



ADVOCATE COMMUNITY PROVIDERS

TARGET WORKFORCE STATE

DEPARTMENT OF WORKFORCE,
COMMUNITY, AND GOVERNMENT RELATIONS

PREPARED IN COLLABORATION WITH



SEPTEMBER 30, 2016

Table of Contents

| | |
|--|----|
| Target Workforce State Overview | 2 |
| ACP Selected Ten DSRIP Projects | 3 |
| ACP Project Requirement Analysis | 4 |
| IHS Target State Report for Advocate Community Providers | 14 |

Target Workforce State Overview

As part of the NYS DOH Medicaid Redesign Team's Delivery System Reform Incentive Payment (DSRIP) program, Advocate Community Providers (ACP) Performing Provider System (PPS) was tasked with defining "the target workforce state (in line with DSRIP program's goals)." In accordance with its Workforce Implementation Plan, ACP approached this task through two interrelated processes:

- Conducting a detailed analysis of its ten projects under implementation, and
- Conducting a microsimulation to describe the anticipated system transformation

ACP engaged the Center for Workforce Studies (CHWS) in Albany as its workforce vendor. CHWS is widely recognized in NYS as one of the most important thought leaders in the study of the workforce in healthcare.

In collaboration with CHWS, ACP conducted an in-depth analysis of the requirements of each project in order to determine any changes to the new service delivery structure of the PPS. This was completed through a systematic organizational assessment that determined the project-by-project impact on the workforce of each of the four sectors: hospitals, physicians, community-based organizations, and ACP PPS. This assessment examined the projects' objectives, strategies, workforce implications and workforce environmental constraints to derive the occupation specific implications on each sector, therefore, spelling out the projects' target workforce state for each one. This information was entered in charts on page 4. Due to formatting, the orientation of the charts varies.

CHWS contracted with IHS, Inc. ("IHS") on ACP's behalf to define the target workforce state through a microsimulation analysis of workforce impacts. The microsimulation considered a wide range of factors independent of DSRIP (demographic shifts and effects of health insurance coverage under ACA) as well as implementation of the ten DSRIP projects. The target workforce state report was prepared by the Department of Workforce, Community, and Government Relations and included input from partnering entities through the Workforce Advisory Committee and Steering Committee.

The Board of Directors approved the document.

ACP Selected Ten DSRIP Projects

System transformation projects:

2.a.i — Integrated Delivery System: ACP is creating an integrated system that will enable primary care providers (PCPs) and specialists to better coordinate services and improve patient outcomes.

2.a.iii — Health Home At-Risk Intervention: Comprehensive care plans have been developed for patients with a progressive chronic disease, serious mental illness, or traumatic brain injury, who are at risk of developing another due to medical and social factors.

2.b.iii — ED Care Triage for At-Risk Populations: Linkages are being created between hospital emergency departments (ED) and PCPs so that a follow up appointment is scheduled with the PCP when a patient visits the emergency room.

2.b.iv — Care Transitions to reduce 30-Day Readmissions: ACP is connecting hospitals to PCPs so that every patient with a hospital admission is scheduled for an appointment with his or her PCP within 7-10 days in order to avoid 30-day readmission.

Clinical improvement projects:

3.a.i — Integration of Primary Care and Behavioral Health: ACP is integrating the IMPACT model into primary care by training in-practice depression care managers to provide education and support to mental health and substance abuse patients.

3.b.i — Cardiovascular: Implementing evidence-based best practices for adults with cardiovascular conditions.

3.c.i — Diabetes: Promoting evidence-based strategies to improve diabetes management.

3.d.iii — Asthma: Ensuring access for all patients with asthma to care that is consistent with evidence-based guidelines for self-management of asthma.

Population-Wide Projects:

4.b.i — Tobacco Use Cessation: Decreasing the prevalence of cigarette smoking in adults by promoting counseling in medical offices and facilitating referrals to the NYS Smokers' Quitline.

4.b.iii — Chronic Disease Prevention: Increasing the number of patient who receive evidence-based preventive care, including screening tests and vaccinations. ACP's target workforce state was created in collaboration with ACP Department of Workforce, Community, and Government Relations and included input from partnering entities through the Workforce Advisory Committee.

Project Requirement Analysis

| ACP Project Requirement Analysis: 2.a.i Integrated Delivery Systems | | | | |
|---|---|---|---|---|
| Project Manager: John Dionisio | | | | |
| Overall objective: Create Integrated Delivery Systems that are focused on Evidence-Based Medicine/ Population Health Management | | | | |
| | Hospitals | Medical Practices | CBOs | ACP PPS |
| Objectives | Reduce avoidable ED visits and hospitalizations of ACP attributed patients defined as potentially preventable admissions (PPAs) and potentially preventable readmissions (PPRs). | PCPs to achieve 2014 Level 3 PCMH primary care certification and/or meet state-determined criteria for Advanced Primary Care Models. | Work with ACP to address needs, including social services, of eligible ACP attributed patients. | Insure patients receive appropriate health care and community support, including medical and behavioral health, post-acute care, long term care and public health services. Leverage health homes (HHs)/ACOs/IPAs support when possible. |
| | Insure that all PPS safety net providers are actively sharing EHR systems with local health information exchange/RHIO/SHIN-NY and sharing health information among clinical partners, including directed exchange (secure messaging), alerts and patient record look up, by the end of Demonstration Year (DY) 3. | Insure that EHR systems used by participating safety net providers meet Meaningful Use (MU) standards by the end of DY 3. | Develop technical integration strategies to allow for easier data sharing. | Insure that all PPS safety net providers are actively sharing EHR systems with local health information exchange/RHIO/SHIN-NY and sharing health information among clinical partners, including directed exchange (secure messaging), alerts and patient record look up, by the end of Demonstration Year (DY) 3. |
| | | Insure that all PPS safety net providers are actively sharing EHR systems with local health information exchange/RHIO/SHIN-NY and sharing health information among clinical partners, including directed exchange (secure messaging), alerts and patient record look up, by the end of Demonstration Year (DY) 3. | | Develop and manage overall VBP strategy. |
| Strategies | Identify ACP attributed patients who are hospitalized or visit the ED through EHR information exchange platforms (RHIOs) and/or patient navigators (PNs). | Identify person who will monitor PCMH certification progress and make use of ACP PCMH content expert and vendors. | Establish referral process with ACP to meet the needs of eligible ACP attributed patients. | Carry out a community needs assessment, workforce survey, IT needs and requirement assessment, clinical workflow survey, and financial sustainability survey. |
| | Facilitate the implementation of ACP's system transformation projects to insure that patients who are hospitalized or visit the ED visit their PCP, and that Health Home at-risk patients, PPA and PPRs are identified, properly referred, and monitored. | Refer eligible patients to ACP's supporting staff for team-based care: Care Managers, Care Coordinators, and Community Health Workers. | Address ACP attributed patients' community needs by establishing partnerships with NYC public agencies. | Utilize partnering HHs, ACOs, and IPAs population health management systems and capabilities to implement the PPS' strategy towards evolving into an IDS. |
| | Collaborate with Medicaid Managed Care Organizations (MCOs) regarding data sharing to help with patient identification process. | Make use of ACP provided centralized EHR systems to formulate more effective care plans and allow for consistent clinical data streams, funding PCMH designation, and subsidizing RHIO connectivity fees. | Assist ACP by identifying services and point of contact person for the development of a comprehensive ACP community resource guide. | Facilitate contract with Medicaid Managed Care Organizations and other payers, as appropriate, as an integrated system and establish value-based payment arrangements |
| | Insure that appropriate communication occurs regarding VBP initiatives that target hospitals. | Continue to serve ACP attributed patients in their language and with the cultural sensitivity that characterizes the ACP network. | | Perform population health management by actively using EHRs and other IT platforms, including use of targeted patient registries, for all participating safety net providers. Reinforce the transition towards value-based payment reform by aligning provider compensation to patient outcomes. |
| | | Insure that appropriate communication occurs regarding VBP initiatives that target medical practices. | | Facilitate PCMH level 3 certification process through the work of ACP's PCMH level 3 content expert and vendors. |
| | | | | Provide ACP medical practices with access to ACP staff: Care Managers, Care Coordinators, and CHWs to help better manage the health of the neediest ACP attributed patients. |
| | | | | Develop a comprehensive ACP community resource guide. |
| Workforce Implications | Hire patient navigators (PNs) to work in ACP network hospitals. | Train medical practice staff on EHR systems, and ACP care management/coordination patient eligibility guidelines and referral process. | Educate staff of involved CBOs and public agencies on ACP PPS and integrated delivery systems project. | Hire project manager. |
| | Place ACP Community Health Workers (CHWs) in ACP hospitals' EDs. | Educate medical practice staff to make use of ACP resources for PCMH level 3 certification, Care Coordination and Care Management. | | Hire and train Value-Based/Medical Economics Analyst, Data Scientists, IDS Specialist/IT Coordinators, ACP CHWs, Care Managers, and Care Coordinators. |
| | Train PNs and CHWs on eligibility guidelines, referral process, electronic patient tracker, RHIOs and HIE. | Educate medical practice staff on ACP resources to facilitate VBP transition. | | Hire and train ACP PCMH level 3 content experts and other PCMH support staff. |
| | | | | Develop ACP core team for VBP to address network preparedness. |
| Workforce Environment/ Constraints | Role of ACP CHWs spread throughout all projects. | Limited number and availability of medical practice staff. | Potential resistance of out of network CBOs and NYC public agencies to establish partnerships with ACP. | Role of ACP CHWs spread throughout projects. |
| | Potential resistance of hospitals to hire enough PNs. | Potential resistance to refer patients to ACP Care Managers and Care Coordinators. | | Limited number and availability of ACP PCMH level 3 content experts and other supporting staff. |
| | Leverage existing workforce with hospital MCOs clinics to avoid work duplication. | | | High cost and limited availability of complete clinical/technical integration in the market. |
| Target State: Occupational specifics (redeployment, training, and hiring) | Hire CHWs and PNs. | Educate medical practice staff on ACP resources for PCMH level 3 certification. | Offer training to CBOs and public agency staff on ACP PPS and integrated delivery systems project. | Hire ACP project manager, PCMH level 3 content experts, Care Coordinators, Care Managers, and CHWs. |
| | Train CHWs and PNs on project, patient eligibility guidelines, referral process, and technology tools used for patient tracking and engagement. | Train medical practice staff on project, patient eligibility guidelines, and referral process. | | Certify PCMH level 3 content manager experts and PCMH support staff. |
| | | | | Analysts to complete <i>Data Analytics</i> training at the General Assembly Campus in New York City. |
| | | | | Train Care Coordinators, Care Managers, and CHWs on IDS. |

ACP Project Requirement Analysis: 2.a.iii Health Home at-risk Intervention

Project Manager: Indiana Maskhulia

Overall objective: Proactive management of higher risk patients not currently eligible for Health Homes through access to high quality primary care and support services

| | Hospitals | Medical Practices | CBOs | ACP PPS |
|--|---|--|---|--|
| Objectives | Reduce avoidable ED visits and hospitalizations of ACP attributed patients defined as potentially preventable admissions (PPAs) and potentially preventable readmissions (PPRs). | Take the lead in supporting health home at-risk projects and patients. | Work with ACP to address needs, including social services, of eligible ACP attributed patients. | Develop integrated delivery services to reach overall project's goal, and reduce avoidable hospitalizations and ED visits. |
| | | PCPs to achieve 2014 Level 3 PCMH primary care certification and/or meet state-determined criteria for Advanced Primary Care Models. | | Insure that health home at risk eligible patients are receiving the proper care management services. |
| | | Equip medical practice staff to properly implement project. | | |
| Strategies | Identify ACP attributed patients who are hospitalized or visit the ED through EHR information exchange platforms (RHIOs) and/or patient navigators (PNs). | Implement ACP's proper project procedures and protocols to provide total PCMH level 3 care. | Establish referral process with ACP to meet the needs of eligible ACP attributed patients and establish ongoing communication. | Through partnership and guidance of health homes develop evidence-based procedures and protocols to engage eligible ACP attributed patients and reduce these events. |
| | Facilitate the implementation of ACP's system transformation projects to insure that patients who are hospitalized or visit the ED visit their PCP, and that Health Home at-risk patients, PPA and PPRs are identified, properly referred, and monitored. | Provide eligible at-risk patients comprehensive care plan, and refer eligible at-risk patients to ACP's Care Managers and Care Coordinators. | Address ACP attributed patients' community needs by establishing partnerships with NYC public agencies. | Carry out a community needs assessment, workforce survey, IT needs and requirement assessment, clinical workflow survey, and financial sustainability survey. |
| | Collaborate with Medicaid Managed Care Organizations (MCOs) regarding data sharing to help with patient identification process. | PCP, or lead provider, to develop a practice culture that supports patient self-management. | Assist ACP by identifying services and point of contact person for the development of a comprehensive ACP community resource guide. | Develop a comprehensive ACP community resource guide. |
| | | Assist in identifying leaders and participants for ACP Stanford Model self-management workshops. | | Integrate cultural competency and health literacy strategy to insure efficient communication and proper development of materials (for patient education and workforce training). |
| | | Insure that coordination of stakeholders (i.e. health homes) is timely and accurate. | | Provide ACP medical practices with access to ACP staff: Care Managers, Care Coordinators, and CHWs. |
| | | Continue to serve ACP attributed patients in their language and with the cultural sensitivity that characterizes the ACP network. | | Facilitate PCMH level 3 certification process through the work of ACP's PCMH level 3 content expert and vendors. |
| | | | | |
| Workforce Implications | Hire patient navigators (PNs) to work in ACP network hospitals. | Train medical practice staff on project, patient eligibility guidelines, and referral process. | Educate staff of involved CBOs and public agencies on ACP PPS and project. | Hire and train project manager. |
| | Place ACP Community Health Workers (CHWs) in ACP hospitals' EDs. | Educate medical practice staff to make use of ACP resources for PCMH level 3 certification, Care Coordination and Care Management. | Place selected CHWs in CBOs in higher needs communities. | Hire and train ACP CHWs, Care Managers, and Care Coordinators. |
| | Train PNs and CHWs on eligibility guidelines, referral process, and technology tools used for patient engagement. | | | Hire and train ACP PCMH level 3 content experts and other PCMH support staff. |
| Workforce Environment/ Constraints | Role of ACP CHWs spread throughout projects. | Limited number and availability of medical practice staff. | Potential resistance of out of network CBOs and NYC public agencies to establish partnerships with ACP. | Role of ACP CHWs spread throughout projects. |
| | Potential resistance of hospitals to hire enough PNs. | Potential resistance to refer patients to health homes or ACP Care Managers and Care Coordinators. | | Limited number and availability of ACP Care Managers, Care Coordinators, PCMH level 3 content expert, and other PCMH support staff. |
| | Leverage existing workforce with hospital MCOs, clinics to avoid work duplication. | | | |
| Target State: Occupational specifics (redeployment, training, and hiring) | Hire CHWs and PNs. | Educate medical practice staff on ACP resources for PCMH level 3 certification. | Offer training to CBOs and public agency staff on ACP PPS and project. | Hire project manager, PCMH level 3 content experts, other PCMH support staff, Care Coordinators, Care Managers, and CHWs. |
| | Train CHWs and PNs on project, patient eligibility guidelines, referral process, and technology tools used for patient engagement. | Train medical practice staff on project, patient eligibility guidelines, and referral process. | | Certify PCMH level 3 content manager experts. |
| | | | | Project manager to complete online <i>Master Certificate in Applied Project Management-Healthcare</i> through Villanova University. |
| | | | | Project managers received NCCA HEDIS training. Train Care Coordinators, Care Managers, CHWs, and others on project protocols ACP community resource guide, Stanford Model, and Coleman transition of care models. |

ACP Project Requirement Analysis: 2.b.iii ED care triage for at-risk populations

Project Manager: Sarah Tobey (consultant)

Objective: to develop an evidence-based care coordination and transitional care program that will assist patients to link with a primary care physician/practitioner, support patient confidence in understanding and self-management of personal condition(s), improve provider to provider communication, and provide supportive assistance to transitioning members to the least restrictive environment.

| | Hospitals | Medical Practices | CBOs | ACP PPS |
|--|---|---|---|--|
| Objectives | Decrease unnecessary use of the emergency room (ED) by effectively linking patients with primary care providers (PCPs) and improving provider to provider communications. | PCPs to achieve 2014 Level 3 PCMH primary care certification and/or meet state-determined criteria for Advanced Primary Care Models. | Work with ACP to address needs, including social services, of eligible patients. | Insure that patients who seek non-urgent services in the ED are linked to a PCP, therefore receiving proper care and decreasing unnecessary use of the ED. |
| | Reduce avoidable ED visits and hospitalizations of ACP attributed patients defined as potentially preventable admissions (PPAs) and potentially preventable readmissions (PPRs). | Collaborate with ACP and participating emergency departments (EDs) to get patients who visit the ED an appointment with their PCP with an emphasis on PCMH Level 3 certified practitioners. | | Assist in PCPs' PCMH level 3 certification process. |
| Strategies | Collaborate with ACP in establishing linkages to PCPs with emphasis on those who are PCMH level 3 certified. | PCMH level 3 certified PCPs will work with ACP to develop a process of connectivity between the ED and PCP to provide open access scheduling and extended hours. | Establish referral process with ACP to meet the needs of eligible patients. | Develop project protocol, guidelines, and scheduling process for PCP appointments. |
| | Connect frequent ED users with the PCMH providers available to them. | Make use of ACP provided centralized EHR systems to formulate more effective care plans and allow for consistent clinical data streams, funding PCMH designation, and subsidizing RHIO connectivity fees. | Assist ACP by identifying services and point of contact person for the development of a comprehensive ACP community resource guide. | Establish linkages between EDs and PCPs, especially those that are PCMH level 3 certified, and insure effective provider to provider communication. |
| | Notify ACP, PCP, and Health Home care manager if applicable, about patients' ED visit and transmit triage information for the patient to PCP. | Continue to serve ACP attributed patients in their language and with the cultural sensitivity that characterizes the ACP network. | Provide services to ACP referred patients in their language when possible and with cultural competency. | Facilitate the process to connect frequent ED users with the PCMH providers available to them. |
| | Assist non-emergency patients, once required medical screening examination is performed, in receiving an immediate appointment with their PCP or finding an appropriate one if needed. | Make use of ACP team-based care staff for patient engagement, i.e. CHWs, care managers/care coordinators, to support care and promote self-management. | | Develop infrastructure and connectivity necessary to facility secured communication among all stakeholders, i.e. ED, Health Homes, PNs, CHWs, and PCPs. |
| | Integrate ACP cultural competency and health literacy strategy to insure efficient communication and patient engagement, and promote self-management. | Collaborate with ACP in improving provider to provider communications. | | Provide ACP medical practices with access to ACP staff: Care Managers, Care Coordinators, and CHWs to help better manage the health of the neediest ACP attributed patients. |
| | Collaborate with ACP in developing the infrastructure and connectivity needed to facilitate secured communication among all stakeholders, i.e. ED, patient navigator (PN), community health workers (CHWs), and PCPs. | | | Develop a comprehensive ACP community resource guide. |
| | Collaborate with ACP in emphasizing the value of having a PCP. | | | Provide appropriate technological tools to ACP staff to deploy strategic initiatives (i.e. tablets, hardware, and software). |
| Workforce Implications | Hire patient navigators (PNs) to work in ACP network hospitals. | Train medical practice staff on EHR systems, ACP care management/coordination patient eligibility guidelines and referral process, and ED triage project. | Educate staff of involved CBOs and public agencies on ACP PPS and project. | Hire project manager. |
| | Place ACP Community Health Workers (CHWs) in ACP hospitals' EDs. | Educate medical practice staff to make use of ACP resources for PCMH level 3 certification, Care Coordination and Care Management. | | Hire and train Data Scientists, IDS Specialist/IT Coordinators, ACP CHWs, Care Managers, and Care Coordinators. |
| | Train PNs and CHWs on guidelines, referral process, electronic patient tracker, RHIOs, HIE, patient consultation, and provider education. | | | Hire and train ACP PCMH level 3 content experts and other PCMH support staff. |
| Workforce Environment/ Constraints | Role of ACP CHWs spread throughout all projects. | Limited number and availability of medical practice staff. | Potential resistance of out of network CBOs and NYC public agencies to establish partnerships with ACP. | Role of ACP CHWs spread throughout projects. |
| | Potential resistance of hospitals to hire enough PNs. | Potential resistance to refer patients to ACP Care Managers and Care Coordinators. | | Limited number and availability of ACP PCMH level 3 content experts and other supporting staff. |
| | | | | High cost and limited availability of complete clinical/technical integration in the market. |
| Target State: Occupational specifics (redeployment, training, and hiring) | Hire CHWs and PNs. | Educate medical practice staff on ACP resources for PCMH level 3 certification and supporting staff. | Offer training to CBOs and public agency staff on ACP PPS, project, and CCHL. | Hire ACP project manager, PCMH level 3 content experts, Care Coordinators, Care Managers, and CHWs. |
| | Train CHWs and PNs on project, guidelines, referral process, technology tools used for patient tracking and engagement, cultural competency and health literacy (CCHL), patient consultation, and provider education. | Train medical practice staff, clinical and administrative, on project, patient eligibility guidelines, referral process, and CCHL. | | Certify PCMH level 3 content manager experts and PCMH support staff. |
| | | | | Train CHWs, care coordinators, care managers, and other appropriate staff on project, guidelines, patient consultation, provider education, technology tools, CCHL, and metrics. |

ACP Project Requirement Analysis: 2.b.iv Implementation of Care Coordination and Transitional Care Programs

Project Manager: TBD

To provide a 30 day supported transition period after a hospitalization to ensure discharge directions are understood and implemented by the patients at high risk of readmission, particularly those with cardiac, renal, diabetes, respiratory, and/or behavioral health disorders.

