DEPARTAMENTO DE

SALUD

GOBIERNO DE PUERTO RICO

Strategic Plan for Asthma Control in Puerto Rico

For 2024-2028

Puerto Rico Asthma Management and Control Unit
Auxiliary Secretariat of Health Integrated Services

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STRATEGIC PLAN FOR ASTHMA CONTROL IN PUERTO RICO, 2024-2028

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Table of Contents

List of tables

Executive Message

I am pleased to present the Strategic Plan for Asthma Control in Puerto Rico for the years 2024-2028. This plan highlights the significant impact of the population living with asthma and those at risk of developing it. The Puerto Rico Asthma Management and Control Unit (PRAMCU), at the Puerto Rico Department of Health, recognizes that the main objective of this plan is to ensure the health and well-being of our target population. Our public health efforts are aimed at enhancing access to adequate health services and promoting healthier environments to prevent asthma exacerbations.

PRAMCU has a multidisciplinary team of health professionals that includes an evaluator, epidemiologists, nurses, health promoters, and a health educator, who, together with key collaborators, are fundamental in the development of this plan. The process was structured and inclusive, obtaining valuable feedback from various groups, including caregivers and patients with asthma. This four-year strategic plan is built upon well-defined strategies to achieve PRAMCU's goals of enhancing asthma control.

Cordially,

Alex Cabrera Serrano, MS

Director
Section for the Prevention and Control of Chronic Diseases

About this document

The Strategic Plan for Asthma Control in Puerto Rico is the product of a comprehensive planning process led by the Puerto Rico Asthma Management and Control Unit in collaboration with key stakeholders across the island. By uniting diverse expertise, the plan seeks to address asthma disparities through well-defined goals, objectives, and strategies, ultimately improving asthma management and enhancing the quality of life for those affected.

Purpose of the Strategic Plan

The 2024–2028 Strategic Plan for Asthma Control in Puerto Rico serves as a roadmap to mobilize the Puerto Rico Asthma Management and Control Unit and its partners in improving asthma outcomes across the islands. By guiding coordinated efforts, the plan aims to help Puerto Ricans better control their asthma, reduce emergency department visits and hospitalizations, and ultimately enhance their quality of life.

Developed through input from a multidisciplinary consortium of stakeholders, this plan is a living document designed to adapt to emerging evidence and best practices in asthma control. The outlined strategies are complementary and mutually reinforcing, relying on sustained commitment, collaboration, and leadership from multiple sectors, including public health, healthcare, health insurance companies, academia, professional associations, and nonprofit organizations.

While not an exhaustive representation of all asthma prevention and control efforts in Puerto Rico, this plan highlights key opportunities for cross-sector collaboration and collective impact, particularly in addressing the inequitable burden of asthma across the jurisdiction.

This strategic plan aims to:

- Establish priorities for the Puerto Rico Asthma Management and Control Unit.
- Improve the quality of life for individuals affected by asthma through clear and achievable strategies and objectives.
- Enhance education and awareness about asthma, providing information and resources to patients, their families, and the community at large.
- Facilitate collaboration and coordination between healthcare providers, educators, and community organizations for a more cohesive and effective response to asthma.
- Implement public policies and programs that address the environmental, socioeconomic, and behavioral factors contributing to asthma prevalence.

Introduction

Worldwide, asthma is the most common chronic disease among children[1]. Approximately 262 million people were affected by asthma in 2019 and 455,000 deaths were attributed to this condition[1]. In the United States (US), approximately 26,799,588 individuals had asthma in 2022, 4,529,232 children and 22,270,356 adults. The asthma prevalence was higher in adults (8.7%) than children (6.2%)[2]. The most recent National Asthma Data from 2021 suggests that the prevalence of asthma in adults is higher among women (10.8%) than in men (6.5%). Meanwhile, in children, a higher prevalence of asthma was reported among boys (7.0%) than in girls (5.4%)[2]. Moreover, Puerto Ricans are among the groups with the highest asthma prevalence in the U.S.[3]

The Puerto Rico Asthma Management and Control Unit (PRAMCU), formerly known as the PR Asthma Program was funded in 2003 under a cooperative agreement between the Puerto Rico Department of Health (PRDoH) and the Centers for Disease Control and Prevention (CDC). The program was created because asthma was recognized as a major public health problem in PR. In 2023, the prevalence of asthma was marked, reaching 16% in children and adolescents and escalating to 14.1% in adults. A comparative analysis with U.S. states unequivocally places Puerto Rico among the states with higher prevalence rates for adults, and it claims the undesirable top position for the highest prevalence in children. Additionally, according to the Office of Minority Health, Puerto Ricans had twice the asthma rate as compared to the overall Hispanic population in 2018, and Puerto Rican children are three times as likely to have asthma than non-Hispanic white children[4].

A comprehensive examination of sociodemographic characteristics highlighted the prevalence of current asthma in adults aged 18 or older as an important burden. In

2023, those aged 25 to 34 years displayed the highest prevalence. Additionally, females (17.5%) and individuals from the Arecibo health region (19.7%) stand out with notably high prevalence rates[5].

For children and adolescents aged 0 to 17 years, the prevalence rates during the 2021-2023 period reveal that those aged 5 to 9 years faced the highest burden, at 15.0%. Boys (13.9%) and individuals from the Bayamón health region (15.2%) also exhibited high prevalence rates, aligning with existing literature indicating higher asthma prevalence in pre-pubertal boys[6].

The gravity of the asthma problem extends beyond the prevalence, with substantial rates of uncontrolled asthma reaching alarming levels — 59.6% in adults and 40.9% in children during the 2018-2020 period. Over half of adults and more than a third of children with asthma grapple with uncontrolled conditions, underscoring the urgent need for targeted interventions.[7]

Further compounding the issue, data from the Puerto Rico Asthma Surveillance System exposes the strain on healthcare resources. The crude rate of emergency department visits stands at 106.9 per 10,000 persons, with females and children aged 0 to 4 years experiencing higher rates. The Caguas region emerges as a hotspot, reporting the highest rate of emergency department visits at 148 per 10,000 persons[8].

Hospitalizations further amplify the severity of the problem, with a crude rate of 23 per 10,000 persons. Females and individuals under 5 years bear higher hospitalization rates, with the Arecibo health region recording the highest rate at 33 per 10,000 persons[9].

In summary, asthma in Puerto Rico is not only pervasive but also profoundly impacts diverse demographic groups, leading to uncontrolled conditions and straining healthcare resources. Urgent and targeted interventions are imperative to mitigate

the extensive health, social, and economic implications of this burgeoning public health crisis.

