were based in Michigan. Therefore, this work might not be representative of other African American/Black community perspectives and preferences. However, communities might leverage (and build on) this framework of key factors while keeping the local pathways needs of their children and young adults in mind.

In the following sections, we integrate findings from the environmental scan and qualitative analyses to highlight key factors related to each of the five program components that comprise the HCPP framework of key factors (Table 4.2). These factors were assessed by the type of evidence supported by the environmental scan, qualitative analysis, or both. The guide to framework key factors by evidence type is presented in Table 4.1.

Communities across the United States can use the key factors and the future HCPP framework to inform the development of new pathways programs or make improvements to existing programs. Ultimately, program evaluation—and research on the comparative effectiveness of programs, program components, or both—will be key to identifying the most-effective strategies for successful pathways programs.
Table 4.1. Guide to Key Factors in the Framework by Evidence Type

<table>
<thead>
<tr>
<th>Evidence Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental scan (nonevaluation) evidence indicates factors are used or considered in other programs</td>
</tr>
<tr>
<td>Environmental scan (evaluation) evidence indicates factors are related to successful programs</td>
</tr>
<tr>
<td>Interview and/or focus group(^a) evidence indicates factors were mentioned either (1) one to two times, (2) three to five times, or (3) more than five times by stakeholders and experts</td>
</tr>
</tbody>
</table>

\(^a\) Support for a factor in the qualitative work indicates that the factor has valence—or is deemed as an attractive option by interviewees—but it does not indicate whether the factor will have a positive effect on student or program outcomes.

Table 4.2. HCPP Framework of Key Factors: Program Components, Key Factor Descriptions, and Evidence Type

<table>
<thead>
<tr>
<th>Program Component</th>
<th>Key Factor</th>
<th>Evidence Type</th>
</tr>
</thead>
</table>
| Student (e.g., kindergarten through 12th grade; undergraduate) recruitment, admission, and retention | 1. Develop a robust admission process.  
   a. Key issues are including underrepresented individuals on the committee and providing implicit bias training for admissions committees, considering the environment in which students' grades were obtained, and using a variety of admission metrics, such as student interest and potential.  
   b. Examples include networking, hosting annual symposiums, offering scholarships, and providing stipends. | Environmental scan (evaluation) |
|                                        |                                                                           | Interviews and focus groups (three to five times) |
|                                        | 2. Maximize social and financial support to create a sense of community for student engagement and to eliminate resource constraints that can hinder African American/Black students from disadvantaged backgrounds from pursuing health education and careers.  
   b. Examples include networking, hosting annual symposiums, offering scholarships, and providing stipends. | Environmental scan (nonevaluation) |
|                                        |                                                                           | Interviews and focus groups (more than five times) |
|                                        | 3. Recruitment activities need to include tailored communication and community partnerships. For example, word about a program can be spread through schools, faith-based, or other community organizations. These partnerships can also help identify potential candidates for the program. | Environmental scan (nonevaluation) |
|                                        |                                                                           | Interviews and focus groups (three to five times) |
|                                        | 4. Boosting student retention can mitigate major barriers for pathways completion (e.g., marginal academic achievement, self-confidence, finances, family challenges). Examples are program resources to address student social needs and experiences with trauma. | Environmental scan (nonevaluation) |
|                                        |                                                                           | Interviews and focus groups (three to five times) |
|                                        | 5. Encourage student participation in decisionmaking and leadership by ensuring that |                                                                 |