| | Hospitals | Medical Practices | CBOs | ACP PPS |
|--|---|---|---|--|
| Objectives | Decrease unnecessary 30-day hospital readmissions for chronic health conditions by effectively improving patient health literacy and provider to provider communications. | PCPs to achieve 2014 Level 3 PCMH primary care certification and/or meet state-determined criteria for Advanced Primary Care Models. | Work with ACP to address needs, including social services, of eligible patients. | Insure that patients who are hospitalized receive clear, culturally sensitive discharge instructions, and the support needed to avoid readmissions for chronic health conditions. |
| | Reduce avoidable ED visits and hospitalizations of ACP attributed patients defined as potentially preventable admissions (PPAs) and potentially preventable readmissions (PPRs). | Collaborate with ACP and participating hospitals to get patients who are hospitalized supported transition care by connecting them with their PCP. | | Assist in PCPs' PCMH level 3 certification process. |
| Strategies | Collaborate with ACP in developing discharge regiments that integrate ACP cultural competency and health literacy strategy to insure that patients understand and comply with directions and promote self-management. | Make use of ACP provided centralized EHR systems to formulate more effective care plans and allow for consistent clinical data streams, funding PCMH designation, and subsidizing RHIO connectivity fees. | Establish referral process with ACP to meet the needs of eligible patients. | Develop project protocol, guidelines, and care transition protocol. |
| | Collaborate with Medicaid Managed Care Organizations (MCOs) regarding data sharing to help with patient identification process and to develop transition of care protocols. | Continue to serve ACP attributed patients in their language and with the cultural sensitivity that characterizes the ACP network. | Assist ACP by identifying services and point of contact person for the development of a comprehensive ACP community resource guide. | Establish linkages among hospitals, PCPs, Medicaid Managed Care Organizations (MCOs), and Health Homes regarding data sharing to help with patient identification process and to develop transition of care protocols. |
| | Collaborate with ACP in developing the infrastructure and connectivity needed to facilitate secured communication among all stakeholders, i.e. hospital, patient navigator (PN), community health workers (CHWs), and PCPs. | Make use of ACP team-based care staff for patient engagement, i.e. CHWs, care managers/care coordinators, to support care and promote self-management. | Provide services to ACP referred patients in their language when possible and with cultural competency. | Develop infrastructure and connectivity necessary to facility secured communication among all stakeholders, i.e. hospital, Health Homes, PNs, CHWs, and PCPs. |
| | Collaborate with ACP in emphasizing the value of having a PCP. | Collaborate with ACP in improving provider to provider communications. | Collaborate with ACP in identifying community-based resources for patients post-hospitalization. | Provide ACP medical practices with access to ACP staff: Care Managers, Care Coordinators, and CHWs to help better manage the health of the neediest ACP attributed patients. |
| | Engage with ACP, Health Homes, and MCOs to develop transition of care protocols that insure they are followed properly. | | | Develop a comprehensive ACP community resource guide. |
| | Work with ACP to make available community-based support and resources for patients post-hospitalization. | | | Provide appropriate technological tools to ACP staff to deploy strategic initiatives (i.e. tablets, hardware, and software). |
| | Notify ACP, PCP, and Health Home care manager if applicable, about patients' admission and transmit discharge information for the patient to PCP. | | | Integrate ACP CCHL strategy to insure efficient communication and patient engagement, and promote self-management. |
| Workforce Implications | Hire patient navigators (PNs) to work in ACP network hospitals. | Train medical practice staff on EHR systems, ACP care management/coordination patient eligibility guidelines and referral process, and care transition project. | Educate staff of involved CBOs and public agencies on ACP PPS and project. | Hire project manager. |
| | Place ACP Community Health Workers (CHWs) in ACP hospitals' EDs. | Educate medical practice staff to make use of ACP resources for PCMH level 3 certification, Care Coordination and Care Management. | | Hire and train Data Scientists, IDS Specialist/IT Coordinators, ACP CHWs, Care Managers, and Care Coordinators. |
| | Train PNs and CHWs on guidelines, referral process, electronic patient tracker, RHIOs, HIE, patient consultation, and provider education. | | | Hire and train ACP PCMH level 3 content experts and other PCMH support staff. |
| Workforce Environment/ Constraints | Role of ACP CHWs spread throughout all projects. | Limited number and availability of medical practice staff. | Potential resistance of out of network CBOs and NYC public agencies to establish partnerships with ACP. | Role of ACP CHWs spread throughout projects. |
| | Potential resistance of hospitals to hire enough PNs. | Potential resistance to refer patients to ACP Care Managers and Care Coordinators. | | Limited number and availability of ACP PCMH level 3 content experts and other supporting staff. |
| | | | | High cost and limited availability of complete clinical/technical integration in the market. |
| Target State: Occupational specifics (redeployment, training, and hiring) | Hire CHWs and PNs. | Educate medical practice staff on ACP resources for PCMH level 3 certification and supporting staff. | Offer training to CBOs and public agency staff on ACP PPS, project, and CCHL. | Hire ACP project manager, PCMH level 3 content experts, Care Coordinators, Care Managers, and CHWs. |
| | Train CHWs and PNs on project, guidelines, referral process, technology tools used for patient tracking and engagement, cultural competency and health literacy (CCHL), patient consultation, and provider education. | Train medical practice staff, clinical and administrative, on project, patient eligibility guidelines, referral process, and CCHL. | | Certify PCMH level 3 content manager experts and PCMH support staff. |
| | | | | Train CHWs, care coordinators, care managers, and other appropriate staff on project, guidelines, patient consultation, provider education, technology tools, CCHL, and metrics. |

ACP Project Requirement Analysis: 3.a.i Integration of Primary Care & Behavioral Health

Project Manager: Gabriel Rosario

Overall objective: Integration of mental health and substance abuse with primary care services to ensure coordination of care for both services.

| | Hospitals | Medical Practices | CBOs | ACP PPS |
|--|--|---|---|---|
| Objectives | Reduce avoidable ED visits and hospitalizations of ACP attributed patients struggling with behavioral health and substance use issues. | Provide collaborative team-based care to ACP attributed patient through implementation of the project's three models: integrate behavioral health services into the PC settings, integrate PC services into behavioral health sites, and implement IMPACT into independent PCP practices. | Provide collaborative team-based care to ACP attributed patient through implementation of the project's three models: integrate behavioral health services into the PC settings, integrate PC services into behavioral health sites, and implement IMPACT into independent PCP practices. | Provide collaborative team-based care to ACP attributed patient through implementation of the project's three models: integrate behavioral health services into the PC settings, integrate PC services into behavioral health sites, and implement IMPACT into independent PCP practices. |
| | | Create patient-centered model with PCPs and behavioral health providers working together to provide quality holistic healthcare. | Work with ACP to address needs, including social services, of eligible ACP attributed patients. | Assist medical practices in understanding behavioral health issues and coordinating care of behavioral health patients |
| | | PCPs to achieve 2014 Level 3 PCMH primary care certification and/or meet state-determined criteria for Advanced Primary Care Models. | | Create patient-centered model with PCPs and behavioral health providers working together to provide quality holistic healthcare. |
| Strategies | Identify ACP attributed patients with a behavioral health diagnosis who are hospitalized or visit the ED EHR information exchange platforms (RHIOs) and/or patient navigators (PNs). | Implement ACP-developed standardized protocols through EHRs that include screening and treatment for depression, substance use, as well as referrals for other serious psychiatric conditions (i.e. schizophrenia). | Address ACP attributed patients' community needs by establishing partnerships with NYC public agencies. | Create standardized protocols to be implemented across ACP network through EHRs that include screening and treatment for depression, substance use, as well as referral for other serious psychiatric conditions, e.g. schizophrenia. |
| | Implement system transformation projects' protocols to insure that behavioral health and substance use patients who are hospitalized in an ACP network hospital or visit the ED see their PCP, and that Health Home at-risk patients, PPA and PPRs are identified, properly referred, and monitored. | Coordinate with ACP's behavioral health partners and in-network hospitals to allow for warm handoffs to effectively and efficiently coordinate care. | Increase linkages between health care and CBOs for behavioral health patients | Team up with OMH and the University of Washington's AIMS Center to participate in a pilot for the IMPACT Model implementation to carefully review, deliberate, and receive guidance, coaching, and training on the IMPACT Model and the use of behavioral health care managers. |
| | Coordinate with ACP's behavioral health partners and PCPs to allow for warm handoffs to effectively and efficiently coordinate care. | Continue to serve ACP attributed patients in their language and with the cultural sensitivity that characterizes the ACP network. | Increase identification and use of alcohol and substance use peer support groups | Contract and designate consulting psychiatrists for implementation of the IMPACT model's collaborative care process (model 3). |
| | Collaborate with mental health clinics at hospitals for the implementation of models 1 and 2. | Implement ACP's proper project procedures and protocols to provide total PCMH level 3 care. | Assist ACP by identifying services and point of contact person for the development of a comprehensive ACP community resource guide. | Collaborate with the New York City OMH and Regional Planning Consortium to share lessons learned amongst the statewide PPSs to incorporate best practices and achieve desired outcomes. |
| | | | | Collaborate with the State and City OMH in developing a comprehensive evidence-based SBIRT training for our PCPs and team. |
| | | | | Assist behavioral health partners in attaining and implementing PC services. |
| | | | | Develop relationships with alcohol and substance use support groups to provide community-based resources to help patients with ongoing needs. |
| | | | | Develop a comprehensive ACP community resource guide. |
| | | | | Establish roving interdisciplinary teams. |
| | | | | Integrate cultural competency and health literacy strategy to insure efficient communication and proper development of materials (for patient education and workforce training). |
| | | | Facilitate PCMH level 3 certification process through the work of ACP's PCMH level 3 content expert and vendors. | |
| Workforce Implications | Hire patient PNs and Behavioral Health (BH) Managers to work in ACP network hospitals. | Train medical practice staff on project protocols, training materials on performing evidence-based assessments such as PHQ2/9, DAST, and AUDIT C, collaborative care, care coordination, and referral process. | Increase the number of peer support groups support behavioral health patients and substance use disorder. | Hire and train project manager. |
| | Place ACP Community Health Workers (CHWs) in ACP hospitals' EDs. | Train medical staff for IMPACT model implementation. | Educate staff of involved CBOs and public agencies on ACP PPS, and project protocols. | Hire physician engagement teams for deployment to PCP practices to distribute protocols and easy-to-follow training materials on performing evidence-based assessments such as PHQ2/9, DAST, and AUDIT C by integrating these into the EHRs and incorporating these into the everyday workflow. |
| | Train PNs, BH Managers, and CHWs on eligibility guidelines, referral process, and technology tools used for patient engagement. | Educate medical practice staff to make use of ACP resources for PCMH level 3 certification, Care Coordination and Care Management. | | Hire and train ACP CHWs, Care Managers, Care Coordinators, PCMH level 3 content experts, and other PCMH support staff. |
| Workforce Environment/ Constraints | Role of ACP CHWs spread throughout projects. | Increased use of medical assistants in private practices. | Potential resistance of out of network CBOs and NYC public agencies to establish partnerships with ACP. | Role of ACP CHWs spread throughout projects. |
| | Potential resistance of hospitals to hire PNs. | Limited resources and space. | | Limited number and availability of ACP Care Managers, Care Coordinators, PCMH level 3 content expert, and other PCMH support staff. |
| | Leverage existing workforce with hospital MCOs, clinics to avoid work duplication. | | | |
| Target State: Occupational specifics (redeployment, training, and hiring) | Hiring of PNs. | Train medical practice staff on project protocols, IMPACT Model, training materials on performing evidence-based assessments such as PHQ2/9, DAST, and AUDIT C, collaborative care, care coordination, referral process, and ACP community resource guide. | Offer training to CBOs and public agency staff on ACP PPS, project, and referral process. | Hire project manager, PCMH level 3 content experts, PCMH support staff, Care Coordinators, Care Managers, and CHWs. |
| | Train CHWs and PNs on project, patient eligibility guidelines, referral process, and technology tools used for patient engagement. | | | Certify PCMH level 3 content manager experts. |
| | | | | Project manager to complete online <i>Master Certificate in Applied Project Management-Healthcare</i> through Villanova University. |
| | | | | Project managers received NCOA HEDIS training. |
| | | | | Train Care Coordinators, Care Managers, CHWs, and others on project protocols ACP community resource guide, Stanford Model, and Coleman transition of care models. |

ACP Project Requirement Analysis: 3.b.i Cardiovascular Disease Management

Project Manager: Shariff De Los Santos

Overall objective: To support implementation of evidence-based best practices for disease management in medical practice for adults with cardiovascular conditions (adults only).

| | Hospitals | Medical Practices | CBOs | ACP PPS |
|--|---|---|--|--|
| Objectives | Reduce avoidable ED visits and hospitalizations of ACP attributed patients with a cardiovascular disease diagnosis. | PCPs to achieve 2014 Level 3 PCMH primary care certification and/or meet state-determined criteria for Advanced Primary Care Models. | Support ACP attributed patients to increase cardiovascular disease self-managing and self-efficacy for prevention and disease control. | Insure ACP network medical practices and ambulatory care setting use evidence-based strategies to improve management of cardiovascular disease. |
| | | Promote cardiovascular disease patient education to increase self-efficacy and self-management. | Work with ACP to address needs, including social services, of eligible ACP attributed patients. | |
| | | Equip medical practice staff to properly implement project. | | |
| Strategies | Identify ACP attributed patients with a cardiovascular disease diagnosis who are hospitalized or visit the ED through EHR information exchange platforms (RHIOs) and/or patient navigators (PNs). | Implement ACP's project protocol and provide total PCMH level 3 care. | Establish referral process with ACP to meet the needs of eligible ACP attributed patients. | Carry out a community needs assessment and cardiovascular disease prevalence 'hotspot' analysis. |
| | Implement system transformation projects' protocols to insure that cardiovascular disease patients who are hospitalized in an ACP network hospital or visit their ED visit their PCP, and that Health Home at-risk patients, PPA and PPRs are identified, properly referred, and monitored. | Promote cardiovascular disease patient education to increase self-efficacy and self-management through care plans, LSM counseling, and the use of ACP-produced language appropriate, culturally sensitive educational material on cardiovascular disease. | Address ACP attributed patients' community needs by establishing partnerships with NYC public agencies, and out of network CBOs. | Engage cardiovascular disease specialists and PCPs, identify and track cardiovascular disease patients with emphasis on "hotspots." |
| | | Assist in identifying leaders and participants for ACP Stanford Model self-management workshops. | Collaborate with ACP to host/facilitate Stanford Model workshop sites. | Develop proper procedures and protocols to engage eligible ACP attributed patients and reduce avoidable ED visits and hospitalizations. |
| | | Refer eligible cardiovascular disease patients to ACP's Care Managers and Care Coordinators. | Assist ACP by identifying services and point of contact person for the development of a comprehensive ACP community resource guide. | Develop a comprehensive ACP community resource guide. |
| | | Collaborate with ACP CHWs in ACP attributed patient outreach for eligible cardiovascular disease patients. | | Establish roving interdisciplinary teams. |
| | | Implement Million Hearts campaign strategies. | | Integrate cultural competency and health literacy strategy to insure efficient communication and proper development of materials (for patient education and workforce training). |
| | | Establish 'blood pressure stations' in each practice for patients to measure their blood pressure free of charge and without an appointment. | | Facilitate PCMH level 3 certification process through the work of ACP's PCMH level 3 content expert and vendors. |
| | | Continue to serve ACP attributed patients in their language and with the cultural sensitivity that characterizes the ACP network. | | Provide Care Management and Care Coordination to eligible ACP attributed patients. |
| Workforce Implications | Hire patient PNs to work in ACP network hospitals. | Train medical practice staff on project, cardiovascular disease care plans, Million Hearts campaign, blood pressure station, and referral process. | Educate staff of involved CBOs and public agencies on ACP PPS, project, and Stanford Model. | Hire and train project manager. |
| | Place ACP Community Health Workers (CHWs) in ACP hospitals' EDs. | Collaborate with ACP CHWs in ACP attributed patient outreach for eligible cardiovascular disease patients. | | Hire and train ACP CHWs, Care Managers, Care Coordinators, PCMH level 3 content expert, and other PCMH support staff. |
| | Train PNs and CHWs on eligibility guidelines, referral process, and electronic patient tracker. | Educate medical practice staff to make use of ACP resources for PCMH level 3 certification, Care Coordination and Care Management. | | |
| Workforce Environment/ Constraints | Role of ACP CHWs spread throughout projects. | Increased use of medical assistants in private practices. | Potential resistance of out of network CBOs and NYC public agencies to establish partnerships with ACP. | Limited number and availability of ACP Care Managers, Care Coordinators, PCMH level 3 content expert, and other PCMH support staff. |
| | Potential resistance of hospitals to hire PNs. | Limited resources and space. | | Role of ACP CHWs spread throughout projects. |
| Target State: Occupational specifics (redeployment, training, and hiring) | Hiring of PNs. | Train Medical Assistants, or appropriate staff identified by PCP or practice lead, on project, referral process, Million Hearts campaign, blood pressure station, and ACP community resource guide. | Offer training to CBOs and public agency staff on ACP PPS and project. | Hire project manager, PCMH level 3 content experts, other PCMH support staff, Care Coordinators, Care Managers, and CHWs. |
| | Train CHWs and PNs on project, patient eligibility guidelines, referral process, and technology tools used for patient engagement. | | | Project manager to complete online <i>Master Certificate in Applied Project Management-Healthcare</i> through Villanova University. |
| | | | | Certify PCMH level 3 content manager expert. |
| | | | | Project managers received NCOA HEDIS training. |
| | | | | Train Care Coordinators, Care Managers, CHWs, and others on project protocols ACP community resource guide, Stanford Model, and Coleman transition of care models. |

ACP Project Requirement Analysis: 3.c.1 Diabetes Disease Management

Project Manager: Li Guo

Overall objective: To support implementation of evidence-based best practices for disease management in medical practice (adult only).

| | Hospitals | Medical Practices | CBOs | ACP PPS |
|--|---|--|--|--|
| Objectives | Reduce avoidable ED visits and hospitalizations of ACP attributed patients with a diabetes diagnosis. | PCPs to achieve 2014 Level 3 PCMH primary care certification and/or meet state-determined criteria for Advanced Primary Care Models. Promote diabetes patient education to increase self-efficacy and self-management. | Support ACP attributed patients to increase diabetes self-managing and self-efficacy for disease control. Work with ACP to address needs, including social services, of eligible ACP attributed patients. | Insure ACP network medical practices and ambulatory care setting use evidence-based strategies to improve management of diabetes. |
| Strategies | Identify ACP attributed patients who are hospitalized or visit the ED through EHR information exchange platforms (RHIOs) and/or patient navigators (PNs). Implement system transformation projects' protocols to insure that ACP attributed patients who are hospitalized in an ACP network hospital or visit their ED visit their PCP, and that Health Home at-risk patients, PPA and PPRs are identified, properly referred, and monitored. Assist in identifying leaders and participants for ACP Stanford Model self-management workshops. Refer eligible diabetic patients to ACP's Care Managers and Care Coordinators. Collaborate with ACP CHWs in ACP attributed patient outreach for eligible diabetic patients. Continue to serve ACP attributed patients in their language and with the cultural sensitivity that characterizes the ACP network. | Equip medical practice staff to properly implement project. Implement ACP's project protocol and provide total PCMH level 3 care. Promote diabetes patient education to increase self-efficacy and self-management through care plans, LSM counseling, and the use of -produced language appropriate, culturally sensitive educational material on diabetes. | Establish referral process with ACP to meet the needs of eligible ACP attributed patients. Address ACP attributed patients' community needs by establishing partnerships with NYC public agencies, and out of network CBOs. Collaborate with ACP to host/facilitate Stanford Model workshop sites. Assist ACP by identifying services and point of contact person for the development of a comprehensive ACP community resource guide. Establishing rowing interdisciplinary teams. Integrate cultural competency and health literacy strategy to insure efficient communication and proper development of materials (for patient education and workforce training). Facilitate PCMH level 3 certification process through the work of ACP's PCMH level 3 content expert and vendors. Provide Care Management and Care Coordination to eligible ACP attributed patients. Hire and train project manager. | Carry out a community needs assessment and diabetes prevalence 'hotspot' analysis. Engage diabetes specialists and PCPs, identify and track diabetic patients with emphasis on "hotspots." Develop proper procedures and protocols to engage eligible ACP attributed patients and reduce avoidable ED visits and hospitalizations. Develop a comprehensive ACP community resource guide. Establish rowing interdisciplinary teams. Integrate cultural competency and health literacy strategy to insure efficient communication and proper development of materials (for patient education and workforce training). Facilitate PCMH level 3 certification process through the work of ACP's PCMH level 3 content expert and vendors. Provide Care Management and Care Coordination to eligible ACP attributed patients. Hire and train project manager. Hire and train ACP CHWs, Care Managers, Care Coordinators, PCMH level 3 content expert, and other PCMH support staff. Limited number and availability of ACP Care Managers, Care Coordinators, PCMH level 3 content expert, and other PCMH support staff. Role of ACP CHWs spread throughout projects. Hire project manager, PCMH level 3 content experts, other PCMH support staff, Care Coordinators, Care Managers, and CHWs. |
| Workforce Implications | Hire patient PNs to work in ACP network hospitals. Place ACP Community Health Workers (CHWs) in ACP hospitals' EDs. Train PNs and CHWs on eligibility guidelines, referral process, and electronic patient tracker. Role of ACP CHWs spread throughout projects. Potential resistance of hospitals to hire PNs. Hiring of PNs. | Train medical practice staff on project, diabetes care plans, and referral process. Educate medical practice staff to make use of ACP resources for PCMH level 3 certification, Care Coordination and Care Management. Increased use of medical assistants in private practices. Limited resources. Train Medical Assistants, or appropriate staff identified by PCP or practice lead, on project, referral process, and ACP community resource guide. | Educate staff of involved CBOs and public agencies on ACP PPS, project, and Stanford Model. Potential resistance of out of network CBOs and NYC public agencies to establish partnerships with ACP. Offer training to CBOs and public agency staff on ACP PPS and project protocol. | Provide Care Management and Care Coordination to eligible ACP attributed patients. Hire and train project manager. Hire and train ACP CHWs, Care Managers, Care Coordinators, PCMH level 3 content expert, and other PCMH support staff. Limited number and availability of ACP Care Managers, Care Coordinators, PCMH level 3 content expert, and other PCMH support staff. Role of ACP CHWs spread throughout projects. Hire project manager, PCMH level 3 content experts, other PCMH support staff, Care Coordinators, Care Managers, and CHWs. |
| Workforce Environment/Constraints | Potential resistance of hospitals to hire PNs. Hiring of PNs. | Increased use of medical assistants in private practices. Limited resources. Train Medical Assistants, or appropriate staff identified by PCP or practice lead, on project, referral process, and ACP community resource guide. | Offer training to CBOs and public agency staff on ACP PPS and project protocol. | Offer training to CBOs and public agency staff on ACP PPS and project protocol. |
| Target State: Occupational specifics (redeployment, training, and hiring) | Train CHWs and PNs on project, patient eligibility guidelines, referral process, and technology tools used for patient engagement. | Train CHWs and PNs on project, patient eligibility guidelines, referral process, and technology tools used for patient engagement. | Offer training to CBOs and public agency staff on ACP PPS and project protocol. | Offer training to CBOs and public agency staff on ACP PPS and project protocol. |
| | | | | Project manager to complete online <i>Master Certificate in Applied Project Management-Healthcare</i> through Villanova University. Certify PCMH level 3 content manager expert. Project managers received NQQA HEDIS training. Train Care Coordinators, Care Managers, CHWs, and others on project protocols ACP community resource guide, Stanford Model, and Coleman transition of care models. |

ACP Project Requirement Analysis: 3.d.iii: Asthma

Project Manager: Maria Debes

Overall objective: To ensure access for all patients with asthma to care consistent with evidence-based medicine guidelines for asthma management.