The purpose of PRAMCU is to improve the quality of life of people living with asthma in PR by maximizing the reach, impact, efficiency, and sustainability of comprehensive asthma control services, prioritizing social determinants of health and EXHALE strategies among communities with high asthma prevalence.

Table 1: EXHALE Strategies

	Strategy	Approach
E	Education on Asthma Self-Management	• Expanding access to and delivery of asthma self-management education (AS-ME)
X	X-tinguishing smoking and exposure to secondhand smoke	• Reducing tobacco smoking • Reducing exposure to secondhand smoke
H	Home visits for trigger reduction and asthma self-management education	• Expanding access to and delivery of home visits (as needed) for asthma trigger reduction and AS-ME
A	Achievement of guidelines-based medical management	• Strengthening systems supporting guidelines-based medical care, including appropriate prescribing and use of inhaled corticosteroids • Improving access and adherence to asthma medications and devices
L	Linkages and coordination of care cross settings	• Promoting coordinated care for people with asthma
E	Environmental policies or best practices to reduce asthma triggers from indoor, outdoor, or occupational sources.	• Facilitating home energy efficiency, including home weatherization assistance programs • Facilitating smokefree policies • Facilitating clean diesel school buses • Eliminating exposure to asthma triggers in the workplace whenever possible • Reducing exposure to asthma triggers in the workplace

Source: Hsu J., Sircar K., Herman E. & Garbe P. (2018). EXHALE: A technical Package to Control Asthma. Atlanta G.A. National Center for Environmental Health, Centers for Disease Control and Prevention.

PRAMCU'S MISSION AND VISION:

Our mission:

Provide educational resources based on the EXHALE strategies for managing and controlling asthma to improve the quality of life of people who suffer from this condition.

Our vision:

Train people with asthma, family members, school personnel, and health professionals from each of the health regions of Puerto Rico to improve the management of this condition.

PRIMARY GOALS

The goals of the Puerto Rico Asthma Management and Control Unit for the next four (4) years are the following:

- Improve health and quality of life for people living with asthma in Puerto Rico.
- Impact the Puerto Rican population with EXHALE strategies, working with community members to expand the reach and sustainability of asthma control services.
- Strengthen existing organizational infrastructure in areas such as leadership, program management, strategic partnerships, surveillance, communication, and evaluation.
- Enhance collaboration with organizations sharing common interests and objectives in asthma-related initiatives.

Logic Model

Puerto Rico Asthma Management and Control Unit: Logic Model

Situation

Asthma is a complex multifactorial chronic disease and a priority for the PRDoH.

An estimate of 14.1% of adults and 16% of children in PR had current asthma in 2023. (BRFSS)

Population in PR have been constantly disproportional affected by asthma compare with the Untied States.

Approximately 3 out of 5 adults and 2 out of 5 children with asthma had their condition uncontrolled in 2020. (ACBS)

Inputs

CDC funding and technical assistance; Puerto Rico Department of Health administration; PR Asthma Control and Prevention Unit implementation; Partnerships established with Tobacco Control Program, BRFSS, ASES, PR Asthma Coalition, FQHC's, PRDoE, PR Private Education Association, Cooperative Extension Services, UPR Medical Science Campus, Head Start, Primary Care Association, ACEC, Health Insurance Companies, OCS, Women & Children Hospital, HUD, PEHSU, EPA, American Lung Association, PRAAP, local government offices, and others; Evidence base strategies as the home-base project VIAS and the school base project OAS.

Strategies and Activities

Strategy 1: Implement EXHALE strategies for populations with high asthma burden.

- Use the PR Asthma Surveillance System data to identify the populations disproportionately affected by asthma in our jurisdiction.
- Implement EXHALE strategies as follows:
  - E: Provide AS-ME interventions to people with asthma in their communities and schools.
  - X: Promote and refer smokers to the PR Quitline.
  - H: Implement the VIAS project.
  - A: Implement the AMED project and provide asthma management trainings to health professionals.
  - L: Link people with asthma to services and community resources, promote medication adherence in AS-ME, implement the Asthma School Registry, and others.
  - E: Help families to reduce asthma triggers in homes, educate school personnel to reduce asthma triggers in schools, promote the Law 40 of 1993 that regulates smoking.

Strategy 2: Improve organizational infrastructure to advance greater health equity and sustainability.

- Considering how Puerto Ricans children and adolescents experienced a disproportionate burden for asthma, PRAMCU will focus their services to this population and will prioritize people experiencing low-income in the municipalities of Arecibo Health Region since throughout the years it has the higher hospitalization rates and its ranked in the regions with higher asthma prevalence.
- PRAMCU staff will include health educators, nurses and health promoters to implement AS-ME.
- The PRDoH Office of Communication will assist the PRAMCU in the designing of educational material address to Puerto Ricans.
- The PRAMCU's evaluator will evaluate the unit projects based on EXHALE and update the SEP with the Program Manager. Also, the evaluator will update the VIAS Business Case.
- The PR Asthma Surveillance System of PRAMCU will collaborate with its partners to receive, manage, analyze and disseminate the asthma data.
- PRAMCU will continue its collaborations with several entities to expand the reach of asthma control services among the focus population.

Outcomes

Short-Term

- Increase the implementation of PRAMCU projects to the focus population.
  - E: Increase in people with asthma who are educated about the management of their condition.
  - X: Increase in the PR Quitline's referrals.
  - H: Increase in participants of the VIAS project.
  - A: Increase in health professionals educated to implement the asthma management based on NAEPP EPR-3.
  - L: Increase linkages to community resources to address drivers of healthy inequity; increase in professionals who can teach people with asthma about adherence and the correct use of their asthma devices; and continue implementing yearly the Asthma School Registry.
  - E: Increase in families educated to reduce asthma triggers in homes, increase school personnel educated to reduce asthma triggers in schools.
- Increase the use of surveillance and evaluation data to drive program improvement.
- Enhance partnerships representing the focus population.

Intermediate

- Increase access to EXHALE interventions for people with uncontrolled asthma.
- Reduce impact on the identified health inequity for asthma control among population with highest risk. Examples of those factors are: low income, being Puerto Rican and live in the Arecibo Health Region.

Long-Term

- Increase coordination of care across settings (homes, schools, community and healthcare).
- Reduce exposure to environmental asthma triggers.
- Improve sustainability of results-based health equity partnerships.
- Increase policies and plans enacted to address drivers of asthma control.
- Reduce asthma-related emergency department visits and hospitalizations.
- Reduce asthma-related mortality and disparities.