27
<table>
<thead>
<tr>
<th>Program Component</th>
<th>Key Factor</th>
<th>Evidence Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>they have a voice in meetings, task forces, oversight boards, curriculum committees, and other professional development opportunities or activities.</td>
<td>Environmental scan (nonevaluation)</td>
<td></td>
</tr>
<tr>
<td><strong>Mentor recruitment and retention</strong></td>
<td>1. <strong>Employ a mix of different types of mentor-mentee relationships necessary for program success</strong> (e.g., peer-peer, near-peer, senior) and use various strategies for mentor recruitment and selection (e.g., engaging faculty champions and chairpersons, seeking referrals).</td>
<td>Environmental scan (evaluation)</td>
</tr>
<tr>
<td></td>
<td>2. <strong>Prioritize mentor experience and training through various approaches</strong> (e.g., offering training components on racism, microaggression, unconscious bias, and cultural understanding through professional development and orientation; learning about university and community resources, policies, and codes; and valuing a mentor’s lived experiences).</td>
<td>Environmental scan (evaluation)</td>
</tr>
<tr>
<td></td>
<td>3. <strong>Develop strategic approaches to maximize mentor retention</strong> (e.g., paid positions, mentoring skills enhancement, commitment to program ideals, protected faculty time, and regular check-ins with mentors to hear their concerns and needs and provide them support to encourage retention).</td>
<td>Environmental scan (nonevaluation)</td>
</tr>
<tr>
<td></td>
<td>4. <strong>Employ previously successful models for pairing mentors and mentees</strong> (e.g., form or short questionnaires, partnership programs, monthly lunch meetings, and mentor participation in student capstone presentations).</td>
<td>Environmental scan (evaluation)</td>
</tr>
<tr>
<td></td>
<td>5. <strong>Promote institutional change in hiring practices to encourage a more diverse faculty and future mentorship pool.</strong></td>
<td>Environmental scan (nonevaluation)</td>
</tr>
<tr>
<td><strong>Program outcome tracking</strong></td>
<td>1. <strong>Develop program evaluation plans to capture feedback on program administration</strong> (e.g., surveys, tracking student dropouts, assessment of students’ interest in field upon program completion, college matriculation and graduation, career choice, test scores, student recommendations, and follow-up interviews).</td>
<td>Environmental scan (evaluation)</td>
</tr>
<tr>
<td>Program Component</td>
<td>Key Factor</td>
<td>Evidence Type</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
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</tr>
<tr>
<td>Longitudinal programming and community engagement</td>
<td>1. Structure programs on a time frame that bolsters student engagement and academic success (e.g., a mixture of both limited programs, such as half-day workshops or summer programs, and long-term or longitudinal programs to balance competing priorities).</td>
<td><img src="images/green-check.png" alt="Green Check" /> Environmental scan (nonevaluation)</td>
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<tr>
<td></td>
<td>2. Include educational and noneducational support and clinical experiences in programming (e.g., college preparation, professional development workshops, specialized technical training, clinical activities, immersed learning, exposure to health care professions and biomedical research, and health and wellness support).</td>
<td><img src="images/green-check.png" alt="Green Check" /> Environmental scan (nonevaluation)</td>
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<tr>
<td></td>
<td>3. Increase community engagement and leadership to nurture students and help address health and academic challenges (e.g., recruiting volunteers in the community and involving them in program development, building trust through long-term partnerships with higher education entities, leveraging innovative community partnerships).</td>
<td><img src="images/green-check.png" alt="Green Check" /> Environmental scan (evaluation)</td>
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<td>4. Select program locations that increase exposure to STEM fields (e.g., college or medical school campuses, hospitals, and other clinical settings).</td>
<td><img src="images/green-check.png" alt="Green Check" /> Environmental scan (nonevaluation)</td>
</tr>
<tr>
<td>Funding and sustainability strategies</td>
<td>1. Establish longitudinal financial support to eliminate budgetary constraints and maintain program continuity (e.g., fund matching, grants, fundraising).</td>
<td><img src="images/green-check.png" alt="Green Check" /> Environmental scan (nonevaluation)</td>
</tr>
<tr>
<td></td>
<td>2. Develop a collaborative program through academic institutional commitment to increasing representation from African American/Black students (e.g., diverse faculty and administration, commitment from leadership, support staff).</td>
<td><img src="images/green-check.png" alt="Green Check" /> Environmental scan (nonevaluation)</td>
</tr>
<tr>
<td></td>
<td></td>
<td><img src="images/green-check.png" alt="Green Check" /> Interviews and focus groups (one to two times)</td>
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</table>
Applying the Equity Lens to Dissemination of the HCPP Framework of Key Factors

To ensure that this report and the HCPP framework of key factors reach African American/Black communities across the United States to help inform the development of their pathways programs, we will

- use the RAND Center to Advance Racial Equity Policy and broader RAND national network to identify as many African American/Black grassroots and community organizations as possible to directly share this work with
- share this work with national organizations in the United States with a focus on health equity and social justice for African American/Black communities
- share this work with historically Black colleges and universities
- share this work with key national advocacy groups, such as the National Medical Association, American Medical Association, and American Nurses Association.
Figure 4.1. HCPP Framework of Key Factors

Key Framework Components

- Prioritize longitudinal programming.
- Incorporate cross collaboration and site visits through practical settings (e.g., school) or clinical settings (e.g., campuses, hospitals).
- Offer diverse interactive and clinical activities.
- Develop programs with academic support, professional opportunities, scholarship, mentorship, and financial support.
- Provide resources to address social needs and traumatic experiences among students.