| | Hospitals | Medical Practices | CBOs | ACP PPS |
|--|--|---|---|--|
| Objectives | Reduce avoidable ED visits and hospitalizations of ACP attributed patients with an asthma diagnosis. | PCPs to achieve 2014 Level 3 PCMH primary care certification and/or meet state-determined criteria for Advanced Primary Care Models. | Support ACP attributed patients to increase asthma self-management and self-efficacy to control condition and prevent visits to ED. | Address asthma management issues related to compliance with clinical asthma practice guidelines and lack of access to pulmonary and allergy specialists in New York City. |
| | | Promote asthma patient education to increase self-efficacy and self-management. | Work with ACP to address needs, including social services, of eligible ACP attributed patients. | |
| | | Equip medical practice staff to properly implement project. | | |
| Strategies | Identify ACP attributed patients with an asthma diagnosis who are hospitalized or visit the ED through EHR information exchange platforms (RHIOs) and/or patient navigators (PNs). | Implement ACP's project protocol and provide total PCMH level 3 care. | Establish referral process with ACP to meet the needs of eligible ACP attributed patients. | Carry out a community needs assessment and asthma prevalence 'hotspot' analysis. |
| | Implement system transformation projects' protocols to insure that asthmatic patients who are hospitalized in an ACP network hospital or visit their ED visit their PCP, and that Health Home at-risk patients, PPA and PPRs are identified, properly referred, and monitored. | Promote asthma patient education to increase self-efficacy and self-management through care plans, LSM counseling, and the use of ACP-produced language appropriate, culturally sensitive educational material on asthma. | Address ACP attributed patients' community needs by establishing partnerships with NYC public agencies, and out of network CBOs. | Engage asthma specialists and PCPs, identify and track asthmatic patients with emphasis on "hotspots." |
| | | Assist in identifying leaders and participants for ACP Stanford Model self-management workshops. | Collaborate with ACP to host/facilitate Stanford Model workshop sites. | Develop proper procedures and protocols to engage eligible ACP attributed patients and reduce avoidable ED visits and hospitalizations. |
| | | Refer eligible asthmatic patients to ACP's Care Managers and Care Coordinators. | Assist ACP by identifying services and point of contact person for the development of a comprehensive ACP community resource guide. | Establish roving interdisciplinary teams. |
| | | Collaborate with ACP CHWs in ACP attributed patient outreach for eligible asthmatic patients. | | Develop a comprehensive ACP community resource guide. |
| | | Continue to serve ACP attributed patients in their language and with the cultural sensitivity that characterizes the ACP network. | | Integrate cultural competency and health literacy strategy to insure efficient communication and proper development of materials (for patient education and workforce training). |
| | | | | Facilitate PCMH level 3 certification process through the work of ACP's PCMH level 3 content expert and vendors. |
| | | | | Provide Care Management and Care Coordination to eligible ACP attributed patients. |
| Workforce Implications | Hire patient PNs to work in ACP network hospitals. | Train medical practice staff on project, asthma action plans, and referral process. | Educate staff of involved CBOs and public agencies on ACP PPS, project, and Stanford Model. | Hire and train project manager. |
| | Place ACP Community Health Workers (CHWs) in ACP hospitals' EDs. | Educate medical practice staff to make use of ACP resources for PCMH level 3 certification, Care Coordination and Care Management. | | Hire and train ACP CHWs, Care Managers, Care Coordinators, PCMH level 3 content expert, and other PCMH support staff. |
| | Train PNs and CHWs on eligibility guidelines, referral process, and electronic patient tracker. | | | |
| Workforce Environment/ Constraints | Role of ACP CHWs spread throughout projects. | Increased use of medical assistants in private practices | Potential resistance of out of network CBOs and NYC public agencies to establish partnerships with ACP. | Limited number and availability of ACP Care Managers, Care Coordinators, PCMH level 3 content expert, and other PCMH support staff. |
| | Potential resistance of hospitals to hire PNs. | Limited resources. | | Role of ACP CHWs spread throughout projects. |
| Target State: Occupational specifics (redeployment, training, and hiring) | Hiring of PNs. | Train physician to implement evidence-based asthma protocol, develop comprehensive asthma action plans for their patients. | Offer training to CBOs and public agency staff on ACP PPS, project, and evidence-based asthma protocols. | Hire project manager, PCMH level 3 content experts, other PCMH support staff, Care Coordinators, Care Managers, and CHWs. |
| | Train CHWs and PNs on project, patient eligibility guidelines, referral process, and technology tools used for patient engagement. | Train Medical Assistants, or appropriate staff identified by PCP or practice lead, on project, referral process, and ACP community resource guide. | | Project manager to complete online <i>Master Certificate in Applied Project Management-Healthcare</i> through Villanova University. |
| | | | | Certify PCMH level 3 content manager expert. |
| | | | | Project managers received NCOA HEDIS training. |
| | | | | Train Care Coordinators, Care Managers, CHWs, and others on project protocols ACP community resource guide, Stanford Model, and Coleman transition of care models. |

| ACP Project Requirement Analysis: 4.b.i Tobacco Use Cessation Project Manager: Katherine Morillo Overall objective: To decrease the prevalence of cigarette smoking by adults 18 and older; increase use of tobacco cessation services including NYS Smokers' Quitline and nicotine replacement products. | | | |
|---|---|--|--|
| Objectives | Hospitals | Medical Practices | CBOs |
| Reduce avoidable ED visits and hospitalizations of ACP attributed patients. | Implement the US Public Health Service Guidelines for Treating Tobacco Use. | Promote tobacco use cessation services counseling, referrals to NY Quits, and nicotine replacement products. Equip medical practice staff to properly implement project. Implement the US Public Health Service Guidelines for Treating Tobacco Use. | Support ACP attributed patients in tobacco use intervention programs and prevent visits to ED. |
| Identify ACP attributed patients who are hospitalized or visit the ED due to tobacco related ailments through EHR information exchange platforms (RHIOs) and/or patient navigators (PNs). Implement system transformation projects' protocols to insure that ACP attributed patients who are hospitalized or visit the ED visit their PCP and that Health Home at-risk patients, PPA and PPRs are identified, properly referred, and monitored. Facilitate tobacco use intervention programs to ACP for patient referral and other efforts. | Identify ACP attributed patients who are hospitalized or visit the ED due to tobacco related ailments through EHR information exchange platforms (RHIOs) and/or patient navigators (PNs). Implement system transformation projects' protocols to insure that ACP attributed patients who are hospitalized or visit the ED visit their PCP and that Health Home at-risk patients, PPA and PPRs are identified, properly referred, and monitored. Facilitate tobacco use intervention programs to ACP for patient referral and other efforts. | Screen patients for tobacco use, promote cessation counseling among smokers, including people with disabilities, refer smokers through warm hand-offs to community-based services, NY Quits, and provide language appropriate, culturally sensitive educational materials. Collaborate with ACP to promote tobacco cessation through community-centered, lifestyle modification educational seminars and campaigns. Use EHR to complete five As (ask, assess, advise, assist, and arrange) and use appropriate HEDIS coding metrics. Continue to serve ACP attributed patients in their language and with the cultural sensitivity that characterizes the ACP network. Refer eligible patients to ACP care managers and care coordinators. | Work with ACP to address needs, including social services, of eligible ACP attributed patients. Implement the US Public Health Service Guidelines for Treating Tobacco Use. Establish referral process with ACP to meet the needs of eligible ACP attributed patients. Address ACP attributed patients' community needs by establishing partnerships with NYC public agencies. Assist ACP by identifying services and point of contact person for the development of a comprehensive ACP community resource guide. |
| Refer eligible patients to ACP care managers and care coordinators. | Refer eligible patients to ACP care managers and care coordinators. | Use EHR to complete five As (ask, assess, advise, assist, and arrange) and use appropriate HEDIS coding metrics. Continue to serve ACP attributed patients in their language and with the cultural sensitivity that characterizes the ACP network. Refer eligible patients to ACP care managers and care coordinators. | Integrate cultural competency and health literacy strategy to insure efficient communication and proper development of materials (for patient education and workforce training). Facilitate PCMH level 3 certification process through the work of ACP's PCMH level 3 content expert and vendors. Provide Care Management and Care Coordination to eligible ACP attributed patients, and facilitate referrals to NY Quits. |
| Hire patient PNs to work in ACP network hospitals. | Hire patient PNs to work in ACP network hospitals. | Train medical practice staff on project, referral process, and HEDIS coding metrics. | Hire and train project manager. |
| Place ACP Community Health Workers (CHWs) in ACP hospitals' EDs. | Place ACP Community Health Workers (CHWs) in ACP hospitals' EDs. | Educate medical practice staff to make use of ACP resources for PCMH level 3 certification, Care Coordination and Care Management. | Hire and train ACP CHWs, Care Managers, Care Coordinators, PCMH level 3 content expert, and other PCMH support staff. |
| Train PNs and CHWs on eligibility guidelines, referral process, and technology tools used for patient engagement. Role of ACP CHWs spread throughout projects. | Train PNs and CHWs on eligibility guidelines, referral process, and technology tools used for patient engagement. Role of ACP CHWs spread throughout projects. | Increased use of medical assistants in private practices Limited resources. Train physicians and appropriate staff to use EHR to complete five As, HEDIS coding metrics, and implement tobacco use intervention program, including warm hand-offs. | Limited number and availability of ACP Care Managers, Care Coordinators, PCMH level 3 content expert, other PCMH support staff, and provider engagement specialists. Role of ACP CHWs spread throughout projects. Hire project manager, PCMH level 3 content experts, other PCMH support staff, Care Coordinators, Care Managers, and CHWs. |
| Potential resistance of hospitals to hire PNs. Hiring of PNs. | Potential resistance of hospitals to hire PNs. Hiring of PNs. | Increased use of medical assistants in private practices Limited resources. Train physicians and appropriate staff to use EHR to complete five As, HEDIS coding metrics, and implement tobacco use intervention program, including warm hand-offs. | Project manager to complete online <i>Master Certificate in Applied Project Management-Healthcare</i> through Villanova University. Certify PCMH level 3 content manager expert. |
| Train CHWs and PNs on project, patient eligibility guidelines, referral process, and technology tools used for patient engagement. | Train CHWs and PNs on project, patient eligibility guidelines, referral process, and technology tools used for patient engagement. | Increased use of medical assistants in private practices Limited resources. Train physicians and appropriate staff to use EHR to complete five As, HEDIS coding metrics, and implement tobacco use intervention program, including warm hand-offs. | Project manager and other appropriate staff to be trained on tobacco use intervention programs. Train Care Coordinators, Care Managers, CHWs, and others on project protocols ACP community resource guide, and Coleman transition of care models. |
| | | | Project managers received NCOA HEDIS training. |

ACP Project Requirement Analysis: 4.b.ii Increase Access to High Quality Chronic Disease Preventive Care and Management in Both Clinical and Community Settings

Project Manager: Katherine Morillo

Overall objective: To increase the numbers of New Yorkers who receive evidence based preventive care and management for chronic diseases (this project targets chronic diseases that are not included in Domain 3, such as cancer).

| | Hospitals | Medical Practices | CBOs | ACP PPS |
|--|--|---|--|--|
| Objectives | Reduce avoidable ED visits and hospitalizations of ACP attributed patients. | PCPs to achieve 2014 Level 3 PCMH primary care certification and/or meet state-determined criteria for Advanced Primary Care Models. | Support ACP attributed patients by connecting them to community preventive resources and prevent visits to ED. | Increase the number of ACP attributed patients who receive evidence-based preventive care and management for chronic disease in both clinical and community settings. |
| Strategies | Identify ACP attributed patients who are hospitalized or visit the ED through EHR information exchange platforms (RHIOs) and/or patient navigators (PNs). Implement system transformation projects' protocols to insure that ACP attributed patients who are hospitalized or visit the ED visit their PCP, and that Health Home at-risk patients, PPA and PPRs are identified, properly referred, and monitored. Incorporate prevention agenda goals and objectives into hospital community service plans, and coordinate implementation with local NYC DOHMH and other community partners. Collaborate with ACP to incorporate prevention agenda. | Equip medical practice staff to properly implement project. Implement ACP's Chronic Disease project and provide total PCMH level 3 care to patients with an emphasis on team-based care. Screen patients for chronic diseases, such as cancer, following evidence-based guidelines, send reminders for preventative care and follow-ups, and provide language appropriate, culturally sensitive educational material. Collaborate with ACP to promote chronic disease prevention through community-centered, lifestyle modification educational seminars. Continue to serve ACP attributed patients in their language and with the cultural sensitivity that characterizes the ACP network. Offer recommended clinical preventive services, connect patients to community-based preventive service resources and ACP care managers/care coordinators. | Work with ACP to address needs, including social services, of eligible ACP attributed patients. Establish referral process with ACP to meet the needs of eligible ACP attributed patients. Address ACP attributed patients' community needs by establishing partnerships with NYC public agencies. Collaborate with ACP to host/facilitate Stanford Model workshop sites, and community-centered, lifestyle modification educational seminars. Assist ACP by identifying services and point of contact person for the development of a comprehensive ACP community resource guide. | Develop chronic disease prevention evidence-based protocol. Develop a comprehensive ACP community resource guide with linkages to community preventive resources. Integrate cultural competency and health literacy strategy to insure efficient communication and proper development of materials (for patient education and workforce training). Facilitate PCMH level 3 certification process through the work of ACP's PCMH level 3 content expert and vendors. Establish or enhance reimbursement and incentive models to increase delivery of high-quality chronic disease prevention and management services in collaboration with health plans and other stakeholders. Provide feedback to clinicians around clinical benchmarks and incentivize quality improvement efforts. Provide Care Management and Care Coordination to eligible ACP attributed patients. Hire and train project manager. Hire and train ACP CHWs, Care Managers, Care Coordinators, PCMH level 3 content expert, and other PCMH support staff. |
| Workforce Implications | Hire patient PNs to work in ACP network hospitals. Place ACP Community Health Workers (CHWs) in ACP hospitals' EDs. Train PNs and CHWs on eligibility guidelines, referral process, and electronic patient tracker. Role of ACP CHWs spread throughout projects. | Train medical practice staff on project, screening guidelines, referral process, and HEDIS coding metrics. Educate medical practice staff to make use of ACP resources for PCMH level 3 certification, Care Coordination and Care Management. Increased use of medical assistants in private practices. Limited resources. Train physicians and appropriate staff to implement Chronic Disease Prevention Project. | Educate staff of involved CBOs and public agencies on ACP PPS and chronic disease screenings. Hire and train ACP CHWs, Care Managers, Care Coordinators, PCMH level 3 content expert, and other PCMH support staff. | Role of ACP CHWs spread throughout projects. Hire project manager, PCMH level 3 content experts, other PCMH support staff, Care Coordinators, Care Managers, and CHWs. Project manager to complete online <i>Master Certificate in Applied Project Management-Healthcare</i> through Villanova University. Certify PCMH level 3 content manager expert. Project manager and other appropriate staff to receive population health training. Train Care Coordinators, Care Managers, CHWs, and others on project protocols ACP community resource guide, Stanford Model, and Coleman transition of care models. Project managers received NCCA HEDIS training. |
| Workforce Environment/ Constraints | Potential resistance of hospitals to hire PNs. Hiring of PNs. Train CHWs and PNs on project, patient eligibility guidelines, referral process, and technology tools used for patient engagement. | Increased use of medical assistants in private practices. Limited resources. Train physicians and appropriate staff to implement Chronic Disease Prevention Project. | Educate staff of involved CBOs and public agencies on ACP PPS and chronic disease screenings. Hire and train ACP CHWs, Care Managers, Care Coordinators, PCMH level 3 content expert, and other PCMH support staff. | Limited number and availability of ACP Care Managers, Care Coordinators, PCMH level 3 content expert, and other PCMH support staff. Role of ACP CHWs spread throughout projects. |
| Target State: Occupational specifics (redemption, training, and hiring) | Potential resistance of hospitals to hire PNs. Hiring of PNs. Train CHWs and PNs on project, patient eligibility guidelines, referral process, and technology tools used for patient engagement. | Increased use of medical assistants in private practices. Limited resources. Train physicians and appropriate staff to implement Chronic Disease Prevention Project. | Educate staff of involved CBOs and public agencies on ACP PPS and chronic disease screenings. Hire and train ACP CHWs, Care Managers, Care Coordinators, PCMH level 3 content expert, and other PCMH support staff. | Limited number and availability of ACP Care Managers, Care Coordinators, PCMH level 3 content expert, and other PCMH support staff. Role of ACP CHWs spread throughout projects. |



Target Workforce State Report for Advocate Community Providers PPS

Prepared by:

Terry West

April Semilla

Tim Dall

June 10, 2016

IHS Inc.

1150 Connecticut Ave, NW | Suite 401 | Washington, D.C. 20036

TABLE OF CONTENTS

| | |
|---|-------------|
| Executive Summary | xvii |
| I. Background and Purpose | 1 |
| II. Overview of Target Workforce State Modeling Approach | 3 |
| Health Care Demand Microsimulation Model | 4 |
| Common Modeling Inputs and Assumptions across DSRIP Projects | 7 |
| III. Impact of Changing Demographics and Expanded Medical Insurance Coverage on Provider Demand Independent of DSRIP | 10 |
| IV. Anticipated PPS Workforce Impacts by DSRIP Project | 13 |
| Project 2.a.iii: Health Home at Risk Intervention Program | 13 |
| Project 2.b.iii: Emergency Department Care Triage for At-Risk Populations..... | 16 |
| Project 2.b.iv: Care Transitions to Reduce 30 Day Readmissions | 18 |
| Project 3.a.i: Integration of Primary Care and Behavioral Health Services..... | 21 |
| Project 3.b.i: Evidence-based Strategies to Improve Management of Cardiovascular Disease | 23 |
| Project 3.c.i: Evidence-based Strategies to Improve Management of Diabetes..... | 26 |
| Project 3.d.ii: Expansion of Asthma Home-based Self-management Program..... | 28 |
| V. Summary Workforce Impact Tables | 31 |
| DSRIP Related Support Hires | 31 |
| DSRIP Future State Workforce Staffing Impact Analysis..... | 34 |
| VI. Conclusions and Implications of Target Workforce State Analysis Findings | 36 |
| VII. Technical Appendix | 37 |

TABLE OF EXHIBITS

| | |
|--|----|
| Exhibit 1 Health Care Demand Microsimulation Logic Model | 5 |
| Exhibit 2: ACP PPS’s Estimated Market Share..... | 7 |
| Exhibit 3: Model Inputs: PPS Provider Staffing Patterns and Productivity | 8 |
| Exhibit 4: Projected Impact of Changing Demographics on Physician Demand, 2015 to 2020..... | 11 |
| Exhibit 5: Projected ACP Network Growth in Demand for Select Health Workers Between 2015 to 2020 Based on Changing Demographics and Expanded Insurance Coverage | 12 |
| Exhibit 6: Health Home at Risk Intervention Program: Projected Impact | 15 |
| Exhibit 7: DSRIP ED Triage: FTE Workforce Implications of Achieving 25% Reduction in PPV | 17 |
| Exhibit 8: Care Transitions to Reduce 30 Day Readmissions: Projected Impact..... | 20 |
| Exhibit 9: Integration of Behavioral Health into Primary Care: Projected Impact..... | 22 |
| Exhibit 10: CVD Management: Projected Impact | 25 |
| Exhibit 11: Diabetes Management: Projected Impact | 28 |
| Exhibit 12: Asthma Management: Projected Impact..... | 30 |
| Exhibit 13: Summary of PPS DSRIP-Related Support New Hire Positions..... | 32 |
| Exhibit 14: Total DSRIP Related PPS Workforce Impacts | 33 |
| Exhibit 15: Total Workforce Impact of DSRIP (2020) | 34 |

EXECUTIVE SUMMARY

Goals of the DSRIP Target Workforce State Analysis

The overall state-wide goal of the Delivery System Reform Incentive Payment (“DSRIP”) program is to reduce avoidable hospitalizations and ED visits by the Medicaid population in New York State (“NYS”) by 25% through the transformation and redesign of the existing health care system.

To reach these goals, Advocate Community Providers (ACP) PPS requires information on the current adequacy of health workforce supply in its service area, including how the demand for health care services and health professions is projected to evolve in relation to current supply and the development needs of DSRIP projects. Identifying the gap between current supply and projected future target state workforce needs will inform implementing a transition road map to guide workforce realignment and training to close the gap.

ACP PPS was founded in 2014 and officially incorporated in 2015 to participate in the DSRIP program. Unlike other PPSs, ACP is a physician-led network consisting predominantly of neighborhood medical practices and, as such, it faces unique challenges and opportunities. Supporting and monitoring the labor force transformation required for proper implementation of DSRIP mandates is the core purpose of ACP. In order to deliver this colossal task, ACP PPS’s leadership structured the organization and its workforce to be the facilitators of this for its network.

ACP engaged the Center for Workforce Studies (CHWS) in Albany as its workforce vendor, in collaboration with IHS, Inc. (“IHS”) to define the target workforce state through analysis of workforce impacts resulting from factors independent of DSRIP (demographic shifts and effects of health insurance coverage under ACA) and implementation of DSRIP projects. ACP’s target workforce state was created in collaboration with ACP Department of Workforce, Community, and Government Relations and included input from partnering entities through the Workforce Advisory Committee.

ACP plans to implement ten projects under DSRIP, focusing on the provision of high quality, integrated primary, specialty, and behavioral health care services in outpatient and community settings with acute care hospitals used primarily for emergent and acute care service delivery. Based on findings from the PPS-sponsored community needs assessment (CNA) the PPS selected four system transformation projects (Domain 2), four clinical improvement projects (Domain 3), and two population-wide prevention projects (Domain 4).

The primary research questions that guided modeling the workforce impact of each DSRIP project include:

1. How many patients will be affected by this intervention?
2. What are the current health care utilization patterns of affected patients, and how will this initiative change care utilization patterns?
3. What mix of providers will be used to implement the intervention and meet future patient demand for services?
4. Will the project as designed materially impact the region's healthcare delivery workforce?

Key Target Workforce State Analysis Findings

Through 2020, the demand for health workers within the ACP PPS network will change as individual DSRIP components are implemented and select trends external to DSRIP evolve. As a result, it is worth noting that although this analysis has been conducted using the most topical data and sophisticated modeling tools, the materiality of these potential impacts given the multitude of factors impacting future healthcare workforce remains uncertain.

Exhibit ES 1 below summarizes estimated target workforce state staffing impacts by 2020 of DSRIP-related projects and demographic and healthcare coverage changes independent of DSRIP across select ACP care settings and key job categories. In some cases non-DSRIP impacts offset or moderate the effects of DSRIP while in other cases they magnify DSRIP workforce impacts. Notable projected impacts across the ACP PPS include:

- By 2020, the combined impacts of a growing and aging population, expanded medical insurance coverage under ACA, and DSRIP implementation will increase demand for health care providers modeled by approximately 2,071 FTEs
 - Independent of DSRIP workforce demand is projected to grow by approximately 873 FTEs
 - The projected impact of DSRIP implementation alone is estimated to increase demand for health providers modeled by approximately 1,198 FTEs
- The largest workforce impacts of both DSRIP and changes independent of DSRIP are projected to take place among registered nurses in hospital inpatient settings, and non-nursing care coordinators and primary care providers and support staff in outpatient and community-based settings. Estimated changes in demand among other health professions are less significant.
 - Net demand for registered nurses is estimated to fall by approximately 614 FTEs, as anticipated DSRIP related declines of approximately 830 FTEs, primarily in hospital inpatient settings, are offset by growth in demand for registered nurses due to non-DSRIP related environmental factors (216 FTEs)
 - DSRIP related demand for non-nursing care coordinators is projected to rise by about 112 FTEs
 - An estimated additional 652 FTE administrative support staff and 575 FTE medical assistants may also be required in primary care and other outpatient settings to support

primary care providers, psychiatrists and other medical and behavioral health specialties meet both DSRIP related needs and those associated with population growth and aging and expanded medical insurance coverage under ACA.

- Projected Impacts by 2020 associated with implementation of DSRIP programs vary greatly.

Target Workforce State Analysis Conclusions

The purpose of this report is to describe the anticipated system transformation and to quantify the estimated DSRIP and non-DSRIP related impacts on future ACP workforce needs. ACP is implementing projects under DSRIP based to a large extent on population healthcare needs identified by the PPS-sponsored community needs assessment.

The demand for health care services and providers within the ACP network will change over time independent of any DSRIP impact. Independent of DSRIP, demand for physicians and other health professions in ACP's service area will grow. As a result, these projections suggest that any DSRIP-related changes in demand need to be taken into account in the context of broader trends affecting the demand for health care services and providers within ACP's service area. In some cases, non-DSRIP impacts will likely offset or moderate the effects of DSRIP while in other cases they may magnify DSRIP workforce impacts.

Under DSRIP, large increases are anticipated in numbers of care coordinators, and primary care providers and support staff which reflects the enhanced demand for these professions within a transformed delivery system. There will likely also be opportunities to redeploy and train hospital nursing and other staff currently in inpatient and ED settings where service demand is projected to decline to assume roles in outpatient and community-based settings where demand is projected to grow.

Although the estimated workforce impacts of several DSRIP projects do not appear significant, they help explain how DSRIP goals, including reductions in inappropriate care use, might be achieved through counseling, improved access to primary and behavioral health services, and better care management for patients with chronic conditions.

In conclusion, based on the best available modeling inputs and assumptions, results suggest that implementing DSRIP as designed will likely impact the ACP network and healthcare delivery workforce, especially when combined with the projected impacts of demographic shifts and expanded health insurance coverage. This information will be used to inform development of a workforce transition plan and gap analysis intended to guide attainment of the ACP future state.