Monitoring and Process Evaluation

The PRAMCU's logic model, presented in Figure 1, is a graphic representation that describes the relationship between program activities and the intended goals to be accomplished in a four-year period. The logic model was developed to provide detailed information regarding its components. The first part of the model is the Puerto Rico asthma epidemiology profile, titled as Situation, which includes summary points of the burden of asthma in PR. The situation is connected to the inputs box, which contains the internal and external collaborators strategically established to attain the goals of PRAMCU.

PRAMCU brings extensive experience in implementing EXHALE strategies in Puerto Rico through collaboration with strategic partners. The proposed projects aim to implement these strategies across various settings, including homes, schools, communities, offices, virtual scenarios, hospitals, primary care centers, FQHCs, and others. To execute asthma-related activities in these environments, PRAMCU collaborates with entities such as the Tobacco Control Program, Behavioral Risk Factor Surveillance System (BRFSS), PR Health Insurance Administration (PRHIA), Puerto Rico Coalition for Asthma & Other Chronic Respiratory Conditions, Federally Qualified Health Centers (FQHCs), Puerto Rico Department of Education (PRDoE), PR Private Education Association, UPR - Cooperative Extension Services, University of Puerto Rico - Medical Science Campus, Office of Head Start, Primary Care Association, Puerto Rico Alliance for Chronic Disease Control (ACEC, by its acronym in Spanish), Health Insurance Companies, Office of the Insurance Commissioner (OCS), Women & Children Hospital, United States Department of Housing and Urban Development (HUD), Pediatric Environmental Health Specialty Units (PEHSU), Environmental Protection Agency (EPA), American Lung Association, Puerto Rico Chapter - American Academy of Pediatrics (PRAAP), local government offices, and others. These entities

support PRAMCU by providing data, facilitating activity coordination, offering funding for specific components, making referrals to VIAS project, and playing other roles.

To comply with the implementation of EXHALE strategies for populations with high asthma burden, PRAMCU propose the following approaches:

The first letter "E" from EXHALE will be implemented within schools and communities in collaboration with the Puerto Rico Department of Education (PRDoE) and the PR Private Education Association. These entities facilitate activity coordination in public and private schools, where PRAMCU staff can impact children with asthma in scholar ages from K to 12. Health educators, health promoters, and nurses will provide Asthma Self-Management Education through workshops. Additionally, elementary schools will receive the Open Airways for Schools (OAS) project, addressing asthma management for children aged 8 to 11, as requested. Workshops are tailored for different audiences, including Kindergarten, grades 1st to 3rd, grades 4th to 8th, and grades 9th to 12th. The presentations, prepared in culturally appropriate Spanish, aim to resonate with children. PRAMCU staff uses the American Lung Association curriculum for the OAS project. Through this initiative, participants are expected to learn about asthma triggers and symptoms at school, managing and controlling their asthma. Lessons are provided at school in coordination with the principal and school nurse.

With collaboration from the PRDoH Tobacco Control Program, PRAMCU expects that smokers participating in asthma-related projects could receive the PR Quitline service for smoking cessation. To address strategy X, PRAMCU promotes smoke cessation and makes referrals to the PR Quitline for caregivers of children with asthma and adults with this condition.

Letter "H" is implemented with the VIAS project, a home visiting program to control exposure to allergens and irritants that can exacerbate asthma. VIAS provides educational interventions to improve indoor air quality and reduce asthma triggers in homes. It includes a home evaluation for asthma trigger identification and culturally appropriate recommendations for reducing them. The primary audience for this project is children with asthma aged 4 to 17 and their low-income caregivers. Interventions are provided at home in coordination with the caregiver. VIAS is based on the educational curriculum "A Breath is life: Asthma Control for My Child", created by the National Heart, Lung and Blood Institute. Collaborators, such as PRDoE, FQHCs, Primary Care Association, Women & Children Hospital, PRAAP, and health professionals, collaborate by identifying children with uncontrolled asthma and making referrals to the project.

Strategy "A" is applied in the AMED project and the asthma management training for health professionals. The AMED project provides asthma devices' use training with the provision of demonstration devices kits to teach health professionals how to educate asthma patients on the correct use of devices. After training, PRAMCU staff continues communication with trainees to assess the impact of educational interventions. The primary audience for this training project includes nurses, health promoters, health educators, and professionals in direct contact with a high number of people with asthma. Collaborators in FQHCs, the School Nursing Program of the PRDoE, Primary Care Association, PRAAP, and health insurance companies are crucial for project expansion. Partnerships with PRAAP and some health insurance companies help implement asthma management training to encourage adherence to National Asthma Education and Prevention Program (NAEPP), Expert Panel Report-3 (EPR-3) guidelines and its 2020 updates. The setting for the AMED project is in the workspace, and for asthma management training, it is in virtual conferences.

The "L" strategy will be employed by linking people with asthma to services and community resources, promoting medication adherence in AS-ME, implementing the Asthma School Registry, capacitating health professionals to make referrals for the VIAS project, and others. With the VIAS project, PRAMCU staff links participants to some local governmental offices that sometimes assist in home remediation and relocation when necessary. In all projects that include AS-ME, medication adherence is promoted. Additionally, the PRDoH and PRDoE collaborate to implement the Asthma School Registry, a tool aligned with Law 56 of 2006 and Regulation 9224 that promotes completing the Asthma Action Plan for every student with asthma in Puerto Rico. Law 56 allows students with asthma to self-administer their asthma medications in schools, and Regulation 9224 specifies the documents parents need to bring to schools to allow medication administration. One of the required documents is the Asthma Action Plan. To ensure parents visit pediatric or other medical doctors for the most updated treatment and the written plan, schools request document delivery and report to PRAMCU. On the other hand, referrals for implementing the VIAS project are crucial to providing services to those in need.

Strategy "E" will be implemented by helping families reduce asthma triggers in homes with the VIAS project, educating school personnel to reduce asthma triggers in schools with the Asthma Control in Schools' online course, and promoting Law 40 of 1993 that regulates smoking in every educational intervention. Additionally, PRAMCU plans to propose an environmental policy to reduce diesel emissions in collaboration with the University of Puerto Rico – Medical Science Campus.