Programming

- Use a mix of different types of mentorship models for maximal success.
- Streamline strategies for recruiting dedicated mentors.
- Improve mentor experience and training.
- Improve strategies for mentor retention.
- Match mentees with mentors using mutual preferences

Mentors

Outcome measures

- Target recruitment strategies to capture underrepresented groups.
- Build partnerships with institutions serving underrepresented groups.
- Publicize the program to raise awareness.
- Develop a comprehensive selection process.
- Highlight the contributions of scientists from diverse backgrounds.
- Implement academic support, opportunities for experiences in clinical settings, and mentoring.
- Create a strong social support environment.
- Offer financial support.
- Foster student participation in decisionmaking and leadership.

Sustainability strategies

- Create comprehensive, longitudinal financial support.
- Prioritize securing commitment and collaboration in educational institutions.
- Build community partnerships to nurture students and address health and academic challenges.
- Foster community ownership to build trust in the program.
- Build on existing programs, partnerships, commitments, and funding mechanisms to support student matriculation and a diverse training environment.

Health System–Community Pathways Program

• Track program outcomes using quantitative and qualitative data before, during, and after administration and through student and caregiver feedback (e.g., student dropout, student interest, application and graduation rates, student program ratings).
Appendix A. Environmental Scan Search Strategy

Table A.1 provides information about search strategies used and the results from the peer-reviewed and gray literature.

### Table A.1. Search Strategy

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<th>Search Strategies</th>
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<th>Total Number of Titles Removed After Review</th>
<th>Total Number of Abstracts Removed After Review</th>
<th>Total Number of Full-Text Documents Removed After Review</th>
<th>Total Number of Articles Included for Key Takeaways</th>
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<td>346</td>
<td>76</td>
<td>98</td>
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</table>
Appendix B. Semistructured Focus Group and Interview Guide

1. Briefly share your current role and involvement within your organization.
2. What encourages African American/Black children and young adults to consider education and/or careers in health care? What discourages them?
3. If a program was designed to expose African American/Black children and young adults to education and/or careers in health care, what should the program look like?
   a. What criteria should be considered in accepting participants into the program? (e.g., academic achievement, parental involvement, grit)
   b. What criteria should be considered in accepting mentors into the program?
      - Who should the mentors be?
      - What qualifications should mentors have?
      - How often should they mentor program participants and for how long?
      - What should be the format of mentoring (e.g., in clinical setting, outside of clinical setting)?
   c. Should mentors and participants get incentives for participation in the program? If yes, what kind of incentives?
   d. What would constitute success in the program?
      - Being accepted into a health care related educational program?
      - Pursuing a career in health care?
      - Becoming a leader in health care?
      - Who should pay for the program to operate in the short- and long-term?
4. What is the role of pathway programs in addressing childhood trauma?
5. What is the role of the community in pathway programs?
6. Would you be able to share contact information of other individuals who might make good candidates for our interview?
### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>DEI</td>
<td>diversity, equity, and inclusion</td>
</tr>
<tr>
<td>DHHS</td>
<td>U.S. Department of Health and Human Services</td>
</tr>
<tr>
<td>ED</td>
<td>emergency department</td>
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<td>GPA</td>
<td>grade point average</td>
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<td>HCPP</td>
<td>Health System–Community Pathways Program</td>
</tr>
<tr>
<td>STEM</td>
<td>science, technology, engineering, and mathematics</td>
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</table>
References


CDC—See Centers for Disease Control and Prevention.


DHHS—See U.S. Department of Health and Human Services.


KIPPM—See Knowledge Is Power Program Public Charter Schools.

Knowledge Is Power Program Public Charter Schools, homepage, undated. As of November 30, 2021:

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