ES-1: ACP PPS Summary of Projected DSRIP Staffing Impacts (DY1 to DY5)

| Setting and Job Category | Current Shortfall | Future State Analysis | | |
|---|-------------------|--------------------------------|----------------------------|----------------------------------|
| | | Non-DSRIP change in FTE demand | DSRIP change in FTE demand | Total change in FTE requirements |
| <i>Primary care and community-based clinics</i> | | | | |
| Primary care providers | | 53 | 275 | 328 |
| Cardiologists | | 8.5 | 9 | 17.5 |
| Endocrinologists | | 2.5 | 20 | 22.5 |
| Psychiatrists/psych nurses | | 6 | 11.5 | 17.5 |
| Psychologists | | 192 | 0 | 192 |
| Clinical social workers | | 0 | 113 | 113 |
| Registered nurses | | 30.5 | 179.5 | 210 |
| Medical assistants | | 93 | 482 | 575 |
| Administrative support staff | | 215 | 437 | 652 |
| <i>Emergency department</i> | | | | |
| Emergency physicians | | 1.5 | -28 | -26.5 |
| Nurse practitioners & physician assistants | | 3 | -9 | -6 |
| Registered nurses | | 15.5 | -102.5 | -87 |
| <i>Hospital inpatient</i> | | | | |
| Hospitalists | | 4 | -82 | -78 |
| Registered nurses | | 170 | -992.5 | -822.5 |
| Licensed practical nurses | | 22.5 | -57 | -34.5 |
| Nurse aides/assistants | | 39 | -249.5 | -210.5 |
| <i>Pharmacists</i> | | 17 | 0 | 17 |
| <i>Care managers/coordinators/navigators/coaches</i> | | | | |
| Nurse coordinator leaders | | 0 | 123 | 123 |
| RN care coordinators | | 0 | 85.5 | 85.5 |
| Care coordinators (non-RN) | | 0 | 627.5 | 627.5 |
| Diabetes educators | | 0 | 111.5 | 111.5 |
| Asthma educators | | 0 | 84.5 | 84.5 |
| CVD educators | | 0 | 159.5 | 159.5 |
| Total FTEs | | 873 | 1,198 | 2,071 |
| <i>Registered nurse total</i> | | 216 | -830 | -614 |

I. BACKGROUND AND PURPOSE

Advocate Community Providers (ACP) Performing Provider System (PPS) is a network of physicians, specialists and community-based organizations working in concert to deliver high quality, patient centered care to the patients it serves. With this in mind, ACP PPS has chosen to take part in the Delivery System Reform Incentive Payment (DSRIP) Program. DSRIP's overarching goal is to encourage health care system redesign and promote collaboration across providers and community-level partners to improve patient health and reduce avoidable inpatient admissions and emergency department (ED) visits. The New York State DSRIP target is to achieve a 25% reduction in avoidable hospital use among the Medicaid population by 2020.

ACP PPS was founded in 2014 and officially incorporated in 2015 to participate in the DSRIP program. Unlike other PPSs, ACP is a physician-led network consisting predominantly of neighborhood medical practices and, as such, it faces unique challenges and opportunities. Supporting and monitoring the labor force transformation required for proper implementation of DSRIP mandates is the core purpose of ACP. In order to deliver this colossal task, ACP PPS's leadership structured the organization and its workforce to be the facilitators of this for its network.

The purpose of this report is to describe the anticipated transformation of the existing health care system as ACP implements its chosen DSRIP projects and to quantify the anticipated implications on the PPS's workforce needs. The target workforce state analysis described here is part of the DSRIP Workforce Strategy Milestones. This analysis identifies new positions and staffing needs, and informs the PPS's overall workforce strategy throughout the five-year program.

ACP PPS engaged the Center for Health Workforce Studies (CHWS), in collaboration with IHS, Inc. (IHS), to define the target workforce state through the analysis of workforce impacts as a result of system transformation and implementation of clinically integrated DSRIP projects. ACP's target workforce state was created in collaboration with ACP Department of Workforce, Community, and Government Relations and included input from partnering entities through the Workforce Advisory Committee. The target workforce state for ACP, as defined within this report, has been developed to align with DSRIP program goals. It takes into consideration the current state of the workforce as well as the demand for health care services and providers in the PPS's New York citywide service area as a result of general population growth and aging over the next five years. The target workforce state will be used in a detailed gap analysis between the PPS's identified current and target workforce state to inform development and implementation of the workforce transition roadmap. The approach used to define the PPS's target workforce state as well as summary findings, observations, and considerations are detailed within the body of this report and a technical appendix.

The results of the target workforce are estimates that are based on a combination of inputs, including the estimates around potential staffing and anticipated project impacts, PPS patient population demographics and health care service utilization, as well as data points from the literature and published outcomes from similar demonstrations. Several DSRIP projects, however, are innovative and there is limited information on

their possible effects. In such instances, assumptions around potential impacts were made in collaboration with ACP, based on the best available information currently available. As such, the estimates in this report are based on assumptions that will most likely change over time, as they are dependent on successful project implementation and funding and budget considerations. Additionally, although the use of workforce models has been prevalent in estimating workforce planning, models have several limitations, one of which is that their results are based on data that doesn't reflect the real-time environment of the scenario they are projecting. When the complexity of the market in the four boroughs of New York is taken into consideration as well, it must be understood that the findings of this report are simply estimates and are subject to change.

II. OVERVIEW OF TARGET WORKFORCE STATE MODELING APPROACH

Modeling the future workforce required under system transformation and taking into account other external trends was accomplished using a combination of existing workforce modeling tools, original data analysis, findings from the published literature, information on the population served and current health care use patterns within New York State and ACP service area, and expert opinion from the Center, the Department of Workforce, Community, and Government Relations, and ACP project managers. The analysis required modeling the likely impact of each DSRIP project individually and jointly (as many DSRIP projects overlap in terms of participating patients and health utilization goals). The modeling tools and analyses were adapted to reflect the characteristics of the DSRIP target population and the nature of each DSRIP project.

Four key dimensions for modeling the future workforce needs required under the target state include:

1. **Health care services providers and support staff.** The right mix of health care providers and support staff is needed to ensure that patients have access to services and the efficient delivery of such services. Hence, modeling efforts require understanding the types of services that patients will require and the staffing patterns for care delivery. The occupation categories modeled are defined by the Department of Labor's Standard Occupational Classification (SOC) system.
2. **Care delivery settings.** The level of services used and staffing by care delivery setting helps inform where providers and support staff are needed to meet patient service needs and help control health care costs. Key settings include hospital inpatient, emergency, and outpatient/clinic care; ambulatory care at provider offices; and home-based care.
3. **Geography.** The geographic location of providers should be consistent with patient needs to ensure access to care. For the ACP PPS, the relevant geographic area covers the population living in Manhattan and Queens in New York City (with multiple PPS networks serving the citywide Medicaid population).
4. **Evolving needs.** Workforce needs will evolve over time (2015 through 2020) as a result of general population growth and aging. Identifying how these needs will evolve helps to inform the appropriate timing for transitioning from the PPS's current state to the target workforce state.

While the PPS's performance metrics are measured on services provided to the Medicaid population, the PPS partner network (e.g., hospitals, clinics, and participating physicians) serves a broader patient population that encompasses Medicaid, Medicare, commercially insured, and uninsured/self-pay patients. Likewise, some DSRIP initiatives will impact both Medicaid and non-Medicaid patients as systematic changes in care delivery are implemented. Therefore, modeling future workforce needs requires understanding how both DSRIP and non-DSRIP trends will affect the entire patient population.

The target workforce state modeling effort was conducted in collaboration with the PPS's Workforce Governing Body, Project Leads, and Project Managers and included the review of supporting PPS literature, the PPS's DSRIP Project and Organizational Applications, and quarterly implementation reports submitted to the NYS Department of Health. Through the synthesis and application of all collected data inputs, the target workforce state was modeled to project DSRIP impacts on the current workforce and identify future state workforce needs to reflect proposed PPS system transformation initiatives under DSRIP. Preliminary results were shared with PPS stakeholders and refined based upon informed feedback.

The complexity of this modeling effort required the use of data from multiple sources and the use of modeling tools. Data used in the analysis comes from local, state and national surveys (e.g., Behavioral Risk Factor Surveillance System [BRFSS]), medical claims databases (e.g., New York's Statewide Planning and Research Cooperative System [SPARCS]), published literature, and IHS's Health Care Demand Microsimulation Model (HDMM). An overview of the HDMM and key data sources is provided below, with additional detail on modeling individual DSRIP projects discussed in a technical appendix.

Health Care Demand Microsimulation Model

The workforce model described within this subsection is unique in its approach, breadth and complexity. Health workforce projection models have been used for decades to assist with workforce planning and to assess whether the workforce was sufficient to meet current and projected future demand (or need) at the local, regional, state, and national levels. The model described applies a microsimulation approach where individual patients are the unit of analysis. This model is used by the Federal Bureau of Health Workforce to model physicians, advanced practice nurses, physician assistants, nurses, behavioral health providers, and other health occupations at the national and state level.¹ The model has been used by states to assess the adequacy of provider supply at the state, regional, and county level.²

The model has also been used by professional associations and other organizations to analyze trends and policies with workforce implications.³ In addition, the model has been used at the local level to help hospitals and health systems with market assessment and workforce planning.

The HDMM models demand for health care services and providers. Demand is defined as the health care services (and providers) that are likely to be used based on population characteristics, care use, and delivery patterns. The logic model describing the HDMM and a summary description of its major components are

¹ See various reports published at <http://bhpr.hrsa.gov/healthworkforce/supplydemand/index.html>

² See, *Florida Statewide and Regional Physician Workforce A: Estimating Current and Forecasting Future Supply and Demand*. Prepared for the Safety Net Hospital Alliance of Florida. 2015. <http://safetynetsflorida.org/wp-content/uploads/Jan-28-IHS-Report-PDF.pdf>

³ Examples include:

The Complexities of Physician Supply and Demand: Projections from 2013 to 2025. Prepared for the Association of American Medical Colleges. Washington, DC: Association of American Medical Colleges; 2015. <https://www.aamc.org/download/426242/data/ihsreportdownload.pdf>

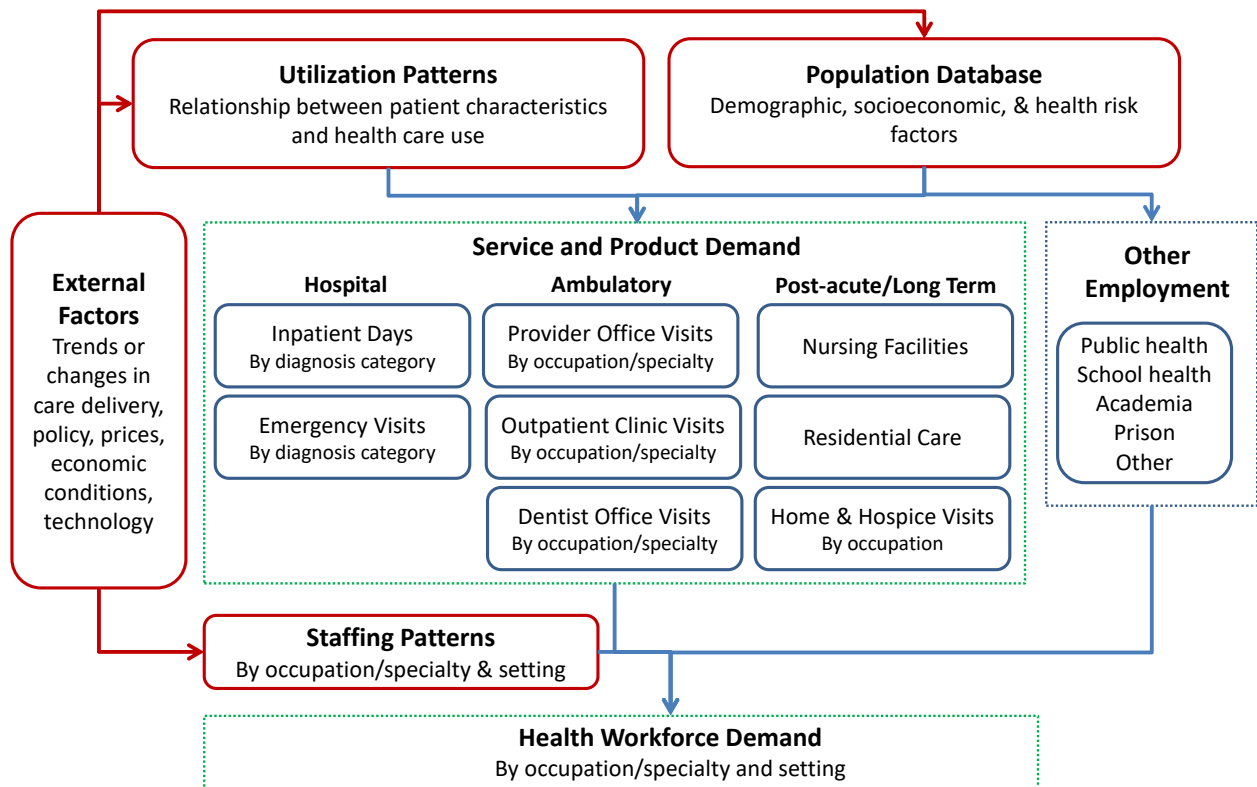
Dall TM, Gallo PD, Chakrabarti R, West T, Semilla AP, Storm, MV. An Aging Population and Growing Disease Burden Will Require a Large and Specialized Health Care Workforce by 2025. *Health Affairs*. 2013; 32:2013-2020.

Dall TM, Chakrabarti R, Storm MV, Elwell EC, and Rayburn WF. Estimated Demand for Women's Health Services by 2020. *Journal of Women's Health*. 2013; 22(7): 643-8.

Dall TM, Storm MV, and Chakrabarti R. Supply and demand analysis of the current and future US neurology workforce. *Neurology*. 2013; 81(5): 470-478.

depicted below. The HDMM is comprised of three major components: (1) a population database with demographic, socioeconomic and information regarding health risks and disease prevalence for each person in a representative sample of the population being modeled (e.g., the population in Manhattan and Queens); (2) health care utilization patterns that reflect the relationship between patient characteristics and health care use; and (3) staffing patterns that convert estimates of health care service demand to estimates of provider demand.

Exhibit 1 Health Care Demand Microsimulation Logic Model



- 1. Preparing the Population Database.** The database prepared for the HDMM contains a representative sample of the population in each borough. The population profile in this representative sample is comprehensive of all insurance types (Medicare, Medicaid, commercial, and uninsured); population demographics (age, sex, race, and ethnicity); household income level; health risk factors including body weight status (normal, overweight, and obese); current smoker status; and presence or history of chronic disease (hypertension, coronary heart disease, diabetes, arthritis, asthma, history of heart attack, history of stroke, and history of cancer). For modeling purposes, estimates for the Medicaid population were scaled to the Medicaid beneficiaries attributed to the PPS. Estimates for the Medicare, commercially insured, and uninsured populations were scaled using estimates of the PPS's market share for each payer type.

Information to create this database comes from both New York-specific sources such as SPARCS, EpiQuery: NYC Interactive Health Data, New York City's Department of Health, and national sources such as the Center for Disease Control and Prevention's Behavioral Risk Factor Surveillance System⁴ and the Census Bureau's American Community Survey (ACS)⁵. Summary prevalence statistics of health risk factors for the created population file were compared to published sources to ensure the sample is representative of the population across Manhattan and Queens. Population projections (by county) through 2020 are from the Cornell Program on Applied Demographics in Ithaca, NY.⁶

- 2. Developing health care utilization forecasting equations.** Patterns of health care services utilization behavior reflect patterns for people with similar demographics, insurance status and health risk factors in the pooled 2009-2013 files (n~169,000) of the Agency for Health Care Research and Quality's Medical Expenditure Panel Survey (MEPS). MEPS is nationally representative of the U.S. non-institutionalized population. Several hundred prediction equations are built into the simulation model. Each prediction equation was estimated using regression⁷ analysis, with separate prediction equations for each combination of care delivery setting, medical specialty, and children versus adults. The dependent variables in the regressions reflect annual use of health care services, while the explanatory variables consist of the demographic characteristics, health risk factors, medical conditions, and socioeconomic factors described previously. Applying these prediction equations to the population in Manhattan and Queens produces estimates of the current and projected future demand for health care services by care delivery setting, given the characteristics and health risk factors among the community modeled.

Aggregating these estimates across individuals provides an estimate of the level of health care services that would be used by a national peer group of the population in each borough. Estimates of health care utilization from this national peer group were compared to actual health care use statistics to calibrate the model (reflecting that health care use patterns of people in the four boroughs can differ from national patterns, controlling for demographics, disease prevalence, and other health risk factors). Also, the population in each borough might receive some care outside the borough, and some care provided in the PPS service area is for patients who reside outside of the borough.

- 3. Modeling Full Time Equivalent (FTE) Staffing to Meet Demand for Health Care Services.** The number and mix of health care professionals required to provide the level of health care services demanded is influenced by how the care system is organized, how care is reimbursed, provider scope of practice requirements, economic constraints, and technology as well as other factors. The HDMM applies staffing patterns measured in terms of provider-to-workload measures (e.g., FTE family physicians per 1,000 office visits, or FTE emergency physicians per 1,000 ED visits). The model was further adapted to New York State by calibrating (scaling) demand projections by physician specialty to equal

⁴ <http://www.cdc.gov/brfss/>

⁵ <https://www.census.gov/programs-surveys/acs/>

⁶ <https://pad.human.cornell.edu/counties/projections.cfm>

⁷ Poisson regression was used to model annual numbers of physician office and outpatient visits with a particular provider type, inpatient days per hospitalization and annual home health/hospice visits. Logistic regression was used to model annual probability of hospitalization and emergency department use for approximately 24 diagnosis categories defined by primary diagnosis code (e.g., hospitalization for a cardiovascular condition).

the state average level of care in 2014. Hence, the baseline demand projections reflect the level and mix of services in each county if that county's population had care use and delivery patterns consistent with the average across New York for a similar patient mix. Staffing levels associated with individual DSRIP projects, described later, came from the published literature and PPS documents.

Common Modeling Inputs and Assumptions across DSRIP Projects

While each DSRIP project has its unique modeling assumptions and data inputs, common modeling assumptions and inputs apply across some projects. These include parameters for identifying the PPS's market share of service utilization and provider staffing patterns and productivity.

Parts of the future state analysis were modeled at the borough/county level due to availability of data on the population and prevalence of disease and other health risk factors. We calculated ACP's citywide market share by payer type (Medicaid, Medicare, and other) using inpatient discharge data from New York State's Statewide Planning and Research Cooperative System (SPARCS).⁸ Exhibit 2 summarizes the PPS's market share of inpatient discharges by payer across boroughs. At present, this is the best available data on hand to calculate ACP's market share, but may significantly underestimate the PPS's share by payer. Additionally, it does not inform the PPS's market share by the outpatient setting. Therefore, once better data is available, it is recommended that this input be revised.

Exhibit 2: ACP PPS's Estimated Market Share

| Payer | Manhattan | Queens |
|--------------|------------------|---------------|
| Medicaid | 4% | 29% |
| Medicare | 9% | 32% |
| Other | 10% | 20% |

Exhibit 3 summarizes information about anticipated staffing patterns and provider productivity used for modeling these impacts across DSRIP projects. The PPS was the primary data source used to model the workforce implications of various DSRIP projects. When PPS-specific data was unavailable, other data sources were used including the National Ambulatory Medical Care Survey (NAMCS, national data), the National Hospital Ambulatory Medical Care Survey (NHAMCS, national data), and the Medical Group Management Association (MGMA).

⁸ Using inpatient discharges to estimate ACP's market share has several caveats: 1) as a physician driven organization, the majority of the PPS's attributed lives seek care from physician and community based organizations throughout all four boroughs 2) the inpatient market share depicted in Exhibit 2 represents discharges from the hospitals that are part of ACP's PPS in Manhattan and Queens and does not take into account the discharges from its partner hospitals in other boroughs e.g. Montefiore in the Bronx 3) inpatient market share is not representative of outpatient market share

Exhibit 3: Model Inputs: PPS Provider Staffing Patterns and Productivity

| Modelling Input | Parameter | Source |
|---|-------------------------|---------------|
| Proportion of primary care office visits seen by | | |
| Primary care doctor | 97.1% | 1 |
| Nurse practitioner | 3.1% | 1 |
| Physician assistant | 4.6% | 1 |
| Proportion of emergency visits seen by | | |
| Emergency physician | 92.4% | 2 |
| Nurse practitioner | 3.5% | 2 |
| Physician assistant | 4.6% | 2 |
| Annual patient visits per FTE provider (productivity) | | |
| Primary care doctor | 3,741 (2,993*) | 3 |
| Office-based nurse practitioner | 3,185 (2,548*) | 3 |
| Office-based physician assistant | 3,670 (2,936*) | 3 |
| Emergency physician | 1,973 | 3 |
| ED-based nurse practitioner | 2,572 | 3 |
| ED-based physician assistant | 1,910 | 3 |
| Hospitalist (assume 1 patient encounter/day) | 2,008 | 3 |
| Annual ratio of total patient visits/days per FTE provider (note: not all patients will necessarily see this provider during their visit/stay) | | |
| Office-based visits per FTE registered nurse | 4,469 | 4 |
| ED visits per FTE registered nurse | 612 | 4 |
| Inpatient days per FTE registered nurse | 168 | 4 |
| Inpatient days per FTE licensed practical nurse | 2,939 | 4 |
| Inpatient days per FTE nurse aide | 667 | 4 |
| Support staff | | |
| Direct medical support | 1.75 x PCP | 5 |
| Direct admin support | 1.25 x PCP + 0.75 x BHP | 5 |

Notes: FTE=full time equivalent, PCP=primary care provider, BHP=behavioral health provider. Sources: ¹ 2012 National Ambulatory Medical Care Survey; ² 2011 National Hospital Ambulatory Medical Care Survey; ³ 2014 Medical Group Management Association median visits/FTE provider (with * indicating the number was scaled by 80% to reflect differences in average panel size between MGMA providers and PPS desired panel size). ⁴ National health care use (visits, days) ÷ FTE providers in that setting, 2013. ⁵ Cherokee Health Systems.

http://c.ymcdn.com/sites/www.tnpca.org/resource/resmgr/Leadership_Conference_2014/IntegrationofBehavioralHealth.pdf

Based on analysis of the NAMCS, patients who visit a primary care provider are seen by a physician in 97.1% of visits, by a nurse practitioner (NP) in 3.1% of visits, and by a physician assistant (PA) in 4.6% of visits. Note that the sum of these percentages exceeds 100%, reflecting that some patients will be seen by multiple providers during the visit. Analysis of the NHAMCS provides estimates of the providers seen by a patient during each emergency department (ED) visit.

The MGMA reports that median patient encounters per year by one family medicine physician providing ambulatory services in the Eastern Region of the U.S. was 3,741. This number suggests that every 3,741 office

visits equates to approximately one physician FTE.⁹ Note that a general pediatrician in the Eastern Region has a similar number of annual patient encounters of 3,725 per year. Likewise, MGMA data suggest that the median number of patient encounters per emergency physician in the Eastern Region is 1,973 patient encounters per year. Estimates for NPs and PAs in primary care settings are based on MGMA estimates in the Eastern Region, while NP and PA productivity in emergency care settings are based on national medians as the sample size was too small to obtain estimates for the Eastern Region.

Feedback from other PPS in the New York City area indicated that the MGMA data might overstate the number of patient encounters in the PPS for primary care providers. First, patients cared for by PPS providers might be higher acuity than the typical patient panel of providers covered by the MGMA survey. Second, and related, the recommended panel size for the typical MGMA primary care physician is 1,900-2,000, whereas for PPS providers under a patient-centered medical home model the recommended panel size is 1,500-1,800. To help address this issue, for modeling purposes we scaled the MGMA productivity numbers for primary care providers by 80%.

For some occupations, we used national ratios to estimate staffing levels. For example, dividing total national office visits by estimates of FTE registered nurses (RN) practicing in an office setting suggests that one FTE nurse is required for every 4,469 visits (reflecting that not every patient visit will involve a nurse). Similar national ratios were estimated for staffing levels of nurses in hospital settings.

⁹ Provider compensation: 2014 report based on 2013 data. Data extracted from MGMA DataDive.

III. IMPACT OF CHANGING DEMOGRAPHICS AND EXPANDED MEDICAL INSURANCE COVERAGE ON PROVIDER DEMAND INDEPENDENT OF DSRIP

The demand for health care services and providers within the PPS network will change over time independent of the anticipated DSRIP impact. A growing and aging population will impact health care utilization and care delivery over time and will influence how the PPS and its partners provide care to patients within the network.

Using the HDMM, we simulated the projected change in demand for physician specialties and other health occupations in each NYC county/borough based on projected population characteristics independent of DSRIP across all patients regardless of insurance status. These projections were then scaled to the PPS based on its estimated market share of each borough's discharges by payer.

Much of the growth is driven by the growing and aging Medicare population which is not captured as part of the DSRIP program (primarily Medicaid and Uninsured). Exhibit 4 summarizes the projected impact between 2015 and 2020 of changing city-wide demographics on physician demand by specialty.¹⁰ The projections illustrate that across the four relevant boroughs total physician demand is projected to grow by approximately 1,106 FTEs between 2015 and 2020 independent of the effects of DSRIP. The PPS's share of total physician demand growth is projected to be approximately TBD FTEs and the PPSs demand for primary care specialties independent of DSRIP is projected to grow by approximately TBD FTEs based on current market share assumptions (in Manhattan, there may be 7 additional PCP FTEs, and in Queens, a 33 total PCP FTEs is expected). These projections suggest that any DSRIP-related changes in physician demand need to be understood in the context of broader trends affecting the demand for health care services and providers.