As outlined in Strategy 2 of the Logic Model, the target population identified for Puerto Rico comprises Puerto Rican children and adolescents with asthma experiencing low income, residing in the municipalities of the Arecibo Health Region. Consequently, PRAMCU will emphasize its services for this demographic and prioritize individuals with

low income in the municipalities of the Arecibo Health Region. The plan to emphasize EXHALE activities for this population includes collaborating with the Arecibo Regional Director of the PRDoE School Nursing Program to facilitate activity coordination in schools within this region. Regarding the VIAS project, PRAMCU visitors will prioritize referrals from the Arecibo Health Region over other regions. However, given that all Puerto Ricans are disproportionately affected by asthma, the service will not be limited to the Arecibo Health Region. Additionally, PRAMCU will utilize data from the Asthma School Registry to identify public schools with a higher number of students with asthma in Puerto Rico and provide them with the OAS project, Asthma Self-Management Education workshops, and the Asthma Control in Schools' online course.

As stipulated in State Act No. 81 of March 14, 1912, and in accordance with Article 4, Section 6 of the Constitution of Puerto Rico, the PRDoH plays a pivotal role as a Cabinet-level agency with a mandate to protect, promote, and enhance the health of all residents in Puerto Rico. This mandate is further underscored by our status as the Island's single state agency responsible for public health and the administration of health services funding from various federal agencies. Within the organizational structure of PRDoH, the Auxiliary Secretariat of Health Integrated Services houses the Division of Diseases Prevention and Control. Specifically, the Section of Chronic Diseases Prevention and Control accommodates the PR Asthma Management and Control Unit, formerly known as the PR Asthma Program. The PRDoH recognized asthma as a public health issue in Puerto Rico and specified it as a priority topic within the PRDoH work plan, including it in the Puerto Rico Chronic Disease Action Plan.

The PRAMCU staff will comprise the following professionals: Principal Investigator, Program Manager, Evaluator, Epidemiologist, Health Educator, two Health Promoters, and two Nurses to cover all program components. The Principal Investigator and

Program Manager will oversee all program administration details in collaboration with select PRDoH offices. One of these offices is the Communication Office, which assists PRAMCU in designing educational materials tailored to Puerto Ricans. Additionally, the Program Manager will participate in various activities, supervise staff, and provide support across all program components. The Evaluator will coordinate all evaluation-related activities and reports, including evaluating unit projects based on EXHALE and updating the Strategic Evaluation Plan (SEP) and the VIAS Business Case with the Program Manager. The Epidemiologist will manage the PR Asthma Surveillance System (PRASS) and provide data collection, analysis, and management assistance to other program areas. Leading the PRASS involves collaborating with strategic partners to receive, manage, analyze, and disseminate asthma data. The Health Educator, Health Promoters, and Nurses will collaborate to implement EXHALE activities statewide.

The expansion of PRAMCU projects relies on strategic partnerships to plan, implement, evaluate, and sustain strategies, particularly among the target audience. One strategic partnership established for the focus population involves the PRDoE School Nursing Program. This program is grounded in Law 85 of March 29, 2018, known as the "Puerto Rico Educational Reform Law." Law 85 mandates the Secretary of Education to ensure the physical and psycho-emotional well-being of students. This includes integrating health professionals, promoting healthy lifestyles, and conducting campaigns to prevent the spread of diseases and suicide.

PRAMCU is committed to refining its evaluation techniques to ensure high-quality assessments of EXHALE services and the effectiveness and efficiency of program strategies. This includes enhancing evaluation processes for initiatives such as the Asthma School Registry and the AMED project. Also, the evaluator will develop a

Surveillance Evaluation Plan, based on the "Learning and Growing through Evaluation: State Asthma Program Evaluation Guide module 4".

Moreover, outcome evaluations will be conducted for the OAS project, VIAS project, and the Asthma Control in Schools online course. These evaluations will enable PRAMCU to pinpoint areas for improvement and inform adjustments to performance measures. In addition, PRAMCU will provide ongoing capacity-building opportunities for program staff in evaluation techniques. This will ensure the collection of precise data to meet CDC Performance Measures requirements effectively. To enhance data accuracy and streamline collection processes, PRAMCU will implement a digitalized and secure program for on-site data collection. Regular review and refinement of data collection materials will further optimize performance and results. By implementing these measures, PRAMCU aims to leverage evaluation findings effectively to promote health equity and sustainability in its asthma control efforts. For more information, refer to the Evaluation and performance measurement plan section.

In terms of the Asthma Surveillance System, PRAMCU will maintain and enhance it by annually obtaining, analyzing, interpreting, and reporting core datasets and related measures. The PRAMCU's epidemiologist will be responsible for ensuring the maintenance and enhancement of the PRASS, which describes asthma prevalence, hospitalizations, Emergency Department visits, mortality, and trends in Puerto Rico over time. With these datasets, PRASS has the information needed to describe the burden of asthma in Puerto Rico and identify specific sub-populations that are disproportionately affected by asthma compared with the general population. For more information, refer to the Surveillance section.

The Planning Process:

The Strategic Plan for Asthma Control in Puerto Rico (2024–2028) is designed to remain relevant, evidence-based, and adaptable to the evolving needs of the population. A key component of this process is the annual review and progress assessment, which will convene public health agencies, healthcare providers, community organizations, and policymakers to evaluate the plan's implementation. These reviews will assess progress toward goals, objectives, and key performance indicators, utilizing data and stakeholder feedback to measure impact and guide decision-making.

Additionally, this process will help identify challenges, recognize successes, and explore opportunities for improvement in asthma control efforts. By fostering collaboration and evidence-based strategies, the plan will remain a dynamic and effective framework for addressing asthma disparities and improving health outcomes across Puerto Rico.

Key Stakeholders

Stakeholders are essential to the development and ongoing refinement of the Strategic Plan. Their engagement ensures valuable insights, enhances program processes, and helps address community needs through an informed and comprehensive approach.

Refer to Table 2 and Table 3 for more details about the Strategic Plan Developer Team and Key Collaborators.