¹⁰ Inpatient market share was used as a proxy for total market share, as the PPS's outpatient and emergency department market share of borough-wide utilization were unavailable. Additionally, the impact has only been calculated for Manhattan and Queens due to lack of inpatient discharge data from Bronx and Kings counties

Exhibit 4: Projected Impact of Changing Demographics on Physician Demand, 2015 to 2020

| | | ACP PPS FTE Growth | | | | | |
|------------------------|--|--------------------------------------|-------|-----------|--------|-------|-------|
| | Specialty | 4-Borough FTE Growth ^a | Bronx | Manhattan | Queens | Kings | Total |
| Primary Care | Total primary care | 334 | | 6.5 | 32.5 | | |
| | Family medicine | 93 | | 1 | 9 | | |
| | Internal medicine | 193.5 | | 2.5 | 19.5 | | |
| | Pediatrics | 42.5 | | 3 | 3.5 | | |
| | Geriatrics | 5 | | 0 | 0.5 | | |
| | Hospitalists (primary care trained) | 30 | | 0.5 | 3 | | |
| Medical Specialties | Allergy and immunology | 11.5 | | -1.5 | 1 | | |
| | Cardiology | 69.5 | | 1 | 7 | | |
| | Critical care/pulmonology | 16.5 | | 0 | 2 | | |
| | Dermatology | 21.5 | | 0.5 | 2 | | |
| | Endocrinology | 18.5 | | 0.5 | 2 | | |
| | Gastroenterology | 32 | | 0.5 | 3 | | |
| | Infectious disease | 7 | | 0 | 1 | | |
| | Hematology and oncology | 30 | | 0.5 | 3 | | |
| | Nephrology | 27.5 | | 0.5 | 3 | | |
| | Pediatric subspecialty | 7 | | 0.5 | 0.5 | | |
| Surgery | Rheumatology | 11 | | 0 | 1 | | |
| | General surgery | 30.5 | | 0.5 | 3 | | |
| | Colorectal surgery | 1 | | 0 | 0 | | |
| | Neurological surgery | 8 | | 0 | 0.5 | | |
| | Ophthalmology | 40.5 | | 0.5 | 4 | | |
| | Orthopedic surgery | 35 | | 0.5 | 3 | | |
| | Otolaryngology | 18.5 | | 0.5 | 1.5 | | |
| | Plastic surgery | 11 | | 0 | 1 | | |
| | Thoracic surgery | 8 | | 0 | 1 | | |
| | Urology | 20.5 | | 0.5 | 2 | | |
| Other | Vascular surgery | 5 | | 0 | 0.5 | | |
| | Obstetrics and gynecology | 35.5 | | 0.5 | 5 | | |
| | Anesthesiology | 41.5 | | 0.5 | 4.5 | | |
| | Emergency medicine | 12 | | 0 | 2 | | |
| | Neurology | 25.5 | | 0.5 | 2.5 | | |
| | Other medical specialties | 36 | | 0.5 | 3.5 | | |
| | Pathology | 4.5 | | 0 | 0.5 | | |
| | Physical med and rehab. | 21 | | 0.5 | 2 | | |
| | Psychiatry | 52 | | -1 | 6.5 | | |
| | Radiology | 83.5 | | 1.5 | 7.5 | | |
| | Total | 1105.5 | | 15 | 111.5 | | |

Note: ^a Full time equivalent growth for Bronx, Brooklyn, Manhattan, and Queens.

Exhibit 5 summarizes projected growth in city-wide FTE demand between 2015 and 2020 for select health professions, as well as the growth in demand for providers in the PPS network. Similar to the approach for developing PPS-specific physician FTE demand projections, these also were scaled to the PPS based on its estimated city-wide inpatient market share.¹¹ Detailed information by care setting is provided in the appendix.

Independent of the effects of DSRIP, demand for registered nurses is projected to be strong, growing by about 2,213 FTEs across the boroughs between 2015 and 2020. Strong growth in demand is also likely among nurse and home health aides and various therapist and technologist titles. Applying current estimates of the PPS market share to applicable settings, registered nurse demand will grow by approximately 233 FTEs. Smaller impacts on future PPS demand across care settings are likely to be seen for a range of health occupations (e.g., technicians, technologists, therapy aides and assistants).

**Exhibit 5: Projected ACP Network Growth in Demand for Select Health Workers Between 2015 to 2020
Based on Changing Demographics and Expanded Insurance Coverage**

| Health Profession | 4-Borough FTE Growth ^a | ACP PPS Network | | | | Total |
|-----------------------------------|---|-----------------|-----------|------------|-------------|-------|
| | | Inpatient | Emergency | Ambulatory | Home Health | |
| Registered nurse | 2,213 | 170 | 15.5 | 30.5 | 16.5 | 232.5 |
| Licensed practical nurse | 538.5 | 22.5 | - | 9.5 | 4 | 36 |
| Nurse aide | 1,134 | 39 | - | 9.5 | 3.5 | 52 |
| Home health aide | 380.5 | - | - | - | 46.5 | 46.5 |
| Pharmacist | 121.5 | - | 5 | 12 | - | 17 |
| Pharmacy technician | 150 | - | 4.5 | 16 | - | 20.5 |
| Pharmacy aide | 18.5 | - | - | 2.5 | - | 2.5 |
| Psychologist | 192 | - | - | 30 | - | 30 |
| Chiropractor | 31 | - | - | 5 | - | 5 |
| Podiatrist | 13 | - | - | 1.5 | - | 1.5 |
| Dietitian | 46 | 2.5 | - | 1 | - | 3.5 |
| Optician | 17.5 | - | - | 2.5 | - | 2.5 |
| Optometrist | 11.5 | - | - | 1.5 | - | 1.5 |
| Occupational therapist | 450.5 | 39 | - | 10.5 | 1 | 50.5 |
| Occupational therapist aide | 76 | 6.5 | - | 2 | - | 8.5 |
| Occupational therapy assistant | 119 | 6.5 | - | 6 | - | 12.5 |
| Radiation therapist | 15.5 | 1.5 | - | 0.5 | - | 2 |
| Radiological technologist | 69 | - | 2.5 | 7.5 | - | 10 |
| Respiratory therapist | 45 | 4 | 0.5 | 1.5 | - | 6 |
| Respiratory therapy technician | 5.5 | 0.5 | - | - | - | 0.5 |
| Medical clinical technician | 27.5 | - | 0.5 | 3 | - | 3.5 |
| Medical clinical lab technologist | 129 | 12.5 | - | 3 | - | 15.5 |
| Medical sonographer | 123.5 | 13 | - | 2 | - | 15 |
| Nuclear medicine technologist | 238.5 | 4.0 | 29.5 | 0.5 | - | 34.0 |

¹¹ Inpatient market share was used as a proxy for total market share, as the PPS's outpatient and emergency department market share of borough-wide utilization were unavailable. Additionally, the impact has been calculated on the basis of the information from Manhattan and Queens due to lack of inpatient discharge data from Bronx and Kings counties

IV. ANTICIPATED PPS WORKFORCE IMPACTS BY DSRIP PROJECT

ACP PPS is implementing ten projects under DSRIP. These projects support the DSRIP goals summarized above by focusing on the provision of high quality, integrated primary, specialty and behavioral health care in outpatient and community settings with acute care hospitals used primarily for emergent and acute care service delivery. Based on findings from the PPS-sponsored community needs assessment (CNA) the PPS selected four system transformation projects (Domain 2), four clinical improvement projects (Domain 3), and two population-wide prevention projects (Domain 4).

One transformation project is to create a more integrated delivery system. A review of the literature on this topic suggests that better integration can allow some services currently performed by specialists to instead be performed by generalists; some services currently performed by physicians to instead be performed by non-physicians, and reduced duplication of tests.¹² For purposes of this future state analysis we assume that better integration of the delivery system does not have an independent effect on health workforce needs. However, integrating the delivery system is necessary for other DSRIP projects to be successful in identifying patients for intervention and coordinating and managing care for these patients.

Our analysis does not explicitly model the two population-wide prevention projects because no enrollment targets have been established for these programs.

This section of the report describes modeling of the remaining system transformation and clinical improvement projects and presents results. A technical appendix contains additional information on the data and assumptions. The primary research questions that guide modeling the workforce impact of each DSRIP project include:

1. How many patients will be affected by this intervention?
2. What are the current health care utilization patterns of affected patients, and how will this initiative change care utilization patterns?
3. What mix of providers will be used to implement the intervention and meet patient demand for services?

Summarized results include projected target state impacts on use of health care services by patients participating in each intervention, and level of care specific changes in how future care delivery will be staffed to meet patient care needs.

Project 2.a.iii: Health Home at Risk Intervention Program

This project will target all patients in the PPS' service area who do not qualify for a health home at the moment, but due to their condition/health status/comorbidity are considered "at-risk" of qualifying. Patients satisfying one or more of the "at-risk" criteria will be flagged for evaluation by a care manager. At risk criteria include a focus on populations that have chronic disease diagnoses (e.g., CHF, COPD, end-stage renal disease, diabetes, substance use disorder, and asthma).

¹² Weiner, JP, Blumenthal, D, Yeh, S. The Impact of Health Information Technology and e-Health on the Future Demand for Physician Services. Health Affairs. November 2013. 32:11 http://www.michigan.gov/documents/mdch/The_Impact_of_Health_Information_Technology_and_e-Health_on_the_Future_Demand_for_Physician_Services_441001_7.pdf

Preliminary estimates suggest that the targeted population for this program will grow from approximately 46,145 in 2018 to 153,818 by 2020 assuming current phase-in assumptions remain unchanged (Exhibit 6). The following assumptions and inputs were used to model the workforce implications of this project:

- Participants in the project are at **moderate risk** for Health Home eligibility. We assume that individuals at low risk do not require the intensity of care that this project will provide, and those at high risk would already be enrolled in a Health Home
- For the following assumptions, results from the New York Chronic Illness Demonstration project were used as inputs, in particular, for the group with a risk score of 0.3 – 0.5 (representing a moderate risk population), and the results reported from year 3 of the demonstration (as there appears to be a higher degree of uncertainty associated with the year 1 and year 2 results). Results from the demonstration suggest, in comparison to non-participants, that participants experience
 - A decline of 3.7% in inpatient days
 - A 4.2% decline in ED visits
 - A 1.8% increase in primary care visits
 - A 2% increase in specialty outpatient visits
- The analysis uses the following assumptions about care coordinator and nurse coordinator caseloads
 - Each care coordinator will have an active case load of 65 patients; patients' active enrollment is 3 months during the year, so each care coordinator is responsible for approximately 250 patients per year¹³
 - One nurse coordinator (assume an RN) oversees 5 care coordinators (assume non-RNs, including licensed practical nurses, social workers, and community health workers)¹⁴

The projected PPS workforce impact associated with achieving the DSRIP goals of this initiative under current modeling assumptions and data inputs is detailed in Exhibit 6. Changes in utilization following project implementation may include

- Approximately 46,100 fewer inpatient days
- Primary care visits may increase by 30,800, and there may be 15,400 additional specialist visits
- Similarly, ED visits decrease by 15,400

The distribution of staffing impacts by care settings and job titles most likely to be affected by 2020 include:

- 615 additional care coordinators FTEs and approximately 123 nurse coordinator leader FTEs to support the level of care management called for under this initiative
- **In outpatient/office settings:** Results indicate an increase in FTEs associated with RNs, direct medical support and primary care providers, ranging from about 9 to 37
- **In the ED setting:** Analysis suggests that FTEs will decline for RNs (-25 FTEs). Emergency physicians also are likely to experience small staffing declines (-7 FTEs)

¹³ IHS informed assumption from experience with similar analysis in the four-borough area

¹⁴ IHS informed assumption from experience with similar analysis in the four-borough area

- **In the inpatient setting:** Results indicate impacts on staffed FTEs, ranging from reductions of about 15 licensed practical nurse FTEs to an approximately 275 decrease in RN FTEs

Exhibit 6: Health Home at Risk Intervention Program: Projected Impact

| | 2017 | 2018 | 2019 | 2020 |
|--|-----------|-----------|-----------|-----------|
| Number of actively engaged patients | 46,145 | 84,599 | 153,818 | 153,818 |
| Health care use absent DSRIP | | | | |
| Hospital inpatient days | 1,261,000 | 1,261,000 | 1,261,000 | 1,261,000 |
| Primary care visits | 1,677,000 | 1,677,000 | 1,677,000 | 1,677,000 |
| Specialist visits | 784,000 | 784,000 | 784,000 | 784,000 |
| Emergency visits | 369,000 | 369,000 | 369,000 | 369,000 |
| DSRIP impact | | | | |
| Hospital inpatient days | -13,800 | -25,400 | -46,100 | -46,100 |
| Primary care visits | 9,200 | 16,900 | 30,800 | 30,800 |
| Specialist visits | 4,600 | 8,500 | 15,400 | 15,400 |
| Emergency visits | -4,600 | -8,500 | -15,400 | -15,400 |
| Workforce FTE implications | | | | |
| Coordinators/educators | | | | |
| Care coordinators | 185 | 338 | 615 | 615 |
| Nurse coordinator leaders | 37 | 67.5 | 123 | 123 |
| Office/outpatient | | | | |
| Primary care providers | 6.5 | 11.5 | 21 | 21 |
| Direct medical support | 11 | 20.5 | 37 | 37 |
| Direct admin support | 8 | 14.5 | 26.5 | 26.5 |
| Registered nurses | 3 | 5.5 | 10.5 | 10.5 |
| Specialist providers | 2.5 | 5 | 9 | 9 |
| Emergency department | | | | |
| Emergency physicians | -2 | -4 | -7 | -7 |
| NPs and PAs | 0 | -0.5 | -0.5 | -1 |
| Registered nurses | -7.5 | -14 | -25 | -25 |
| Inpatient | | | | |
| Hospitalists | -7 | -12.5 | -23 | -23 |
| Registered nurses | -82.5 | -151.5 | -275 | -275 |
| Licensed practical nurses | -4.5 | -8.5 | -15.5 | -15.5 |
| Nurse aides/assistants | -21 | -38 | -69 | -69 |

The analysis suggests that project 2.a.iii's greatest impact on the PPS workforce will be on the FTEs associated with care coordinators/educators to increase patient touchpoints with primary care. Workforce FTEs in the ED and inpatient settings are anticipated to decline, with a greater impact on the inpatient setting and specifically on RNs, owing to this patient population achieving better control of their health.

Project 2.b.iii: Emergency Department Care Triage for At-Risk Populations

Many patients who visit the emergency department have non-urgent conditions which could have been treated in a less expensive setting. The goals of this initiative are (1) to identify ED patients who would be better served by a primary care provider who can provide continuity of care, (2) to link patients without a primary source of care to a primary care provider (PCP), and (3) to educate patients on appropriate use of ED services. The statewide target is to reduce avoidable ED use among the Medicaid population by 25% within five years. Working towards this goal, ACP's initial focus for project 2.b.iii is reducing preventable ED utilization for all Medicaid at risk patients utilizing care within the Emergency Departments of the four Hospitals in the PPS.

The target patient population modeled is all attributed patients with two or more ED visits within the previous six months (or 4+ in the last rolling 12 months) potentially appropriate for diversion or usually treated and released from the ED. This includes patients with ambulatory sensitive chronic conditions and at-risk patients requiring more intensive ED care management services post discharge. Program components include PPS connectivity to community PCPs, especially PCMHs, but also home health providers and other resources; and intensive ED care management provided to at-risk patients. For patients without a primary care provider presenting with minor illnesses, patient navigators will assist the patient to secure an appointment with a PCP. For patients with a PCP, patient navigators will assist the member in scheduling a timely appointment.

For modeling, we use the following inputs and assumptions:

- Numbers of Medicaid attributed lives that are targeted to take part in this program (from PPS) grows from 18,960 in 2018 to 54,170 in 2020 and beyond
- Average annual number of potentially avoidable ED visits per engaged beneficiary is 4¹⁵
- 50% of diverted ED visits will result in a primary care visit¹⁶
- Care managers/care coordinators for this DSRIP project are modeled under the Health Home at Risk Intervention Program

¹⁵ Source: ED Care Management, CMMI Health Care Innovation Award, program update slides for Dec 2-3, 2015 CMS site visit.

Notes: High utilizers of ambulatory care sensitive conditions in the NYC Health + Hospitals ED care management intervention had 3+ ED visits within 12 months. For patients with at least one ED visit during the period September 2014 to June 2015, 10% of patients had 5 or more ED visits during 10-month period studies.

¹⁶ A synthesis of the literature reports that for nine studies with an ED-based intervention to connect patients to a primary care provider the rate of successful follow-up with a PCP ranged from 39% to 65%, with an average follow-up rate of 53% when weighted by intervention sample size. The populations participating in these interventions, however, varied greatly—e.g., patients admitted for a specific condition such as asthma, urban patients, rural patients, children, elderly, uninsured, and insured. See Table 1 in Katz et al. Comparative Effectiveness of Care Coordination Interventions in the Emergency Department: A Systematic Review. *Annals of Emergency Medicine*. Vol 60(1): July 2012, pp 12-23.

- Probability that during the ED visit patient will see an emergency physician (88.7%), a nurse practitioner (5.8%) or a physician assistant (12.3%) are based on national averages from the National Hospital Ambulatory Medical Care Survey (NHAMCS)
- Annual encounters per emergency physician (1,973) is based on MGMA medians for the Eastern Region while annual encounters per emergency nurse practitioner (2,572) and per emergency physician assistant (1,910) come are national median estimated from MGMA

This modeled analysis reflects the desired statewide achievement of 25% reduction in PPVs among the target population. Other DSRIP projects described later help explain how the 25% reduction might be achieved through counseling, improved access to outpatient services, and better management of patients with chronic conditions. By 2020 the net projected PPS impact associated with achieving the statewide target of reducing avoidable ED visits by 25% among the population modeled is detailed in Exhibit 7:

- Approximately 54,170 fewer ED visits
- An additional 27,100 primary care visits

Examining the FTE effect by setting, changes in utilization suggest the following:

- **In the office/outpatient settings:** an estimated 12 additional primary care provider FTEs, 37 FTEs in direct medical and administrative support FTEs and 6 more RN FTEs may be required
- **In the ED setting:** The PPS network will require approximately 24 fewer emergency physician FTEs, 89 fewer RN FTEs, as well as slight decreases in nurse practitioners and physician assistant FTEs

Exhibit 7: DSRIP ED Triage: FTE Workforce Implications of Achieving 25% Reduction in PPV

| | 2017 | 2018 | 2019 | 2020 |
|--|---------|---------|---------|---------|
| Engaged patients successfully and appropriately redirected to PCMH after triage | 18,960 | 40,630 | 54,170 | 54,170 |
| Expected PPV ED visits for this population absent DSRIP | 75,830 | 162,500 | 216,670 | 216,670 |
| PPV reduction if achieving DSRIP -25% goal | -18,960 | -40,630 | -54,170 | -54,170 |
| Primary care visits impact | 9,500 | 20,300 | 27,100 | 27,100 |
| Office/Outpatient | | | | |
| Primary care providers | 4.5 | 9 | 12 | 12 |
| Direct medical support | 7.5 | 16 | 21.5 | 21.5 |
| Direct admin support | 5.5 | 11.5 | 15 | 15 |
| Staff registered nurses | 2 | 4.5 | 6 | 6 |
| Emergency Department | | | | |
| Emergency physicians | -8.5 | -18.5 | -24.5 | -24.5 |
| Nurse practitioners | -0.5 | -1 | -1 | -1 |
| Physician assistants | -1 | -2.5 | -3.5 | -3.5 |
| Staff registered nurses | -31 | -66.5 | -88.5 | -88.5 |
| ED care transition coordinators | TBD | | | |

Project 2.b.iv: Care Transitions to Reduce 30 Day Readmissions

The objective of this DSRIP project is to reduce Potentially Preventable Readmissions (PPRs) to hospitals by providing a 30-day supported transition period after a hospitalization by patients at high risk of readmission due to lack of effective patient education, engagement in follow-up care and other risk factors.

ACP is targeting all of its attributed patients with a hospital admission to any hospital within Manhattan and Queens with a chronic disease both physical and mental, substance abuse, and those with symptoms consistent with Cardiac or Gastroenterological Disease but who have had negative workups during their hospitalization. ACP will also target those patients' frequent admissions of any cause. The target population will include patients of all ages. There are certain high-risk groups who fall into the higher intensity, shorter term services and higher intensity longer, term service subgroups as they represent medically complex patients that are frequent utilizers of hospital services. These groups include:

- The chronically ill and developmentally disabled;
- Those with mental health problems;
- Those with behavioral health and substance abuse issues;
- Patients with multiple co-morbid conditions.

At-risk patients will be identified using a standardized risk assessment tool, which will look at frequent admissions and re-admissions in the past year, and patients will be provided with more intensive care management.

To model the potential workforce implications of this DSRIP project we address the following questions:

1. What is the underlying rate of readmission for targeted patients in the absence of intervention?
2. By how much is the intervention anticipated to reduce readmissions?
3. By how much will total inpatient days be reduced due to reduced readmissions?
4. By how much will emergency department services be reduced due to readmissions (as some readmissions will be through the ED)?
5. By how much will visits to primary care or specialist providers' change due to the intervention?
6. What is the level and mix of providers to implement this intervention?

All PPS affiliated hospitals will address the medical conditions targeted for this project; however, each will phase-in interventions based on the prevalence of their respective readmission trends. To support the project the PPS will retrain and redeploy staff as care managers, navigators, and care coordinators. Care managers will assist with arranging follow-up appointments with primary care providers through expanded and enhanced centralized scheduling systems.

We assume that this DRSIP project will be staffed with care coordinators similar to the Medicare Coordinated Care Demonstration (MCCD) programs.¹⁷ The MCCD programs relied heavily on registered nurses (nurse coordinators), with assistance from social workers. At two successful programs the patient-to-coordinator ratios were 50:1 (for very high average severity patients) to 106:1. The median staffing ratio across 15 programs was 70:1. The two most successful MCCD programs report that about 10-15% of the care coordination caseload could be handled by social workers, with the remainder of the work performed by registered nurses.

- The ratio of care coordinators-to-patients is 70:1¹⁸
- The ratio of transitional care managers to patients is 1:70 per month¹⁹
- Patients will receive transition care for 30 days following discharge
- The overall calculated intervention impact is a 30% reduction in readmission rates (by weighting the category totals by estimates of the number of hospital admissions by diagnosis category for Medicaid patients)

Furthermore, we assume that 50% of avoided readmissions would have been through the emergency department (thus having workload implications for the emergency department as well as workers in an inpatient setting). Exhibit 8 details the potential impact of this program, upon complete implementation, by 2020

- Readmissions will decrease by approximately 6,100
- Inpatient days will decline by approximately 31,100 days
- ED visits will reduce by 3,000 visits

¹⁷ Mathematica Policy Research, Inc. THE PROMISE OF CARE COORDINATION: Models that Decrease Hospitalizations and Improve Outcomes for Medicare Beneficiaries with Chronic Illnesses. A Report Commissioned by the National Coalition on Care Coordination (N3C). March 2009. http://www.champ-program.org/static/BROWN%20FULL%20REPORT%203%2013%2009v2_ah2.pdf

¹⁸ IHS informed assumption from experience with similar analysis in the four-borough area

¹⁹ IHS informed assumption from experience with similar analysis in the four-borough area

Exhibit 8: Care Transitions to Reduce 30 Day Readmissions: Projected Impact

| Year | 2017 | 2018 | 2019 | 2020 |
|--|-------------|-------------|-------------|-------------|
| Number of actively engaged patients | 32,795 | 40,994 | 81,988 | 81,988 |
| Projected DSRIP impact | | | | |
| Readmissions | -2,400 | -3,000 | -6,100 | -6,100 |
| Inpatient days | -12,400 | -15,600 | -31,100 | -31,100 |
| Emergency visits | -1,200 | -1,500 | -3,000 | -3,000 |
| Workforce FTE implications | | | | |
| Emergency Department | | | | |
| Emergency physicians | -0.5 | -0.5 | -1.5 | -1.5 |
| Nurse practitioners and physician assistants | 0 | 0 | -0.5 | -0.5 |
| Registered nurses | -2 | -2.5 | -5 | -5 |
| Inpatient | | | | |
| Hospitalists | -6 | -7.5 | -15.5 | -15 |
| Registered nurses | -74 | -92.5 | -185.5 | -185.5 |
| Licensed practical nurses | -4.5 | -5.5 | -10.5 | -10.5 |
| Nurse aides | -18.5 | -23.5 | -47 | -47 |
| Total care coordinators | | | | |
| Nurse coordinators (RNs) | 39 | 48.5 | 97.5 | 98 |
| Care coordinators (social workers) | 5 | 6 | 12.5 | 12.5 |

Examining the FTE effect by setting, changes in utilization suggest the following:

- About 12 additional care coordinator social worker FTEs and 85 nurse coordinator FTEs will be required to satisfy the care management aspects of this initiative
- **In the ED setting:** Small decreases in FTEs associated with nurse practitioners, physician assistants, RNs and emergency physicians are expected
- **In the inpatient setting:** FTEs associated with RNs are expected to decrease by approximately 185 FTEs, and nurse aides by 47 FTEs. Smaller changes likely will be seen among hospitalist and licensed practical nurse staffing

Our target will encompass all attributed lives including those with disparities such as foreign-born, low socioeconomic status, and those with chronic illness conditions, which may also contribute to mental health issues. According to the analysis, project 2.b.iv's greatest impact on workforce FTEs will be on the inpatient setting, and particularly on RNs and nurse aides, reflective of decreasing readmissions, which leads to a reduction in inpatient days.

Project 3.a.i: Integration of Primary Care and Behavioral Health Services

To address the needs of individuals with co-morbid physical and behavioral health needs, ACP intends to better integrate behavioral health and primary care services by addressing gaps in available resources and coordination of care. This includes implementing the Improving Mood–Providing Access to Collaborative Treatment (IMPACT) Collaborate Care model in both current PCMH practices and practices that are not PCMH yet with a special focus on those suffering from depressive disorders. Collaborative care is the cornerstone of the IMPACT model. In consultation with a psychiatrist, the primary care provider and the Depression Care Manager develop and implement an appropriate treatment plan. The target population encompasses all attributed lives including those with disparities such as low socioeconomic status, and those with chronic illness conditions, which may also contribute to mental health issues.

The following assumptions and inputs, from sources such as literature and published reports, are used in this analysis:

- Approximately 10% of the Medicaid population has unmet behavioral health needs (i.e., not receiving specialty mental health services), and these unmet needs largely consist of mild-to-moderate depressive/anxiety disorders or substance abuse²⁰
- 80% of the Medicaid population with unmet behavioral health needs visits a primary care provider during the year.²¹
- Absent the DSRIP program, 50% of patients with unmet behavioral health needs would have been successfully diagnosed by a PCP and referred to a behavioral health provider.²² With this DSRIP project, PCPs will receive additional training and we assume 80% of patients with unmet needs will be diagnosed and referred.
- Absent the DSRIP program, 25% of referred patients will complete the referral.²³ Under DSRIP we assume this referral completion rate will double to 50%.²⁴ For comparison, Geisinger reports that after integrating behavioral health across the continuum of care, 85% of patients attended their first office visit with a behavioral health specialist.²⁵

²⁰ IHS assumption: for modeling purposes, an estimate of the percentage of Medicaid population may have unmet behavioral health needs was required. Data from the literature around this metric is scarce, but indicates that a 10% may be conservative, as some estimate that 60% to 70% of patients with behavioral health issues leave medical settings without receiving behavioral health treatment <http://www.commonwealthfund.org/publications/newsletters/quality-matters/2014/august-september/in-focus/#/4>. 10% was chosen in order to avoid overestimating effects of the DSRIP program, but this number may underestimate unmet need

²¹ Nationwide, 86.5% of adult and 93.5% of child Medicaid beneficiaries had contact with a health care professional in the past year. This information is used to guide our the IHS assumption that 80% of the Medicaid population with unmet behavioral health needs will visit a PCP. http://ftp.cdc.gov/pub/Health_Statistics/NCHS/NHIS/SHS/2014_SHS_Table_A-18.pdf

²² Montano CB. Recognition and treatment of depression in a primary care setting. *Journal of Clinical Psychiatry*, Vol 55(12, Suppl), Dec 1994, 18-34.

²³ Becker AL. In some primary care offices: The social worker will see you now, Sep 8, 2015. <http://ctmirror.org/2015/09/08/in-some-primary-care-offices-the-social-worker-will-see-you-now/>

²⁴ IHS assumption of PPS behavioral health referral completion target. New York State added 320,000 beneficiaries to Medicaid in 2014, and an estimated 48,000 (15%) had BH issues (though the portion of these beneficiaries whose BH issues were undiagnosed and unmet is not known).

²⁵ American Hospital Association (2014, February). Integrating behavioral health across the continuum of care. Chicago, IL: Health Research & Educational Trust. <http://www.hpoe.org/Reports-HPOE/Behavioral%20health%20FINAL.pdf>

- Behavioral health services will be provided by a licensed clinical social worker, and each provider will manage approximately 75 active patients for approximately 6 months (or approximately 150 patients annually).²⁶
- Any care coordination services required by this population are modeled under the Health Home at Risk Intervention Program.

Changes in utilization as a result of program implementation may include the following:

- 1,410 fewer BH-related ED visits
- A 2,270 reduction in BH-related inpatient days

Exhibit 9: Integration of Behavioral Health into Primary Care: Projected Impact

| | 2017 | 2018 | 2019 | 2020 |
|---|---------|---------|---------|---------|
| Population modeled (Medicaid + Uninsured) | 769,100 | 769,100 | 769,100 | 769,100 |
| Population with unmet BH needs | 76,910 | 76,910 | 76,910 | 76,910 |
| Population with unmet BH needs visiting PCP | 61,530 | 61,530 | 61,530 | 61,530 |
| Population screening positive for BH needs absent DSRIP | 30,770 | 30,770 | 30,760 | 30,770 |
| Population screening positive for BH needs with DSRIP | 49,230 | 49,220 | 49,230 | 49,220 |
| Screened population completing BH referral absent DSRIP | 7,690 | 7,690 | 7,690 | 7,690 |
| Screened population completing BH referral with DSRIP | 24,610 | 24,610 | 24,610 | 24,610 |
| Change in population receiving BH counseling | 16,920 | 16,920 | 16,920 | 16,920 |
| Health care use impact of DSRIP | | | | |
| Encounters with BH care manager | 4,740 | 28,420 | 47,370 | 47,380 |
| Primary care visits | 580 | 3,450 | 5,750 | 5,750 |
| BH-related ED visits | -140 | -850 | -1,410 | -1,410 |
| BH-related inpatient days | -230 | -1,360 | -2,270 | -2,270 |
| Workforce FTE implications | | | | |
| Office setting | | | | |
| Licensed clinical social worker | 10.5 | 63.5 | 105.8 | 105.7 |
| Psychiatrists/psych nurses | 1.1 | 6.3 | 10.5 | 10.6 |
| Primary care providers | 0.2 | 1.4 | 2.4 | 2.4 |
| Direct medical support | 0.4 | 2.5 | 4.1 | 4.1 |
| Direct admin support | 9 | 54.1 | 90.2 | 90.2 |
| Staff registered nurses | 0.5 | 3.3 | 5.4 | 5.4 |
| Emergency Department | | | | |
| Emergency physicians | -0.1 | -0.4 | -0.6 | -0.6 |
| Nurse practitioners or physician assistants | 0 | -0.1 | -0.1 | -0.1 |

²⁶ Source indicates caseloads of 100 – 150 patients. IHS chose the higher caseload as the project focuses on population without serious mental health issues, and in that case, presumably, providers are able to see more patients. <https://aims.uw.edu/collaborative-care/team-structure/care-manager>

| | DSRIP Workforce Strategy Deliverable | | | |
|---------------------------|--------------------------------------|------|-------|-------|
| Staff registered nurses | -0.2 | -1.4 | -2.3 | -2.3 |
| Inpatient | | | | |
| Hospitalists | -0.1 | -0.7 | -1.1 | -1.1 |
| Staff registered nurses | -1.3 | -8.1 | -13.6 | -13.6 |
| Licensed practical nurses | -0.1 | -0.4 | -0.8 | -0.8 |
| Nurse aides/assistants | -0.3 | -2.1 | -3.4 | -3.4 |

Based on modeling results summarized above, by 2020 the net projected PPS-wide workforce impact associated with this DSRIP initiative will likely include (Exhibit 9):

- **In the outpatient/office setting:** includes approximately 106 FTE increase in licensed clinical social workers, and a 11 increase in psychiatrists/psych nurses FTES
- **In the ED setting:** Minimal anticipated impact on providers in this setting
- **In the inpatient setting:** A 14 FTEs reduction in RNs, with additional small FTE reductions in licensed practical nurses, hospitalists and nurse aides/assistants

The project goals will increase access to behavioral health services and the results indicate a corresponding rise in BH care providers and associated support staff FTEs. While a reduction in workforce FTEs in the ED and inpatient settings is also anticipated, the projected impact in these settings is small, supporting the project goal that most of the care in this project will be received in a primary care setting.

Project 3.b.i: Evidence-based Strategies to Improve Management of Cardiovascular Disease

ACP will pursue a multi-pronged approach to address major cardiovascular disease (CVD) risk factors. This includes improving prescribing and adherence to aspirin prophylaxis among eligible patients, improving blood pressure control by updating and strengthening implementation of HTN guidelines, improving cholesterol control by updating current cholesterol management and treatment guidelines, and increasing smoking cessation by enabling PCPs to distribute nicotine replacement therapy at the point-of-care. The demographics of the patients will include all Medicaid patients over the age of 18. The disease types to be targeted will be Hypertension, Coronary Artery Disease, Hyperlipidemia, and Congestive Heart Failure. Claims data grouped by ICD 9 codes will be used to identify targets.

ACP has developed evidence-based protocols for the project that include:

- Implementation of Million Hearts campaign
- Lifestyle modifications including diet
- Identification of patient needs beyond taking medication
- Screenings to identify tobacco and alcohol use, depression, mental health co-morbidities
- Assessment of ability to perform activities of daily living, living conditions, socioeconomic needs and engagement of partner organizations (i.e., social services)

For modeling, we use the following inputs:

- Using the HDMM we estimate the following
 - In Manhattan, the population that the PPS has defined as needing this intervention accrues: 0.13 cardiology related ED visits per person, 0.23 cardiology related inpatient days per person
 - In Queens: 0.13 cardiology related ED visits per person, 0.25 cardiology related inpatient days per person
 - In Bronx: 0.14 cardiology related ED visits per person, 0.42 cardiology related inpatient days per person
 - In Kings: 0.13 cardiology related ED visits per person, 0.26 cardiology related inpatient days per person
- We estimate that 10% of the total engagement population has a serious CVD condition (not hypertension and not hyperlipidemia). These people will 1 extra PCP visit per year
- We use productivity data from MGMA (Eastern region) which suggests each cardiologist typically handles about 3,363 visits/year.
- Care management will decrease CVD-related emergency visits by 20%²⁷
- Care management will decrease CVD-related inpatient hospital days by 39%²⁸
- Care management will increase visits to PCPs by 1 and cardiologists by 0.5 annually²⁹
- Any care coordination services required by this population are modeled under the Health Home at Risk Intervention Program.

Exhibit 10 below summarizes modeling results and projected impacts. By 2020 the net projected annual utilization impact associated with this DSRIP clinical initiative is the following

- An 8,290 reduction in emergency visits
- Inpatient days decrease by 30,200 days
- 319,170 additional urgent (unscheduled) primary care visits
- 159,590 more visits to cardiologists

²⁷ Katch H et al. The role of self-efficacy in cardiovascular disease self-management: a review of effective programs. *Patient Intelligence* 2010;2 33–44.

²⁸ Katch H et al. The role of self-efficacy in cardiovascular disease self-management: a review of effective programs. *Patient Intelligence* 2010;2 33–44.

²⁹ IHS assumption

Exhibit 10: CVD Management: Projected Impact

| | 2017 | 2018 | 2019 | 2020 |
|--|---------|---------|---------|---------|
| DSRIP initiative participants (with phase-in) | 159,590 | 319,170 | 319,170 | 319,170 |
| Projected DSRIP impact | | | | |
| Emergency visits | -4,150 | -8,290 | -8,290 | -8,290 |
| Inpatient days | -15,110 | -30,200 | -30,200 | -30,200 |
| Visits to primary care providers | 159,590 | 319,170 | 319,170 | 319,170 |
| Visits to cardiologists | 15,960 | 31,920 | 31,920 | 31,920 |
| Workforce FTE implications | | | | |
| <i>Outpatient/Office setting</i> | | | | |
| Primary care providers | 77 | 153 | 153 | 153 |
| Direct medical support | 134 | 268 | 268 | 268 |
| Direct admin support | 96 | 191 | 191 | 191 |
| Staff registered nurses | 54 | 107 | 107 | 107 |
| Specialists (cardiologists) | 5 | 9 | 9 | 9 |
| <i>Emergency Department</i> | | | | |
| Emergency physicians | -2 | -4 | -4 | -4 |
| Nurse practitioners and physician assistants | -1 | -1 | -1 | -1 |
| Staff registered nurses | -7 | -14 | -14 | -14 |
| <i>Inpatient</i> | | | | |
| Hospitalists | -8 | -15 | -15 | -15 |
| Staff registered nurses | -90 | -180 | -180 | -180 |
| Licensed practical nurses | -5 | -11 | -11 | -11 |
| Nurse aides/assistants | -23 | -45 | -45 | -45 |
| <i>CVD health coaches</i> | 80 | 160 | 160 | 160 |

The Projected Impact includes:

- An increase of 160 FTE CVD health coaches
- **In outpatient/office settings:** an increase of 153 additional PCP FTEs, 459 direct medical and administrative support staff FTEs and 107 additional staff RN FTEs
- **In the ED setting:** a slight decrease in emergency department staff led by a 14 FTE reduction in RNs
- **In inpatient settings:** a decrease in demand for hospital inpatient staff, including approximately 180 fewer RN FTEs and 15 fewer emergency physicians

In terms of workforce implications, the analysis suggests that the greatest impact of this project on workforce will be in outpatient settings. When the additional FTE requirements associated with primary care providers, direct medical and administrative support staff and staff RNS are combined, approximately 719 FTEs may be needed. The project also has impact in the inpatient setting, with staff RN FTEs decreasing by approximately 180. There is minimal projected impact in the ED setting.

Project 3.c.i: Evidence-based Strategies to Improve Management of Diabetes

The PPS's goal is to reduce progression of diabetes and sequelae thus lower hospital utilization rates. To achieve this ACP is developing multidisciplinary care teams including PCPs, endocrinologists, cardiologists, nurses, social workers, pharmacists, diabetes educators, and others to fill current gaps in patient care and compliance. Under this program PPS providers will implement evidence-based protocols with guidelines on the diagnosis and management of diabetes and develop educational programs to improve the community's knowledge of diabetic risk factors and diabetes management with focus on lifestyle modification, and self-management per evidence-based clinical guidelines. The demographics of the patients will include all Medicaid patients over age 18. The disease type to be targeted will be diabetes and those with obesity for which data based on ICD 9 codes assigned for these disease types will be used.

The following assumptions and inputs are used in this analysis.

- **Participation in diabetes management will reduce total emergency visits per participant by 14.3%** (regardless of reason for visit). This estimate is based on a study of 27,188 participants in a diabetes management program by CIGNA Healthcare compared to a matched parallel group of 12,104.³⁰ Participants who completed the diabetes management program experienced an even larger (22.8%) reduction in emergency department use. This finding is based on an intervention where patients with diabetes received repeated telephone outreach by trained nurses, dietitians, or health educators; Web-based education; remote monitoring devices; and reminders and educational mailings throughout the year. For comparison, another study reported a 51% reduction in diabetes-related emergency visits based on patient outcomes in the year following participation in a nurse-directed diabetes care program among a minority population (n=331 patients who completed the intervention).³¹ Also for comparison, an evaluation of Geisinger's diabetes care implemented in routine primary care settings found that total inpatient costs were reduced by 29% following care management—with an average reduction of 29-41% in years 2-3 following intervention.³² Hence, the 14.3% reduction is possibly conservative.
- **Diabetes management will reduce total inpatient days per participant by 11.6%.**³⁰ This assumption is based on the CIGNA HealthCare evaluation for all participants in diabetes management; the reduction was 21.7% for patients who fully participated in the care management program. This 11.6% reduction in bed days reflects a 23.8% reduction in admissions but a 16% longer average length of stay.
- **Diabetes management will reduce total office visits by 5.3%.**³⁰ This assumption is based on the CIGNA HealthCare evaluation for all participants in diabetes management. The study does not distinguish between visits to a primary care provider or a specialist.

³⁰ Villagra VG, Ahmed T. Effectiveness Of A Disease Management Program For Patients With Diabetes. *Health Affairs*, July 2004, vol 23(4):255-266.

³¹ Davidson MB, Snsari A, and Karlan VJ. Effect of a Nurse-Directed Diabetes Disease Management Program on Urgent Care/Emergency Room Visits and Hospitalizations in a Minority Population. *Diabetes Care*, 2007, vol 30(2): 224-227. <http://care.diabetesjournals.org/content/30/2/224.long>

³² Maeng et al. Value of Primary Care Diabetes Management: Long-Term Cost Impacts. *American Journal of Managed Care*. See more at: <http://www.ajmc.com/journals/issue/2016/2016-vol22-n3/value-of-primary-care-diabetes-management-long-term-cost-impacts/P-3#sthash.9sB3VT7L.dpuf>

- **We assume that participation in diabetes management will result in one extra primary care visit per year and an extra visit to an endocrinologist every fourth year.** The rationale for this assumption is that diabetes management programs place a focus on receiving preventive care for diabetes and common comorbidities (e.g., hypertension, hypercholesterolemia, heart disease). However, although Maeng et al. (2016) do not specifically report utilization impact they do report that in the first year following care intervention patient outpatient costs rose by 13% and professional service costs rose by 10%. Over the 5-year period analyzed, though, outpatient costs averaged 5% higher and professional services averaged 1% lower than the comparison group without diabetes management.³²
- **This analysis focused on the short-to-midterm impact of diabetes management on health care utilization.** Numerous studies report improvements in patient biometrics including reduced hemoglobin A1c, blood pressure, and cholesterol levels, and improvements in screening and testing for neuropathy, retinopathy, and other potential complications of diabetes.³³ These improvements in biometrics and early screening and treatment likely have benefits that extend beyond the year 2020 analysis period used for DSRIP evaluation.
- **Medicaid beneficiaries with diabetes currently average 2.19 inpatient days, 11 emergency visits, and 95 ambulatory visits (office plus outpatient) annually.** These estimates are based on the HDMM given the characteristics and prevalence of health risk factors (e.g., obesity and smoking prevalence, demographics) of the Medicaid population in Brooklyn. These use rates average 2-2.5 times higher than rates for the commercially insured population with diabetes.
- Any **care coordination services** required by this population are modeled under the Community-Based Health Navigation Service.

By 2020 the projected annual health care use impacts associated with this initiative may include the following estimates:

- Approximately 29,500 fewer emergency visits (relative to no change in care use patterns)
- An estimated 52,900 fewer inpatient days
- Approximately 223,100 additional primary care visits

The workforce impact includes the following:

- An increase of 111 FTE diabetes educators.
- **In primary care settings:** a projected increase of 101 additional PCP FTEs and 304 direct medical and administrative support staff FTEs

³² See, for example, Piatt GA, Anderson RM, Brooks MM, Songer T, Siminerio LM, Korytkowski MM, et al. 3-year follow-up of clinical and behavioral improvements following a multifaceted diabetes care intervention: results of a randomized controlled trial. *Diabetes Educ* 2010;36(2):301–9.

Stroebel RJ, Gloor B, Freytag S, Riegert-Johnson D, Smith SA, Huschka T, et al. Adapting the chronic care model to treat chronic illness at a free medical clinic. *J Health Care Poor Underserved* 2005;16(2):286–96.

Liebman J, Heffernan D, Sarvela P. Establishing diabetes self-management in a community health center serving low-income Latinos. *Diabetes Educ* 2007;33(Suppl 6):132S–8S.

- **In the ED setting:** a decrease across the board in emergency department staff, ranging from an approximately 48 reduction in RN FTEs to a 13 FTE reduction in emergency physicians
- **In inpatient settings:** a decrease in demand for hospital inpatient staff—including approximately 315 fewer RN FTEs and 79 fewer nurse aides/assistants

Exhibit 11: Diabetes Management: Projected Impact

| | 2017 | 2018 | 2019 | 2020 |
|--|---------|---------|---------|---------|
| DSRIP initiative participants (with phase-in) | 111,520 | 223,040 | 223,040 | 223,040 |
| Projected DSRIP impact | | | | |
| Emergency visits | -14,800 | -29,500 | -29,500 | -29,500 |
| Inpatient days | -26,500 | -53,000 | -53,000 | -52,900 |
| Visits to primary care provider | 111,500 | 223,000 | 223,000 | 223,100 |
| Visits to endocrinologist | 27,900 | 55,700 | 55,800 | 55,800 |
| Workforce FTE implications | | | | |
| Office/Outpatient | | | | |
| Primary care providers | 50.5 | 101.5 | 101.5 | 101.5 |
| Direct medical support | 88.5 | 177.5 | 177.5 | 177.5 |
| Direct admin support | 63.5 | 126.5 | 126.5 | 126.5 |
| Staff registered nurses | 31.5 | 62.5 | 62.5 | 62.5 |
| Endocrinologist | 10.5 | 20 | 20 | 20 |
| Emergency Department | | | | |
| Emergency physicians | -6.5 | -13 | -13 | -13 |
| Nurse practitioners and physician assistants | -1 | -2.5 | -2.5 | -2.5 |
| Staff registered nurses | -24 | -48.5 | -48.5 | -48 |
| Inpatient | | | | |
| Hospitalists | -13 | -26.5 | -26.5 | -26.5 |
| Staff registered nurses | -158 | -315 | -315.5 | -315.5 |
| Licensed practical nurses | -9 | -18 | -18 | -18 |
| Nurse aides/assistants | -39.5 | -79.5 | -79.5 | -79.5 |
| Diabetes educators | 55.8 | 111.5 | 111.5 | 111.5 |

In terms of workforce implications, the analysis suggests that the overall impact of this chronic care management focused DSRIP project is extensive due to the large numbers of participants and projected shifts in demand between care settings. Outpatient primary care settings will likely experience large workforce additions, while inpatient settings are projected to incur large decreases in FTE demand associated with nursing staff at all levels.

Project 3.d.ii: Expansion of Asthma Home-based Self-Management Program

Overall goals of this project will be to promote wellbeing and quality of life, prevent triggers of asthma, limit exacerbations and prevent patients from being readmitted. ACP providers will evaluate patients and create

personalized action plans, provide coaching and information to patients to improve medication compliance and ensure safe environment for patients. The patient population for this project will include both children and adult Medicaid patients with a diagnosis of asthma.

The following assumptions and inputs are used in this analysis.

- Asthma management will decrease asthma-related emergency visits by 18%.³⁴
- Asthma management will decrease asthma-related hospitalizations by 34%.³⁵
- Asthma management will decrease urgent primary care visits (i.e., unscheduled visits to a primary care provider) by 5% (approximately 1.8 visits/year)³⁶
- Using SPARCS data we estimate that the average length of stay for Medicaid beneficiaries hospitalized for an asthma-related reason is 2.3 days.
- Any care coordination services required by this population are modeled under the Health Home at Risk Intervention Program.