Table 2: Strategic Plan Developer Team

Stakeholder Name: Alex Cabrera Serrano, MS	**Title and Affiliation:** Director – Chronic Disease Prevention and Control Section
• **Role played in the development of the Strategic Plan:** • Technical Advisor • Strategic Plan Reviewer	**Contribution to the Strategic Plan:** • Provide technical assistance to the Asthma Management and Control Unit • Assist in the process of reviewing the Strategic Plan. • Support PRAMCU activities
Stakeholder Name: Keila E. Narváez Sánchez, MS	**Title and Affiliation:** Program Manager – PRAMCU
Role played in the development of the Strategic Plan: • Strategic Plan Writer and Reviewer • Stakeholder Engagement Facilitator • Plan Implementation Coordinator • Implementation Monitor • Intervention Overseer • Activity Supporter • Evaluation Report Contributor • Report Dissemination Promoter	**Contribution to the Strategic Plan:** • Assist in the process of writing and reviewing the Strategic Plan. • Promote the participation of stakeholders in the development of the Strategic Plan. • Implement and make necessary adjustments to the Strategic Plan • Monitor the implementation of the Strategic Plan • Oversee PRAMCU interventions • Support PRAMCU activities • Assist in the development of evaluation reports • Promote the dissemination and use of evaluation reports. • Regularly review emerging research, CDC guidelines, and local asthma surveillance data to incorporate new evidence-based interventions.
Stakeholder Name: Wilmarie De Jesús Vera, MS	**Title and Affiliation:** Evaluator – PRAMCU
Role played in the development of the Strategic Plan: • Evaluation Team Leader • Individual Evaluation Plan Lead • Evaluation Planning Facilitator • Evaluation Activity Supporter • Evaluation Report Developer • CQI Process Developer • Data Collection Instrument Developer • CDC Liaison	**Contribution to the Strategic Plan:** • Lead the evaluation team. • Lead the process of writing the Individual Evaluation Plans. • Lead meetings of the evaluation planning team. • Provide technical assistance on evaluation for PRAMCU staff and stakeholders. • Support the evaluation activities.

	• Conduct analysis and interpretation of evaluation data • Develop evaluation reports. • Develop CQI process. • Develop data collection instruments. • Report the performance measures to CDC
Stakeholder Name: Estefanía I. Ayala Alvarado, MSc	**Title and Affiliation:** Epidemiologist – PRAMCU
Role played in the development of the Strategic Plan: • Surveillance Data Provider • Strategic Plan Writer • Data Collection Instrument Developer • Data Analyst and Interpreter	**Contribution to the Strategic Plan:** • Provide surveillance data and technical assistance. • Assist the evaluator in carrying out prioritization of activities. • Assist in the process of writing the SEP • Assist in the monitoring of the implementation of the Strategic Plan • Assist in the development of the data collection instruments • Conduct data analysis and interpretation
Stakeholder Name: Paola Casal Nazario, MPH, GCG	**Title and Affiliation:** Health Promoter – PRAMCU
Role played in the development of the Strategic Plan: • Strategic Plan Reviewer • Community Needs Advisor	**Contribution to the Strategic Plan:** • Assist in the process of writing and reviewing the Strategic Plan. • Provide insights into the community's needs related to asthma control, trigger reduction, and education on asthma self-management.
Stakeholder Name: Andrea N. Ramos Morales, BSN-RN	**Title and Affiliation:** Health Promoter – PRAMCU
Role played in the development of the Strategic Plan: • Strategic Plan Reviewer • Community Needs Advisor	**Contribution to the Strategic Plan:** • Assist in the process of writing and reviewing the Strategic Plan. • Provide insights into the community's needs related to asthma control, trigger reduction, and education on asthma self-management.
Stakeholder Name: Saraí Vázquez Figueroa, MPHE	**Title and Affiliation:** Nurse – PRAMCU

Role played in the development of the Strategic Plan: • Strategic Plan Reviewer • Community Needs Advisor	**Contribution to the Strategic Plan:** • Assist in the process of writing and reviewing the Strategic Plan. • Provide insights into the community's needs related to asthma control, trigger reduction, and education on asthma self-management.
Stakeholder Name: Mirelys Valentín López, MPH	**Title and Affiliation:** Health Promoter – PRAMCU
Role played in the development of the Strategic Plan: • Strategic Plan Reviewer • Community Needs Advisor	**Contribution to the Strategic Plan:** • Assist in the process of writing and reviewing the Strategic Plan. • Provide insights into the community's needs related to asthma control, trigger reduction, and education on asthma self-management.
Stakeholder Name: Gabriela Serrano Cruz, BSN-RN	**Title and Affiliation**: Nurse – PRAMCU
Role played in the development of the Strategic Plan: • Strategic Plan Reviewer • Community Needs Advisor	**Contribution to the Strategic Plan:** • Assist in the process of writing and reviewing the Strategic Plan. • Provide insights into the community's needs related to asthma control, trigger reduction, and education on asthma self-management.

Table 3: Key Collaborators

Partners	Role	Responsibilities
Tobacco Control Program	PR Quitline Administrator	Offer the services of the PR Quitline to individuals referred by PRAMCU.
Behavioral Risk Factor Surveillance System (BRFSS)	BRFSS data provider	Provide the BRFSS datasets to PRASS.
Health Insurance Administration (PRHIA)	Data provider	Assist in requesting asthma-related claims from public health insurances and provide them to PRASS.
Puerto Rico Coalition for Asthma & Other Chronic Respiratory Conditions	Asthma Advisor	Participate in meetings of the Asthma Advisory Committee, including the process of updating the PR Asthma Management Guidelines.

Federally Qualified Health Centers (FQHCs)	EXHALE activities promoter and coordinator	Assist PRAMCU in expanding EXHALE activities with center health professionals and patients by promoting program projects and implementing ASME.
Puerto Rico Department of Education (PRDoE)	EXHALE activities promoter and coordinator & Data provider	Assist PRAMCU in expanding EXHALE activities with public-school personnel and students by promoting program projects and implementing AS-ME. Complete the School Asthma Registry annually.
PR Private Education Association	EXHALE activities promoter and coordinator & Data provider	Assist PRAMCU in expanding EXHALE activities with private school personnel and students by promoting program projects and implementing AS-ME. Complete the School Asthma Registry annually.
University of Puerto Rico - Medical Science Campus	Asthma Advisor	Participate in the meetings of the Asthma Advisory Committee, including the process of updating the PR Asthma Management Guidelines.
Primary Care Association	EXHALE activities promoter and coordinator & Data provider	Assist PRAMCU in expanding EXHALE activities with center health professionals and patients by promoting program projects and implementing ASME.
Puerto Rico Alliance for Chronic Disease Control (ACEC)	Asthma Advisor and Communication assistant	Participate in meetings of the Asthma Advisory Committee and assist in disseminating asthma-related information.
Health Insurance Companies	Data provider	Provide requested asthma-related claims data from private health insurances.
Office of the Insurance Commissioner (OCS)	Data collection assistant	Assist in requesting asthma-related claims from public and private health insurances and provide them to PRASS.
Pediatric Environmental Health Specialty Units (PEHSU)	Advisor	Participate in the meetings of the Asthma Advisory Committee.
American Lung Association	Advisor and OAS trainer	Have educational materials about asthma and training on the OAS project available for PRAMCU staff

Local government offices	Provider of home remediation services and resources	Assist families participating in the VIAS project with home remediation services and resources when necessary and available.

Implementation of EXHALE strategies:

(E) – Education on Asthma Self-Management

The Education on Asthma Self-Management strategy is designed to improve asthma knowledge and self-management skills across diverse populations, with a primary focus on children and adolescents. By delivering targeted education in schools, homes, and communities, this strategy aims to reduce asthma-related complications, improve quality of life, and promote long-term disease control.

While the majority of initiatives within this strategy address the pediatric population, recognizing the significant burden of asthma among adults, the strategy also includes tailored programs to support adults living with the condition. These programs provide essential education on asthma management, empowering individuals to take an active role in controlling their symptoms and preventing exacerbations.

The following programs form the core of the Education on Asthma Self-Management strategy:

- Open Airways for Schools (OAS)
- Asthma Management and Control Workshops for children and adolescents
- Asthma Management and Control Workshops for adults, parents, and caregivers of children with asthma
- "Asthma Control in Schools" Online Course:
- Training for School Nurses on the Asthma School Registry

Refer to Table 4 for more details about each program.

Table 4: Programs under the Education on Asthma Self-Management strategy

Program name and description	Implementation Strategy:	Evaluation methods	Expected Outcomes:
Open Airways for School (OAS): OAS is an interactive asthma self-management program for children ages 8 to 11, developed by the American Lung Association (ALA). It educates children on recognizing asthma symptoms, avoiding triggers, and making informed health decisions.	• Conduct school-based interventions with principal approval and school nurse presence. • Deliver at least three completed OAS interventions in primary schools with the highest asthma prevalence, as identified through the Asthma School Registry. Each session lasts approximately 40 minutes, covering: • Asthma basics and warning signs. • Trigger identification and control. • Symptom recognition and management. • Physical activity and academic performance. • Treatment adherence and medication use.	- Pre-test - Post-test: - Satisfaction Survey - Asthma Control test results	- Increased asthma awareness and self-management skills among children. - Improved asthma control

Program name and description	Implementation Strategy:	Evaluation methods	Expected Outcomes:
Asthma Self-Management Workshops for Children: The workshops aim to educate children ages 4 to 17 on how to manage and control asthma. The sessions last approximately 1 hour and focus on recognizing asthma symptoms and implementing appropriate management steps.	• Conduct 1-hour workshops targeting children ages 4 to 17. • The sessions will cover key topics related to asthma self-management, including recognizing symptoms, managing asthma triggers, and proper medication usage. • Each workshop will incorporate hands-on demonstrations for proper medication usage and practical advice for following an Asthma Action Plan. • Workshops will be delivered in schools, community centers, and other relevant settings. • Sessions will be tailored to the developmental and cognitive levels of different age groups within the target population.	- Pre-test - Post-test: - Satisfaction Survey	- Increased asthma awareness and self-management skills among children
Asthma Self-Management Workshops for Adults: The purpose of these workshops is to educate the community on how to manage and control asthma. These workshops	• Conduct 1-hour workshops targeting adults aged 18 years and older. • Focus on practical education, including asthma symptom recognition, medication	- Satisfaction Survey	- Increased asthma awareness and self-management skills among adults

Program name and description	Implementation Strategy:	Evaluation methods	Expected Outcomes:
are aimed to impact adults 18 years old or older and take approximately 1 hour to be completed. In this manner, it is expected that they know how to recognize the symptoms of asthma when they first occur and carry out management steps.	adherence, and trigger management. Key topics include: • Definition of asthma, symptoms, and treatment options • Proper use of asthma medications • Identification and control of asthma triggers • Overview of asthma statistics in Puerto Rico • Understanding Law 56 of 2006, Regulation 9224, and Administrative Order 473 The workshops will be delivered in community centers and other public venues to reach a broad audience. Educational materials will be provided, and there will be opportunities for hands-on demonstrations.		

Program name and description	Implementation Strategy:	Evaluation methods	Expected Outcomes:
Asthma Self-Management Workshops for Parents and/or Caregivers: The purpose of these workshops is to educate caregivers on how to manage and control asthma in their children's. The workshops are aimed to impact parents and/or caregivers of children with asthma and take approximately 1 hour. In this manner, it is expected that they know how to recognize the symptoms of asthma when they first occur and carry out appropriate management steps.	• Conduct 1-hour workshops for parents and/or caregivers of children with asthma. • The goal is to equip caregivers with the knowledge and skills needed to effectively manage asthma in their children. Key topics include: • Definition of asthma, symptoms, and treatment options • Proper use of asthma medications • Identification and control of asthma triggers • Rights and responsibilities of children with asthma in schools, and the importance of the Asthma Action Plan Workshops will be held in community centers, schools, or healthcare settings to ensure broad accessibility.	- Pre-test - Post-test: - Satisfaction Survey	- Increased asthma awareness and self-management skills among caregivers of children with asthma

Program name and description	Implementation Strategy:	Evaluation methods	Expected Outcomes:
Asthma Control in Schools Online Course: This 1.5-hour online course, offered free of charge, is designed for school personnel (teachers, principals, school nurses, counselors, etc.) to comply with Regulation 9224 under Law 56 of 2006. Schools can request the course via email or phone, and it is also promoted through school nurse requests and social media. Delivered through an online platform, the course is available for 48 hours, allowing flexibility for participants.	• The online course is designed for key school personnel, including teachers, principals, school nurses, counselors, and other staff, to comply with Regulation 9224 under Law 56 of 2006. • Schools interested in participating must contact PRAMCU via email or phone to coordinate the training. • Once scheduled, the course is delivered through a on-line platform, lasting 1.5 hours and available for 48 hours to allow flexibility in completion. • The course is free of charge for all educational institutions in Puerto Rico. Key topics covered: • Definition of asthma, symptoms, and treatment • Demonstration of proper asthma medication use • Asthma statistics in Puerto Rico • Law 56 of 2006, Regulation 9224, and Administrative Order 473 • Services provided by PRAMCU	- Pre-test - Post-test: - Satisfaction Survey	- Increased asthma control knowledge among school personnel - Strengthened compliance with asthma-related regulations (Regulation 9224 and Law 56 of 2006)

(X) – Extinguishing smoking and secondhand smoke

As part of the comprehensive approach to asthma control, PRAMCU implements the "Extinguishing Smoking and Secondhand Smoke" strategy to reduce exposure to tobacco smoke, a significant asthma trigger. This initiative focuses on educating the community about the harmful effects of firsthand and secondhand smoke, its impact on individuals with asthma, and practical recommendations to minimize exposure.