Exhibit 12 summarizes modeling results and projected target state impacts of this DSRIP clinical improvement project. By 2020 the net projected annual utilization impact associated with this DSRIP clinical initiative is the following

- A reduction of 5,500 emergency visits in the ED
- 3,800 fewer inpatient days
- 30,400 fewer urgent (unscheduled) primary care visits

The Projected Impact includes:

- An estimated increase of 84 FTE asthma educators/coaches
- **In primary care settings:** A 14 FTE and 44 FTE decrease in primary care providers and administrative and medical support staff, respectively, associated with registered nurses in this care setting
- **In the ED setting:** Minimal projected impacts on demand for staff FTEs
- **In the inpatient setting:** A 23 FTE decline in demand for registered nurses as well as modest reductions among other hospital inpatient staff

³⁴ <http://www.ncbi.nlm.nih.gov/pubmed/16740859>

³⁵ <http://www.nga.org/files/live/sites/NGA/files/pdf/031403DISEASEMGMT.pdf>

³⁶ http://pediatrics.aappublications.org/content/117/6/2149?sso=1&sso_redirect_count=1&nfstatus=401&nftoken=00000000-0000-0000-0000-000000000000&nfstatusdescription=ERROR:+No+local+token

Exhibit 12: Asthma Management: Projected Impact

| | 2017 | 2018 | 2019 | 2020 |
|---|-------------|-------------|-------------|-------------|
| Medicaid target population with asthma | 84,600 | 169,200 | 169,200 | 169,200 |
| Projected DSRIP impact | | | | |
| Emergency visits | -2,800 | -5,500 | -5,500 | -5,500 |
| Inpatient days | -1,900 | -3,800 | -3,800 | -3,800 |
| Urgent office visit to primary care provider | -15,200 | -30,400 | -30,400 | -30,400 |
| Workforce FTE implications | | | | |
| Office/Outpatient | | | | |
| Primary care providers | -7.5 | -14.5 | -14.5 | -14.5 |
| Direct medical support | -13 | -25.5 | -25.5 | -25.5 |
| Direct admin support | -9 | -18.5 | -18.5 | -18.5 |
| Staff registered nurses | -3.5 | -7 | -7 | -7 |
| Emergency Department | | | | |
| Emergency physicians | -1.5 | -2.5 | -2.5 | -2.5 |
| Nurse practitioners & physician assistants | 0 | -1 | -1 | -1 |
| Staff registered nurses | -4.5 | -9 | -8.5 | -8.5 |
| Inpatient | | | | |
| Hospitalists | -1 | -1.5 | -1.5 | -1.5 |
| Staff registered nurses | -11 | -23 | -23 | -23 |
| Licensed practical nurses | -0.5 | -1.5 | -1.5 | -1.5 |
| Nurse aides/assistants | -3 | -5.5 | -5.5 | -5.5 |
| Asthma health coaches | 42 | 84.5 | 84.5 | 84.5 |

The results of the analysis suggest that with the exception of asthma head coaches this DSRIP initiative will have minimal effect on the workforce providing direct medical care to this asthma population.

V. SUMMARY WORKFORCE IMPACT TABLES

Through 2020, the demand for health workers will change within the ACP provider network as individual DSRIP components are implemented and based on trends external to DSRIP (such as changing demographics and expanded medical insurance coverage under the Affordable Care Act).

The combined impact of a growing and aging population and expanded medical insurance coverage will increase demand for health providers—with much of this increase driven by the growing needs of the Medicare population. While the DSRIP projects are largely targeted at the Medicaid and uninsured populations, many providers in the PPS network also provides services to the Medicare and commercially insured populations. In addition, DSRIP has the potential to increase demand for some types of providers (e.g., primary care and behavioral health); decrease demand for other types of providers (e.g., hospital-based providers); and increase demand for both licensed and unlicensed care coordinators, social workers, patient navigators, and health educators.

In this section we summarize the projected health workforce impact from DSRIP-related activities, and combine the estimated DSRIP impact with projected impacts of changing demographics and expanded medical coverage under the Affordable Care Act.

ACP PPS DSRIP Support Hires

As the only physician-led PPS in the State of New York, ACP faces unique workforce transformation challenges. Facilitating, supporting, and monitoring the labor force transformation required for proper implementation of DSRIP mandates is the core purpose of ACP. ACP's workforce as whole consists of new hires committed to this colossal task. All positions at ACP were created to provide support related to DSRIP. The Exhibit below documents ACP's workforce projections for DY1-DY5.

The "New Hire Position Title" column indicates titles of staff hired/to be hired by the PPS to provide support throughout the DSRIP program. The "Current Number" column indicates the total number of staff (by headcount) currently hired by the PPS for each corresponding tile.

The "Target Number" column indicates the total number of staff that the PPS plans to hire (by headcount) to provide support by the end of the DSRIP program.

The "Total New Hires" column indicates (by headcount) whether staff that are currently filling and/or are planned to fill the positions will be either new hire or redeployed/retrained staff.

Exhibit 13: Summary of ACP DSRIP-Related Support New Hire Positions

| New Hire Position Title | Current Number | Target Number | Total New Hires |
|---|-----------------------|----------------------|------------------------|
| Chief Executive Officer | 1 | 1 | 1 |
| Executive Assistant | 1 | 1 | 1 |
| Chief Operations Officer | 1 | 1 | 1 |
| VP of Operations | 2 | 2 | 2 |
| Administrative Staff | 4 | 4 | 4 |
| Project Managers | 11 | 11 | 11 |
| Other Project Support Staff | 2 | 2 | 2 |
| Chief Financial Officer | 1 | 1 | 1 |
| Director of Finance | 1 | 1 | 1 |
| Accountants and Analysts | 2 | 6 | 6 |
| Controller | 1 | 1 | 1 |
| Directors, Network & Provider Operations | 1 | 2 | 2 |
| Physician Engagement Specialists | 4 | 12 | 12 |
| PCHM Content Experts | 1 | 2 | 2 |
| Chief Technology Officer | 1 | 1 | 1 |
| Director of Data/Analytics | 1 | 1 | 1 |
| Data Analysts | 4 | 4 | 4 |
| Chief Information Officer | 1 | 1 | 1 |
| Support Staff | 0 | 3 | 3 |
| VP of Workforce | 1 | 1 | 1 |
| Director of Workforce | 1 | 1 | 1 |
| Director of CCHL | 1 | 1 | 1 |
| CCHL Support Staff | 0 | 2 | 2 |
| Manager of Community Health Workers (CHWs) | 1 | 1 | 1 |
| Supervisors of CHWs | 4 | 5 | 5 |
| CHWs | 19 | 50 | 50 |
| Community Engagement Specialists | 0 | 4 | 4 |
| Analyst | 0 | 1 | 1 |
| Director of Multicultural Diversity Programs and Development | 1 | 1 | 1 |
| Assistant | 1 | 1 | 1 |
| Chief Medical Officer | 1 | 1 | 1 |
| Care Managers (RNs) | 2 | 6 | 6 |
| Utilizations Managers (RNs) | 0 | 6 | 6 |
| Care Coordinator | 0 | 7 | 7 |
| VP of Legal Affairs | 1 | 1 | 1 |
| Legal Coordinator | 1 | 1 | 1 |
| Administrative Support | 1 | 1 | 1 |
| VP of Human Resources | 1 | 1 | 1 |
| Administrative Support | 1 | 1 | 1 |
| VP of Communications | 1 | 1 | 1 |
| Director of Integrated Outreach | 1 | 1 | 1 |

| | DSRIP Workforce Strategy Deliverable | | |
|--------------------------------------|--------------------------------------|------------|------------|
| Marketing Coordinator | 1 | 1 | 1 |
| Compliance Officer | 1 | 1 | 1 |
| Support Staff | 0 | 2 | 2 |
| Total DSRIP-Related Positions | 81 | 156 | 156 |

Exhibit 14 summarizes the estimated PPS health workforce impact of DSRIP projects across professions and settings.³⁷ The largest Projected Impacts of DSRIP will likely take place among nursing staff and care managers, licensed educators, and care coordinators/navigators. Demand for staff registered nurses is projected to decline by about 707 FTEs with the impacts primarily affecting those employed in hospital inpatient settings where demand declines by about 993 FTEs offset by increases in RNs in care coordinator and coordinator manager roles and RNs in office/clinic settings.

Large increases are expected in the numbers of non-RN care managers, licensed educators, and clinical social workers providing behavioral health counseling which reflects the important roles of these professions in a transformed healthcare environment. Demand for clinical and administrative support staff is expected to grow by about 482 and 431 FTEs, respectively, by 2020. Projected changes in demand among other health professions are smaller. For example, demand for primary care providers is expected to rise by approximately 275 FTEs and fall among emergency physicians by approximately 28 FTEs and by hospitalists by about 82 FTEs.

Exhibit 14: Total DSRIP Related PPS Workforce Impacts

| Occupation and Setting | 2017 | 2018 | 2019 | 2020 |
|---|-------------|-------------|-------------|-------------|
| Primary care providers | 131 | 261 | 275 | 275 |
| Specialist Physicians | | | | |
| Emergency physicians | -12 | -24 | -29 | -28 |
| Hospitalists | -35 | -64 | -83 | -82 |
| Cardiologists | 0 | 0 | 0 | 0 |
| Endocrinologists | 11 | 20 | 20 | 20 |
| Nurse practitioners and physician assistants | | | | |
| Emergency department | -3 | -7 | -9 | -9 |
| Nursing | | | | |
| Staff registered nurses | -306 | -576 | -708 | -707 |
| RN care coordinators | 71 | 110 | 208 | 209 |
| Hospital inpatient | -417 | -770 | -993 | -993 |
| Emergency | -45 | -89 | -103 | -102 |
| Office/clinic | 86 | 173 | 179 | 179 |
| Licensed practical nurses | | | | |
| Hospital inpatient | -24 | -44 | -57 | -57 |
| Nurse aides/assistants | | | | |
| Hospital inpatient | -105 | -194 | -249 | -249 |
| Clinical Support | | | | |
| Medical Assistants | 228 | 459 | 482 | 482 |

³⁷ It excludes the ED triage goal associated with a decline in avoidable ED visits (to avoid double counting overlapping services).

DSRIP Workforce Strategy Deliverable

| | 173 | 379 | 431 | 431 |
|--|-----|-----|-----|-----|
| Administrative support staff | | | | |
| Behavioral health | | | | |
| Psychiatrists/psychiatric nurses | 1 | 6 | 11 | 11 |
| Psychologists | | | | |
| Licensed clinical social workers | 11 | 64 | 106 | 106 |
| Care managers/coordinators/navigators/coaches | | | | |
| RN coordinator leaders | 37 | 68 | 123 | 123 |
| RN care coordinators | 34 | 43 | 85 | 86 |
| Care coordinators (non-RN) | 190 | 344 | 628 | 628 |
| Asthma health coaches | 42 | 85 | 85 | 85 |
| Diabetes health coaches | 56 | 112 | 112 | 112 |
| CVD health coaches | 80 | 160 | 160 | 160 |

DSRIP Future State Workforce Staffing Impact Analysis

Exhibit 15 depicts the combined effects on workforce demand in 2020 of both DSRIP impacts and the impacts of changing demographics and expanded insurance coverage under the Affordable Care Act. In some cases, non-DSRIP impacts offset or moderate the effects of DSRIP while in other cases they magnify projected DSRIP workforce impacts.

For example, the largest anticipated adverse workforce impact is among registered nurses working in hospital inpatient settings, but these declines will be partially offset for greater demand for nurses in care coordination/management and office settings so the net DSRIP effect is a decline of approximately 707 FTEs. However, growth of approximately 216 FTEs will be required to meet the needs of a growing and aging population (and in particular the Medicare population). As a result, the net effect on demand for RNs in the PPS network is an increase of approximately 491 FTEs.

Relative to 2015, the ACP network will require approximately 328 additional FTE primary care providers. This includes approximately 53 FTEs to meet the additional demand for services due to demographic and insurance trends external to system transformation by all patients (Medicaid, Medicare, commercial, uninsured/self-pay) and 275 FTEs due to the DSRIP impact on the Medicaid population. An additional 652 FTE administrative support staff and 575 FTE medical assistants will also be required.

Exhibit 15: Total Workforce Impact of DSRIP (2020)

| Occupation and Setting | Non-DSRIP impact on demand (FTEs) | DSRIP impact on demand (FTEs) | Total impact on demand (FTEs) |
|---|-----------------------------------|-------------------------------|-------------------------------|
| Primary care providers | 53 | 275 | 328 |
| Specialist physicians | | | |
| Emergency physicians | 1.5 | -28 | -26.5 |
| Hospitalists | 4 | -82 | -78 |
| Cardiologists | 8.5 | 9 | 17.5 |
| Endocrinologists | 2.5 | 20 | 22.5 |
| Nurse practitioners and physician assistants | | | |
| Emergency department | 3 | -9 | -6 |

| Nursing | | | |
|--|------------|-------------|-------------|
| Staff registered nurses | 216 | -707 | -491 |
| RN care coordinators and managers | 0 | 208.5 | 208.5 |
| Hospital inpatient | 170 | -992.5 | -822.5 |
| Emergency | 15.5 | -102.5 | -87 |
| Office/clinic | 30.5 | 179.5 | 210 |
| Licensed practical nurses | 32 | -57 | -25 |
| Hospital inpatient | 22.5 | -57 | -34.5 |
| Office/clinic | 9.5 | | 9.5 |
| Nurse aides/assistants | 48.5 | -249.5 | -201 |
| Hospital inpatient | 39 | -249.5 | -210.5 |
| Office/clinic | 9.5 | | 9.5 |
| Clinical support | | | |
| Medical assistants | 93 | 482 | 575 |
| Administrative support staff | 215 | 437 | 652 |
| Behavioral health | | | |
| Psychiatrist/psychiatric nurse | 6 | 11.5 | 17.5 |
| Psychologists | 192 | 0 | 192 |
| Licensed clinical social workers | 0 | 113 | 113 |
| Pharmacists | 17 | 0 | 17 |
| Care managers/coordinators/navigators/coaches | | | |
| RN coordinator leaders | 0 | 123 | 123 |
| RN care coordinators | 0 | 85.5 | 85.5 |
| Care coordinators (non-RN) | 0 | 627.5 | 627.5 |
| Diabetes educators | 0 | 112 | 111.5 |
| Asthma educators | 0 | 85 | 84.5 |
| CVD educators | 0 | 160 | 159.5 |

VI. CONCLUSIONS AND IMPLICATIONS OF TARGET WORKFORCE STATE ANALYSIS FINDINGS

Modeling the future state of the workforce following the implementation of various DSRIP projects is an immensely complex analysis, involving inputs from ACP PPS, the literature, ACP anticipated targets and the best assumptions currently available. A question arises to what extent a five-year projection horizon is adequate to implement and assess impacts of DSRIP projects. This may not be enough time to capture the effect of most projects given realistic implementation phase-in assumptions, existing and future capacity and budget constraints, and availability of data sufficiently robust to evaluate results.

The results presented in this report are conservative projections based, in part, on outcomes from literature that may not be completely generalizable to ACP's patient population, assumptions that may change, and are contingent on project implantation proceeding as planned. The findings of this report must therefore be examined while taking these influencing factors into account.

Defining the target workforce state in line with these DSRIP program goals requires information on the current health workforce supply in ACP's service area and how the demand for health care services and health professions is projected to evolve in relation to current supply, the development needs of DSRIP projects and external trends influencing healthcare delivery. Defining this target state and its workforce implications is essential to developing a detailed gap analysis between the current state assessment of the workforce and the projected future state under DSRIP and a workforce transition roadmap for achieving the defined target workforce state.

The demand for health care services and providers within ACP's network will change over time, independent of the anticipated DSRIP impact. Under DSRIP, large increases are expected in the numbers of licensed educators and care coordinators/navigators/health coaches which reflects the enhanced roles of these professions. In contrast, demand for RNs is projected to decrease by approximately 491 FTEs, with a decline in RNs in inpatient and emergency settings offset by an increase in demand for RNs in care coordination/manager and office-based settings. These projections suggest that any DSRIP-related changes in demand need to be understood in the context of broader trends affecting the demand for health care services and providers.

In conclusion, based on the best available modeling inputs and assumptions, these modeling results suggest that implementing DSRIP as designed may likely materially impact the ACP network and healthcare delivery workforce, especially when combined with the projected impacts of demographic shifts and expanded health insurance coverage. This information will be used to inform development of a workforce transition plan and gap analysis intended to guide attainment of ACP's future state. ACP will continue facilitating, supporting, and monitoring the labor force transformation of its physician-led network.

VII. TECHNICAL APPENDIX

HEALTHCARE DEMAND MICROSIMULATION MODEL

This appendix provides technical documentation of the Health Care Demand Microsimulation Model (HDMM) developed by IHS Inc. with contributions to the model development from the Center for Health Workforce Studies at SUNY-Albany and the various organizations for which studies have been conducted using this model. This model was used for several parts of the DSRIP analysis—including estimation of the growing demand for health workers by occupation and medical specialty in the PPS service area independent of DSRIP (e.g., in response to population growth and aging across payer types) to help inform a gap analysis and forthcoming workforce transition roadmap. The model also provided information on average length of stay, average patient use of health care services by setting, and measures of provider productivity (e.g., provider-to-service use ratios) when data from the PPS providers was unavailable. This DSRIP analysis relies on a combination of use of the HDMM, information from the PPS regarding the number and characteristics of the Medicaid lives attributed to the PPS and the health care use patterns of this population, published findings in the literature, and data from external sources such as NY SPARCS.

Background information and an overview of the workforce model is provided below. The appendix documents the data, methods, assumptions and inputs for the three main components of the demand model: the population file, the health care use equations, and the provider staffing parameters. The final section describes work to validate the model and model strengths and limitations. Additional documentation of the model is available online.³⁸

This model is the primary source of workforce projections for the federal Bureau of Health Workforce for physicians, nurses, behavioral health providers, allied health providers, and other health occupations.³⁹ The model has also been adapted to make supply projections for many states (including ongoing work with the New York Department of Health in collaboration with the Center for Health Workforce Studies), health plans and hospital systems, and professional associations.⁴⁰

Overview

The HDMM, as its name implies, models demand for health care services and providers. Demand is defined as the level and mix of health care services (and providers) that are likely to be used based on population characteristics and economic considerations, such as price of services and people's ability and willingness to pay for services. The HDMM was designed to also run a limited set of scenarios around "need" for services. Need is defined as the health care services (and providers) required to provide a specified level of care given

³⁸ The most detailed information on the model is available at <https://cdn.ihs.com/www/pdf/IHS-HDMM-DocumentationApr2016.pdf>.

³⁹ <http://bhpr.hrsa.gov/healthworkforce/supplydemand/simulationmodeldocumentation.pdf>

⁴⁰ An example of a recent application of the model is physician workforce projections for the Association of American Medical Colleges. https://www.aamc.org/download/458082/data/2016_complexities_of_supply_and_demand_projections.pdf

the prevalence of disease and other health risk factors. Need is defined in the absence of economic considerations or cultural considerations that might preclude someone from using available services.

The HDMM has three major components: (1) a population database with information for each person in a representative sample of the population being modeled, (2) health care use patterns that reflect the relationship between patient characteristics and health care use, and (3) staffing patterns that convert estimates of health care demand to estimates of provider demand. Demand for services is modeled by employment setting. Demand is also modeled by (a) diagnosis category for hospital inpatient care and emergency department visits, and (b) health care occupation or medical specialty for office and outpatient visits. The services demand projections are workload measures, and demand for each health profession is tied to one or more of these workload measures. For example, current and future demand for primary care providers is tied to demand for primary care visits, demand for dentists is tied to projected demand for dental visits, etc. External factors—such as trends or changes in care delivery—can influence all three major components of HDMM.

Population Input Files

The population files contain person-level data for a representative sample of the population of interest. As adapted for modeling DSRIP, we created a population file for each New York county where for each person we identify their insurance type, demographics, and health risk factors. Creation of the population files starts with merging the following publicly available data:

- **Population files** for each county in New York and population projections through 2020 as obtained from the Cornell Program on Applied Demographics in Ithaca, NY.⁴¹
- **American Community Survey (ACS).**⁴² Each year the Census Bureau collects information on approximately three million individuals grouped into approximately one million households. For each person, information collected includes: demographics, household income, medical insurance status, geographic location (e.g., state and sub-state [for multi-year files]), and type of residency (e.g., community-based residence or nursing home). Each year HDMM is updated with the latest available file, and HDMM was updated with the 2014 ACS (n=3,132,610 observations) in November 2015. We used ACS data for the population in New York State.
- **Behavioral Risk Factor Surveillance System (BRFSS).**⁴³ The Centers for Disease Control and Prevention (CDC) annually collects data on a sample of over 500,000 individuals. This survey is conducted in concert with each state's Department of Health. Similar to the ACS, the BRFSS includes demographics, household income, and medical insurance status for a stratified random sample of households in each state. The BRFSS, however, also collects detailed information on presence of chronic conditions (e.g., diabetes, hypertension) and other health risk factors (e.g., overweight/obese, smoking). One limitation of BRFSS is that as a telephone-based survey it excludes

⁴¹ <https://pad.human.cornell.edu/counties/projections.cfm>

⁴² <https://www.census.gov/programs-surveys/acs/>

⁴³ <http://www.cdc.gov/brfss/>

people in institutionalized settings (e.g., nursing homes) who do not have their own telephone. We combined the two latest BRFSS files (2013 and 2014) to create a joint file with close to one million individuals. HDMM was updated with the BRFSS files in November 2015. We used BRFSS data for the population in New York State.

- **National Nursing Home Survey (NNHS).** The Centers for Disease Control and Prevention collected data on a national sample of 16,505 nursing home residents in 2004 (the latest year for which individual data were collected). In addition to demographics, the NNHS collects information on chronic conditions and health risk factors of this population. Use of data on nursing home **residents** is important because this institutionalized population has much poorer health and different health care use patterns compared to their peers living in the community. The statistical match process that combines NNHS with the institutionalized population in ACS, as well as model calibration using current estimates of the size of the nursing home population helps ensure demographic representativeness of the current nursing home population.
- **EpiQuery: NYC Interactive Health Data.** EpiQuery is a web-based tool that provides access to health data collected by New York's Department of Health and other organizations. One of these sources is the New York City Community Health Survey—a telephone survey conducted annually by the DOHMH, Division of Epidemiology, Bureau of Epidemiology Services. This source provides data on the health and health risk factors of New Yorkers by borough. This information was used to calibrate the disease prevalence and health risk factor prevalence rates used in the HDMM.

The HWSM population database merges information from these sources using a statistical matching process that combines patient health information from the BRFSS and NNHS with the larger ACS file that has a representative population in New York. Using information on residence type, we stratified the ACS population into those residing in nursing facilities to be matched to people in the NNHS, and those not residing in nursing facilities to be matched to people in BRFSS (Exhibit A-1). For the non-institutionalized population, we statistically matched each individual in the ACS with someone in the BRFSS from New York from the same gender, age group (15 groups), race/ethnicity, insured/uninsured status, and household income level (8 levels). Individuals categorized as residing in a nursing home were randomly matched to a person in the NNHS in the same gender, age group, and race-ethnicity strata. Under this approach, some BRFSS or NNHS individuals might be matched multiple times to similar people in the ACS, while some BRFSS or NNHS individuals might not be matched. The metropolitan and non-metropolitan subsamples from this New York database were then combined with population data for each county based on demographics. Statistics for each county were generated for prevalence of chronic disease and behavioral risk factors, and compared to New York data (from EpiQuery) for model calibration.