This strategy is integrated into key asthma management programs, such as OAS and VIAS, ensuring that children, caregivers, and school personnel receive targeted education on smoking-related asthma risks. Through a collaborative effort with the Puerto Rico Department of Health (PRDoH) Tobacco Control Program, PRAMCU provides educational and promotional materials on smoking cessation resources. Additionally, a referral system is in place to connect interested caregivers with smoking cessation support, including the PR Quitline “Déjalo Ya!” (1-877-DEJALOS).

Beyond education, PRAMCU actively promotes brief smoking cessation interventions offered by the PRDoH Tobacco Control Program, encouraging caregivers and community members to take steps toward quitting smoking. Outreach efforts aim to identify caregivers who smoke and provide them with the necessary resources and support to reduce smoking-related asthma risks for children. To evaluate the impact of this initiative, PRAMCU tracks the distribution of educational materials and the percentage of individuals referred to the PR Quitline who access the service.

By implementing this strategy, PRAMCU expects to increase awareness of smoking-related asthma risks, enhance referral rates to smoking cessation services, and ultimately improve asthma control by reducing exposure to tobacco smoke. Furthermore, strengthening partnerships with the PRDoH Tobacco Control Program

will enhance the effectiveness of smoking cessation efforts, contributing to a healthier environment for individuals with asthma.

(H) – Home Visits for Trigger Reduction and Asthma Self-Management Education

The “Visitas Interactivas acerca del Asma en el hogar” (VIAS) project is a home-based asthma education initiative designed for children ages 4 to 17 with uncontrolled asthma and their caregivers. This program aims to reduce asthma triggers in the home, enhance self-management skills, and ultimately decrease emergency room visits and hospitalizations due to asthma. VIAS is based on the "Breathing is Life: The Control of Asthma in Our Children" curriculum developed by the National Heart, Lung, and Blood Institute (NHLBI).

To achieve its goals, VIAS implements a structured intervention plan that includes:

- Two face-to-face home visits, where asthma triggers are identified, and families receive hands-on education.
- One video call, reinforcing key self-management techniques and strategies.
- Three follow-up calls at one month, six months, and twelve months to monitor progress and provide additional support.
- Educational materials on asthma management, proper medication use, and trigger reduction strategies.

Evaluation methods include pre-tests and post-tests to assess knowledge improvement, asthma control status and the effectiveness of the intervention. Additionally, a satisfaction survey is administered to measure participant experience and collect feedback for continuous improvement. Follow-up calls also serve as a tool to track long-term impact.

Through VIAS, participants are expected to develop better asthma self-management skills, leading to improved adherence to treatment and action plans. Additionally, by reducing asthma triggers within the home, the program seeks to contribute to a decrease in emergency room visits and hospitalizations related to asthma.

(A) – Achievement of guidelines-based medical management

This strategy is supported by facilitating educational activities based on the Guidelines for the Diagnosis and Management of Asthma (NAEPP asthma guidelines EPR-3, EPR-4 and their updates). The training covers essential topics, including asthma pathophysiology, common triggers, and proper medication use. Additionally, healthcare providers receive guidance on how to correctly complete the Asthma Action Plan, ensuring patients receive a structured treatment plan tailored to their needs.

Refer to Table 5 for more details about each program.

Table 5: Programs under the 'Achievement of guidelines-based medical management' strategy

Program name and description	Implementation Strategy:	Evaluation methods	Expected Outcomes:
Asthma Management Training for Health Professionals: These workshops aim to enhance the knowledge and skills of healthcare providers in Puerto Rico regarding asthma diagnosis, management, and treatment.	• Workshops are scheduled based on requests from healthcare institutions or proactive promotion by PRAMCU. • Delivered in collaboration with pediatricians and pulmonologists, ensuring evidence-based and expert-driven content. • Content is structured around the Asthma Management Guidelines, published by the National Asthma Education and Prevention Program Coordinating Committee Expert Panel Working Group.	- Pre-test - Post-test - Satisfaction Survey	- Increased knowledge among health professionals on asthma diagnosis, management, and treatment
Asthma Medication: Education and Demonstration (AMED project): The AMED Project is an educational initiative aimed at expanding knowledge on the proper use of asthma medications to improve	• Conduct training sessions focused on asthma management, medication use, and hands-on demonstrations. • Utilize asthma demonstration devices and medication kits to enhance learning.	- Pre-test - Post-test - Satisfaction Survey - Interventions log	- Increased skills among health professionals on asthma medication use and hands-on demonstrations - Increased the number of asthma patients who received

Program name and description	Implementation Strategy:	Evaluation methods	Expected Outcomes:
asthma management and control. PRAMCU provides training sessions for community health workers, nurses, teachers, physicians, and health educators to ensure they can effectively educate patients and demonstrate the correct use of asthma medication devices. Each training session lasts approximately two hours.	• Engage participants in role-playing activities to reinforce practical application. • Provide certificates of participation upon completion of the training.		personalized instruction on proper medication use

(L) – Linkages and Coordination of Care across Setting

The "L" strategy will be employed by linking individuals with asthma to essential services and community resources, with a particular emphasis on improving asthma management and ensuring access to necessary support. Also, health professionals will be trained to make referrals for the VIAS project, and the Asthma School Registry will be implemented to support asthma control in schools.

The VIAS project plays a critical role in this strategy by providing home visits to individuals with asthma, where PRAMCU staff not only educate participants on asthma management but also identify additional needs and make referrals. Specifically, visitors in the VIAS project link patients and their families to local governmental offices that may assist with home remediation, relocation, or other essential services. These services are vital to reducing asthma triggers in the home environment and improving overall asthma management.

In addition to the VIAS project, PRAMCU works closely with the Puerto Rico Department of Education (PRDoE) to implement the Asthma School Registry, which is aligned with Law 56 of 2006 and Regulation 9224. This registry seeks for every student with asthma to have a completed Asthma Action Plan. Law 56 permits students to self-administer asthma medications in schools, and Regulation 9224 specifies the required documentation that parents must submit for medication administration. By ensuring the completion and submission of the Asthma Action Plan, schools play a key role in supporting students' asthma management, while PRAMCU helps track that these students receive the necessary documentation to self-administer asthma medications in schools.

Furthermore, through the VIAS project, PRAMCU encourages healthcare professionals to refer families to additional resources, ensuring that all aspects of asthma

management—such as environmental factors, medical care, and medication adherence—are addressed. This holistic approach helps ensure that participants and their families receive the necessary support to manage asthma effectively and reduce the frequency of exacerbations.

Overall, this strategy strengthens the linkages and coordination of care across different settings, promoting comprehensive asthma management through community collaboration, health professional education, and resource referrals.