Exhibit A-1: Population Database Mapping Algorithm

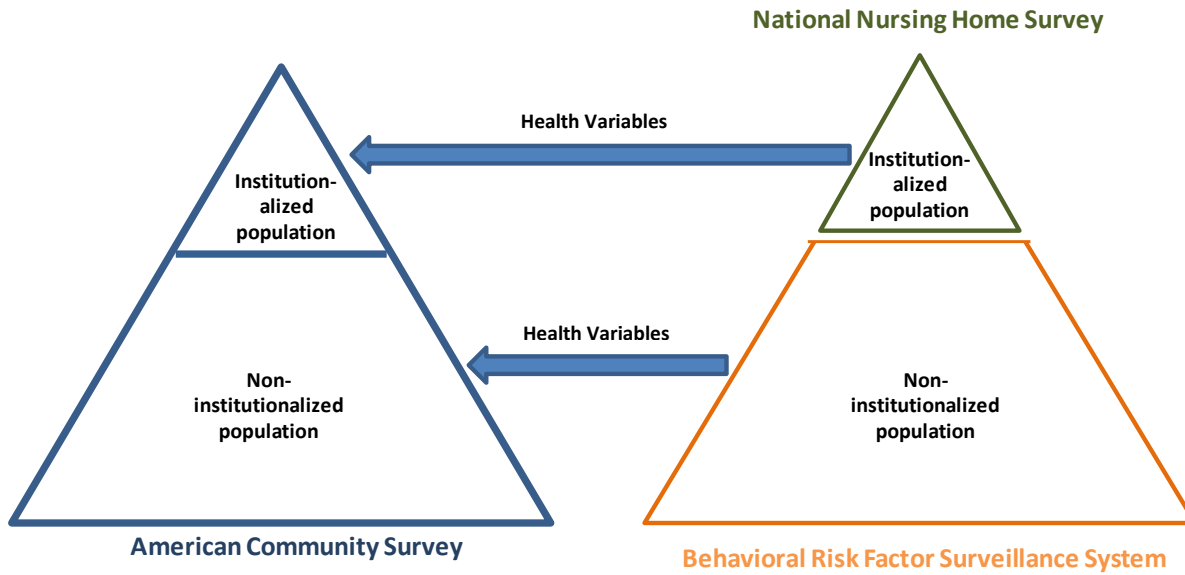


Exhibit A-2 summarizes the population characteristics in the final population database created for each county. This detailed information for each person captures systematic geographic variation in demographics, socioeconomic characteristics, and health risk factors (e.g., obesity, smoking, diabetes and cardiovascular disease prevalence).

Exhibit A-2: Summary of Population Characteristics

| |
|--|
| Race-Ethnicity: Hispanic, Non-Hispanic black, Non-Hispanic white, Non-Hispanic other race |
| Gender |
| Age Group: 0-3, 5-13, 14-17, 18-34, 35-44, 45-64, 65-74, 75+ years |
| Current smoker |
| Diagnosed with or history of: |
| Arthritis |
| Asthma |
| Coronary heart disease |

| |
|--|
| Diabetes |
| History of cancer |
| History of heart attack |
| History of stroke |
| Hypertension |
| Insured (from any source) |
| Medicaid (insured through Medicaid) |
| Managed care (insurance plan type) |
| Family Income: <\$10,000, \$10,000 to <\$15,000, \$15,000 to < \$20,000, \$20,000 to < \$25,000, \$25,000 to < \$35,000, \$35,000 to < \$50,000, \$50,000 to < \$75,000, \$75,000 or higher |
| Body Weight: Normal, Overweight, Obese |
| Metro area |

Health Care Use

Projected future use of health care services, based on population characteristics and patterns of health-seeking behavior, produce workload measures used to project future demand for health care providers. HDMM uses prediction equations for health care use based on recent patterns of care use, but also can model scenarios where health care use patterns change in response to emerging care delivery models or other factors.

Demand Determinants and Prediction Equations

Health seeking behavior is generated from econometrically estimated equations using data from ~170,000 participants in the pooled 2009-2013 files of the Medical Expenditure Panel Survey (MEPS). We pooled multiple years of data to provide a sufficient sample size for regression analysis for smaller health professions and diagnosis categories. Over time, as a new year of data becomes available and is added to the analytic file

the oldest year in the analysis file is dropped. We used the 2013 Nationwide Inpatient Sample (NIS), with ~8 million discharge records, to model the relationship between patient characteristics and length of hospitalization by primary diagnosis category.

Poisson regression was used to model annual office visits, annual outpatient visits, annual home health/hospice visits and inpatient days per hospitalization. These regressions were estimated separately for children versus adults. Separate regressions were estimated by physician specialty or non-physician occupations—e.g. dentists, physical therapists, psychologists—for office-based care. Likewise, separate regressions were estimated for occupations providing home health care. The dependent variable was annual visits (for office, outpatient, and home health) and inpatient days per hospitalization (for hospitalizations). The explanatory variables were the patient characteristics available in both MEPS or NIS for hospital length of stay and the constructed population file.

Exhibit A-3 is provided as an example of the regression specifications, with this example showing how patient characteristics are correlated with use of cardiology-related health care services by care delivery setting. The numbers in this table reflect rate ratios (for office and outpatient visits, or inpatient days) or odds ratios (for ED visits and hospitalizations). For all types of cardiology-related care there is a strong correlation with patient age (controlling for other patient characteristics modeled) and being in Medicaid. Having any medical insurance is associated with much greater use of ambulatory care, and if the insurance is Medicaid then there is even greater use of cardiology services across all care delivery settings. For example, compared to their commercially insured counterparts with similar demographics and health risk factors, patients with Medicaid average 35% more office visits to a cardiologist annually, 42% more cardiology-related outpatient visits, have 64% higher odds of a cardiology-related emergency visit, and have 71% higher odds of a cardiology-related hospitalization. These estimates for the Medicaid population are statistically different from 1.0 (where a ratio of 1.0 would indicate no statistical difference with the comparison category).

Obesity increases use of cardiology-related services. Smoking is associated with fewer office and outpatient visits to a cardiologist but higher rates of ED visits (likely reflecting correlation rather than causality in the case of ambulatory care, as smoking is a risk factor for heart disease but could be correlated with aversion to visit a doctor). Lower income is associated with less use of ambulatory care and more use of ED visits and hospitalization. The presence of chronic medical conditions—and especially heart disease, hypertension, and history of heart attack—are associated with much greater use of cardiology services across care delivery settings. When modeling the Medicaid population in each county the HDMM takes into consideration that the Medicaid population often has much greater prevalence of a host of chronic conditions and risk factors relative to their non-Medicaid peer group.

Exhibit A-3: Sample Regressions: Adult Use of Cardiology Services

| | Parameter | Office Visits | Outpatient Visits | Emergency Visits | Hospitalization |
|-------|--------------------|---------------|-------------------|------------------|-----------------|
| Race- | Hispanic | 0.81** | 0.73** | 1.03 | 0.87** |
| | Non-Hispanic Black | 0.78** | 0.98 | 1.45** | 1.41** |

| | Parameter | Office Visits | Outpatient Visits | Emergency Visits | Hospitalization |
|------------------|-------------------------|---------------|-------------------|------------------|-----------------|
| | Non-Hispanic White | 1.00 | 1.00 | 1.00 | 1.00 |
| | Non-Hispanic Other race | 0.92** | 0.82** | 1.09 | 1.06 |
| | Male | 1.11** | 1.48** | 0.97* | 1.07 |
| Age | 18-34 years | 0.12** | 0.13** | 0.63** | 0.37** |
| | 35-44 years | 0.23** | 0.52** | 0.98 | 0.80** |
| | 45-64 years | 0.52** | 0.74** | 1.10 | 1.14* |
| | 65-74 years | 0.87** | 0.95* | 1.12 | 1.57** |
| | 75+ years | 1.00 | 1.00 | 1.00 | 1.00 |
| | Smoker | 0.74** | 0.75** | 1.11 | 1.06 |
| Diagnosed with | Hypertension | 1.56** | 1.15** | 3.85** | 2.71** |
| | Coronary heart disease | 8.54** | 9.60** | 2.93** | 3.96** |
| | History of heart attack | 1.69** | 1.63** | 2.41** | 2.59** |
| | History of stroke | 1.11** | 1.18** | 3.11** | 2.97** |
| | Diabetes | 1.11** | 1.37** | 1.01 | 1.16** |
| | Arthritis | 1.09** | 1.23** | 1.02 | 0.99 |
| | Asthma | 1.08** | 1.10** | 0.95 | 1.08 |
| | History of cancer | 1.08** | 0.98 | 0.99 | 0.93 |
| | Insured | 2.48** | 1.88** | 0.89 | 1.02 |
| | Medicaid | 1.35** | 1.42** | 1.64** | 1.71** |
| | Managed Care | 0.97** | 1.06** | 1.01 | 0.99 |
| Household Income | <\$10,000 | 0.84** | 1.05 | 1.20** | 1.16** |
| | \$10,000 to <\$15,000 | 0.89** | 0.72** | 1.10 | 1.11 |
| | \$15,000 to < \$20,000 | 0.90** | 1.06 | 0.86 | 1.02 |
| | \$20,000 to < \$25,000 | 0.84** | 0.72** | 1.15 | 1.09 |
| | \$25,000 to < \$35,000 | 0.89** | 1.08** | 1.18** | 1.05 |
| | \$35,000 to < \$50,000 | 0.89** | 0.96** | 0.92 | 0.94 |
| | \$50,000 to < \$75,000 | 0.93** | 1.24** | 0.89 | 0.82** |
| | \$75,000 or higher | 1.00 | 1.00 | 1.00 | 1.00 |

| | Parameter | Office Visits | Outpatient Visits | Emergency Visits | Hospitalization |
|-------------|------------|---------------|-------------------|------------------|-----------------|
| Body Weight | Normal | 1.00 | 1.00 | 1.00 | 1.00 |
| | Overweight | 1.06** | 1.02 | 1.16** | 1.22** |
| | Obese | 1.11** | 1.08** | 1.13** | 1.26** |
| | Metro Area | 1.31** | 1.02 | 1.04 | 0.89 |

Logistic regression was used to model annual probability of hospitalization and annual probability of an emergency department visit for approximately two dozen categories of care defined by primary diagnosis code. The dependent variable for each regression is whether the patient had a hospitalization (or ED visit) during the year for each of the condition categories.

Estimating Health Care Use by Care Setting

As noted above, the HDMM generates health seeking behavior from econometrically estimated equations in the pooled 2008-2013 files of the Medical Expenditure Panel Survey. Forecasting equations for healthcare use are then applied to produce estimates of numbers of patient visits and hospitalizations by specialty, occupation and diagnosis by care setting. For example, when modeling demand for psychiatrists the HDMM projects current and future office and outpatient visits to a psychiatrist and emergency visits and hospitalizations for patients with ICD-9 primary diagnosis codes in the 290-319; and 94.1-.59 range under Major Diagnostic Category 19: Mental Diseases and Disorders.

These health care service demand projections, when combined with provider staffing and productivity estimates, provide the basis for estimating current and projecting future demand for FTE behavioral health and other health occupations modeled. To illustrate, below are presented information on methods, workload drivers and data sources for modeling hospital inpatient service demand.

Hospital Inpatient Service Demand

The 2008-2013 MEPS and the 2012 Nationwide Inpatient Sample (NIS) are used to model demand for hospital inpatient services in short-term general acute care hospitals as well as specialty hospitals. Logistic regression quantifies the probability of a person with given characteristics experiencing hospitalization during the year for a wide range of medical conditions, including mental health and substance abuse conditions based on ICD-9 primary diagnosis code groupings (Exhibit A-4).

To model inpatient length of stay the 2012 NIS discharge records were analyzed. Because of the large sample size (over 8 million hospital stays) estimates derived from the NIS are stable. Estimated Poisson regressions generated the expected number of days spent in the hospital conditional on a hospitalization. Explanatory variables consisted of patient age group, sex, race/ethnicity, insurance type, presence of chronic diseases and risk factors among the diagnosis codes, and residence in a metropolitan area. Separate regressions were

estimated for each of the mental health and substance abuse condition categories. Combining information on condition specific hospitalization risk and length of stay per hospitalization, HDMM computed each person's expected number of inpatient days during the year for different types of medical conditions.

Exhibit A-4: Hospital Inpatient Demand Drivers by Condition Code and Profession

| Medical condition codes (ICD-9 CM) | | Specialty/NPC Profession |
|---|---|------------------------------------|
| Allergy & immunology | 001-139, 477, 995.3 | Allergy & immunology |
| Diseases of the circulatory system | 390-459; 745-747; 785 | Cardiology |
| Diseases of the circulatory system | 426, 427, 780, 785; 3726 <= pr02 <=3734 | Clinical Cardiac Electrophysiology |
| Diseases of the circulatory system | pr02 IN (0060, 3600, 3950) | Interventional Cardiology |
| Colon & rectal surgery | 17.31-17.36, 17.39, 45.03, 45.26, 45.41, 45.49, 45.52, 45.71-45.76, 45.79, 45.81-45.83, 45.92-45.95, 46.03, 46.04, 46.10, 46.11, 46.13, 46.14, 46.43, 46.52, 46.75, 46.11, 46.13, 46.14, 46.43, 46.52, 46.75, 46.76, 46.94, 153-154 | Colon & rectal surgery |
| Diseases of the skin and subcutaneous tissue | 680-709; 757; 782 | Dermatology |
| Endocrine, nutritional and metabolic diseases, and immunity disorders | 240-279; 783 | Endocrinology |
| Diseases of the digestive system | 520-538; 555-579; 751; 787; 42-54 | Gastroenterology |
| General surgery | 860-869; 870-904; 925-939; 958-959; 996-999 | General surgery |
| Neoplasms, diseases of the blood and blood-forming organs | 140-239, 280-289; 790 | Hematology & oncology |

| Medical condition codes (ICD-9 CM) | | Specialty/NPC Profession |
|--|---|-----------------------------|
| Neoplasms, diseases of the blood and blood-forming organs | 195.2, 188.9, 174.9, 156.0, 164.1, 209.24, 155.0, 162.9, 183.0; 92.2 (http://www.donself.com/documents/ICD-10-for-Radiation-Oncology.pdf) | Radiation Oncology |
| Infectious and parasitic diseases | 001-139, 477, 40.11, 40.3, 40.9 | Infectious diseases |
| Nephrology | 580-589; 55.2-55.8 | Nephrology |
| Conditions originating in perinatal period | 760-779 | Neonatal-perinatal medicine |
| Neurological surgery | 850-854; 950-957; 01.0-05; 89.13 | Neurological surgery |
| Diseases of the nervous system and sense organs | 320-359; 742; 781; 784; 800-804 | Neurology |
| Complications of pregnancy, childbirth, and the puerperium | 614-679, V22, V23, V24, 72-75 | Obstetrics & gynecology |
| Ophthalmology | 360-379; 8-16; 95.0-95.4 | Ophthalmology |
| Diseases of the musculoskeletal system and connective tissue; injury and poisoning | 710-719; 720-724; 730-739; 805-848; 754-756; 76-84 | Orthopedic surgery |
| Otolaryngology | 380-389; 744; 18-29 | Otolaryngology |
| Plastic surgery | 904-949; 749; 18.7, 21.8, 25.59, 26.49, 27.5, 27.69, 29.4, 31.7, 33.4, 46.4, 64.4, 78.4, 81.0-81.99, 82.7, 82.8, 83.8, 85.8, 86.84 | Plastic surgery |
| Mental disorders | 290-319; 94.1-.59 | Psychiatry |
| Diseases of the respiratory system | 460-519; 748; 786; 35-39 | Pulmonology |
| Diseases of the musculoskeletal system and connective tissue | 725-729 | Rheumatology |

| Medical condition codes (ICD-9 CM) | | Specialty/NPC Profession |
|--------------------------------------|--|----------------------------------|
| Thoracic surgery | 426, 427, 780, 785); 32.6, 34.9, 40.6, 90.4, 35-37 | Thoracic surgery |
| Diseases of the genitourinary system | 590-608; 753; 788; 789; 791; 55-64 | Urology |
| Vascular surgery | 440-448; 0.4-00.5, 17.5, 35-39 | Vascular surgery |
| Physical Medicine/Rehabilitation | 0.4-00.5, 17.5, 35-39; 93 | Physical Medicine/Rehabilitation |

Health Care Use Calibration

MEPS is a representative sample of the non-institutionalized population, and although the health care use prediction equations are applied to a representative sample of the entire U.S. population parts of the model require calibration to ensure that the predicted health care use equals actual use. Applying the prediction equations to the population for 2011 through 2013 creates predicted values of health care use in those years (e.g., total hospitalizations, inpatient days, and ED visits by specialty category, and total office visits by physician specialty). For model calibration, we compared predicted national totals to estimates of national total hospitalizations and inpatient days, by diagnosis category, derived from the 2013 NIS. National ED visits and office visits came from the 2011 NHAMCS and 2012 NAMCS, respectively. Multiplicative scalars were created by dividing national estimates by predicted estimates. For example, if the model under-predicted ED visits for a particular diagnosis category by 10% then a scalar of 1.1 was added to the prediction equation for that diagnosis category. Applying this approach to diagnosis/specialty categories, the model's predicted health care use was consistent with national totals for most settings. Setting/category combinations where the model predicted less accurately (and therefore required larger scalars) tended to cluster around diagnosis categories in the ED characterized by lower frequency of visits likely due to a combination of small sample size in both MEPS and NHANES.

For DSRIP modeling, the health care use patterns were further calibrated to the populations in each New York county modeled (using SPARCS data or data from the PPS where available) to reflect that patients in New York can have care use patterns that differ from national peer group.

Health Workforce Staffing Patterns

This section discusses the assumptions and methods used to convert demand for services into demand for health care workers. Demand for health care workers is derived from the demand for health care services. Services provided (e.g., visits, hospitalizations, procedures, or prescriptions written) or demand drivers for services for which there are no survey data (e.g., total population, population over age75, and school aged

children) in each setting were compared with the number of providers working in that setting. For professions that provide services across a wide array of setting (e.g., nurses and therapists), information on the employment distribution of the care providers in the base year from the BLS was used to determine the number of individuals working in each setting.

Assuming that the base year demand for services in each setting was fully met by the available professionals in that setting, the base year staffing ratio was calculated by dividing the volume of service used by the number of health care professionals employed in each setting. For professions that provide services in a single setting, base year utilization was divided by the base year supply to derive the staffing ratio for that profession. The staffing ratio was then applied to the projected volume of services to obtain the projected demand for providers in every year after the base year.

The baseline scenarios in HDMM (used for modeling how care use in each New York county would change over time in the absence of DSRIP) assumed that care delivery patterns remained unchanged over time given the demand for health care services. However, the number and mix of health professionals required to provide the level of health care services demanded is influenced by how the care system is organized and care is reimbursed, provider scope of practice requirements, economic constraints, technology, and other factors. Emerging health care delivery models and advances in technology may alter future health care delivery, changing the relationship between patient characteristics and the probability of receiving care in a particular setting. The DSRIP modeling used information from the published literature and from the PPS's internal planning documents) to identify how care delivery and staffing will change with implementation of individual DSRIP projects.

HDMM VALIDATION, STRENGTHS, AND LIMITATIONS

Model validation activities continue on an ongoing basis as a long-term process evaluating the accuracy of the model and making refinements as needed. For each of four primary types of validation deployed, key short term and long term activities include the following:

- **Conceptual validation:** Through reports, presentations at professional conferences and submission of peer-reviewed manuscripts the model described here continue to undergo a peer-review evaluation of its theoretical framework. Contributors to these models include health economists, statisticians and others with substantial modeling experience; physicians, nurses, behavioral health providers and other clinicians; health policy experts; and professionals in management positions with health systems. Conceptual validation requires transparency of the data and methods to allow health workforce researchers and modelers to critique the model. This report is an attempt to increase the transparency of these complex workforce projection models where work is ongoing to improve the theoretical underpinnings, methods, assumptions, and other model inputs.
- **Internal validation:** The model runs using SAS software. As new capabilities are added to the model and data sources updated, substantial effort is made to ensure the integrity of the programming code. Internal validation activities include generating results for comparison to published statistics

used to generate the model (e.g., ensuring that population statistics for the input files are consistent with published statistics).

- **External validation:** Presenting findings to subject matter experts for their critique is one approach to externally validate the model. Intermediate outputs from the model also can be validated. For example, the HDMM has been used to project demand for health care services for comparison to external sources not used to generate model inputs. Results of such comparisons across geographic areas indicate that more geographic variation in use of health care services occurs than is reflected geographic variation in demographics, presence of chronic disease, and health risk factors such as obesity and smoking.
- **Data validation:** Extensive analyses and quality review have been conducted to ensure data accuracy as model data inputs were prepared. Most of the model inputs come from publicly available sources (e.g., MEPS, BRFSS, and ACS).

HDMM Strengths and Limitations

The main strengths of the HDMM includes use of recent data sources and a sophisticated microsimulation approach that has substantial flexibility for modeling changes in care use and delivery by individuals or by the health care system. Compared to population-based modeling approaches used historically, this microsimulation model takes into account more detailed information on population characteristics and health risk factors when making national and state-level demand projections. For example, rates of disease prevalence and health related risk factors and household income can vary significantly by geographic area. Such additional population data can provide more precise estimates of service demand at State and county levels compared to models that assume all people within a demographic group use the same level of services.

HDMM simulates care use patterns by delivery setting. Certain populations have disproportionately high use of specific care delivery settings (e.g., emergency care) and lower use of other settings. Setting-specific information on patient characteristics and use rates provides insights for informing policies that influence the way care is delivered. Because the microsimulation approach uses individuals as the unit of analysis, the HDMM can simulate demand for health care services and providers to care for populations in low income categories, populations in select underserved areas, or populations with certain chronic conditions. Using individuals as the unit of analysis creates flexibility for incorporating evidence-based research on the implications of changes in technology and care delivery models that disproportionately affect subsets of the population with certain chronic conditions or health-related behaviors and risk factors. This information also leads to more accurate projections at state and local levels. The microsimulation approach also provides added flexibility for modeling the workforce implications of changes in policy and emerging care delivery models under ACA, important areas of ongoing research.

Limitations of the workforce model largely stem from current data limitations. For example, one limitation of the BRFSS as a data source for modeling demand is that as a telephone-based survey it tends to exclude

people in institutionalized settings who typically do not own telephones. Hence, when creating the population files that underlie the demand projections BRFSS data is combined with National Nursing Home Data. Other current data limitations associated with these models include:

- Information on the influence of provider and payer networks on consumer service demand and migration patterns.
- Information on how care delivery patterns might change over time in response to emerging market factors.

ADDITIONAL INFORMATION**Project 2.b.iv: Care Transitions to Reduce 30-day Readmissions**

The estimated volume of hospitalizations by diagnosis category for Medicaid beneficiaries through 2020 in the PPS service area and the average length per stay comes from the microsimulation model. To estimate underlying rates of readmission for high-risk patients, we used national rates for the top 10 conditions with the most all-cause 30-day readmission rates for Medicaid patients (see **Exhibit A-5**). Together these top 10 conditions account for about one third (34%) of total Medicaid readmissions. The rates range from a high of 30.4% readmission for patients with an original admission diagnosis of congestive heart failure (CHF), to 8.4% readmission for patients with an original diagnosis of “other complications of pregnancy.”

Exhibit A-5: Ten conditions with the most all-cause, 30-day readmissions for Medicaid patients (aged 18–64 years)

| Principal diagnosis for index hospital stay* | Number of all-cause, 30-day readmissions | Readmissions as % of total Medicaid readmissions | Readmission rate (per 100 admissions) |
|---|--|--|---------------------------------------|
| Mood disorders | 41,600 | 6.2 | 19.8 |
| Schizophrenia and other psychotic disorders | 35,800 | 5.3 | 24.9 |
| Diabetes mellitus with complications | 23,700 | 3.5 | 26.6 |
| Other complications of pregnancy | 21,500 | 3.2 | 8.4 |
| Alcohol-related disorders | 20,500 | 3 | 26.1 |
| Early or threatened labor | 19,000 | 2.8 | 21.2 |
| Congestive heart failure (CHF); non-hypertensive | 18,800 | 2.8 | 30.4 |
| Septicemia (except in labor) | 17,600 | 2.6 | 23.8 |
| Chronic obstructive pulmonary disease (COPD) and bronchiectasis | 16,400 | 2.4 | 25.2 |
| Substance-related disorders | 15,200 | 2.2 | 18.5 |
| Total | 230,200 | 34.1 | 20 |

Similarly, we assessed the published literature on the potential impact of care transition interventions to reduce 30-day readmission—reviewing the literature on Project RED, BOOST and other successful care transition interventions (see Exhibit A-6). When multiple studies showed findings for the same medical condition, we averaged the reduced readmission rate across studies to derive an estimate for modeling.

- **Cardiology-related readmissions** (heart failure, myocardial infarction): The percent reduction in readmission rate is 37% based on the averaged results from studies 1-4.

- **Pulmonology-related readmissions** (COPD, pneumonia): The percent reduction in readmission rate is 37% based on the averaged results from studies 5, 6-8.
- **Diabetes-related readmissions**: The percent reduction in readmission rate is 31% based on study 9.
- **Behavioral health (mental health and substance abuse)**: The percent reduction in readmission rate is 23% based on the averaged results from studies 11-14.

The overall calculated intervention impact is a 30% reduction in readmission rates.