(E) – Environmental policies or best practices to reduce asthma triggers from indoor, outdoor, and occupational sources

The "E" strategy is applied through multiple approaches to help families and communities reduce asthma triggers both in the home and school environments, as well as in public spaces.

Through the VIAS project, PRAMCU helps families identify asthma triggers in the home and provides resources to mitigate exposure to them. During home visits, PRAMCU staff works with participants to assess their home environment for common asthma triggers, such as dust, pests, and allergens. Based on these assessments, a plan is developed to minimize exposure, and resources are provided to families.

In addition to home visits, PRAMCU also works to reduce asthma triggers in schools. The Asthma Control in Schools Online Course educates school personnel on how to identify and reduce asthma triggers in school environments. This course provides school staff with the knowledge and tools to create a safer, healthier environment for students with asthma.

Likewise, PRAMCU promotes the application of Law 40 of 1993, which regulates smoking in public spaces in Puerto Rico, to further reduce exposure to tobacco smoke as an asthma trigger.

Through these efforts, PRAMCU aims to minimize asthma triggers in various environments and promote healthier, safer living conditions for individuals with asthma across Puerto Rico.

Communications Plan

This Communications Plan was developed considering the following strategies:

- **Strategy 1:** Engage and educate people with asthma and their caregivers on asthma management.
- **Strategy 2:** Engage and educate the school community on asthma management through implementation of EXHALE strategies.
- **Strategy 3:** Engage and educate health professionals on asthma management through implementation of EXHALE strategies.
- **Strategy 4:** Engage and educate the general public on asthma management through implementation of EXHALE strategies.
- **Strategy 5:** Engage and educate people with asthma, caregivers, school professionals, health professionals and the general public about public policies of asthma in Puerto Rico.
- **Strategy 6**: Raise awareness and educate people with asthma, caregivers, school professionals, health professionals and the general public about epidemiologic burden of asthma in Puerto Rico.
- **Strategy 7:** Advance to greater health equity in asthma control.
- **Strategy 8:** Disseminate PRAMCU's program evaluation results.

These strategies aim to implement the EXHALE Technical Package to improve asthma control preventing hospitalizations and emergency department visits to meet the needs of all key audiences, including adults and children with asthma, caregivers, students, school professionals, health professionals (Physicians, Nurses, Health Promoters, Health Educators and other health professionals who serve people with asthma), general public and key stakeholders. For more detailed information about the key audiences, their needs, key messages and strategies, please refer to the following tables.

Table 6: Key Audiences and Needs

Key Audiences	Needs
Adults and Children with asthma	• Education about asthma management and control including: • Asthma medication and administration techniques. • Asthma triggers ongoing through the year. • Public Health Policies. • Access to the Asthma Action Plan. • Engage Advocacy in Public Health. • Access reliable and up-to-date data on asthma. • Address in disparities that disproportionately affects population with asthma. • Provide evaluation findings to stakeholders in order to address decision making process.
Caregivers	
Students	
School Professionals	
Health Professionals*	
General public	
Stakeholders	

**Health Professionals = Physicians, Nurses, Health Promoters, Health Educators and other health professionals who serve people with asthma.*

Table 7: Goal, audience and key messages

Goal	Audience/ Demographic	Key Messages
Implement the EXHALE Technical Package to improve asthma control preventing hospitalizations and	People with Asthma, Parents / Caregivers of People with Asthma (including children), School professionals, Health professionals	• Asthma is a public health problem in PR, and everyone plays a key role within the EXHALE strategies. • Health professionals can implement CDC's EXHALE package to reduce asthma-related hospitalizations, emergency department visits, and healthcare costs. • School Community can implement CDC's EXHALE strategies to reduce asthma triggers, educate on asthma management and promote the use of asthma action plans. • Asthma self-management education, home visits through VIAS project and Asthma workshops for parents can help children with asthma and their caregivers to improve asthma control.

emergency department visits.	and Asthma Stakeholders.	• Healthcare providers should educate people with asthma and their caregivers that asthma is a chronic disease with no cure, but the correct and daily use of medications can reduce its symptoms and control the disease. • Tobacco uses and exposure to secondhand smoke are considered risk factors for asthma. • Reducing asthma triggers can improve asthma control. • Guidelines-based asthma management should be followed by all healthcare providers and school nurses. • Asthma stakeholders can connect people with asthma-to-asthma education and guidelines-based care to improve the quality of life of adults and children living with asthma in Puerto Rico.

Table 8: Strategy 1 - Engage and educate people with asthma and their caregivers on asthma management.

Strategy 1: Engage and educate people with asthma and their caregivers on asthma management.					
Needs	**Activity**	**Audience**	**Sender**	**Tactic/Channel**	**Measurement**
Education about asthma management and control including: • Asthma triggers ongoing through the year.	Provide asthma workshops for caregivers of children with asthma (see appendix no. 2 for more information about the workshops).	Children with asthma, Caregivers.	PRAMCU Health Promoters, Health Educator and Nurses.	In person.	• Number of caregivers that participate in workshops. • Workshops evaluation survey.

	Make asthma action plan available on the PRDoH's website to improve accessibility (see appendix no. 8 to see PRAMCU action plan).	Children with asthma, Caregivers, school nurses, health professionals, asthma Stakeholders and general public.	PRAMCU through PRDoH Communications Office.	PRDoH's Website.	Number of website hits.
	Deliver asthma action plans to schools upon request.	Children with asthma, Caregivers.	PRAMCU Health Promoters, Health Educator or Nurses.	In person.	Number of action plans delivered to schools.
	Create and disseminate educational materials.	Caregivers.	PRAMCU, Health Educators, Asthma Stakeholders, and PRDoH's Communications Office.	In person, social media or e-mail.	Number of resources shared.
	As part of a yearlong social media plan, create two (2) social media posts about the importance of the asthma action plan.	Caregivers of children with asthma, school nurses and health professionals.	PRAMCU through PRDoH's Communications Office.	Social media (Facebook).	Number of social media (Facebook) impressions, likes and shares per post.

	Monthly, share two (2) educational materials on the VIAS caregivers group chat.	Caregivers of children with asthma that participated in VIAS project.	PRAMCU.	WhatsApp VIAS group chat.	Number of shared materials.
	Impact at least 20 children with the VIAS Project (see appendix no. 4 for mor information about VIAS Project).	Children with asthma (4-17 years old) and Caregivers.	PRAMCU Health Promoters, Health Educator and Nurses.	Two (2) in person visits (Visits no. 1 and no. 3) and one (1) virtual meeting.	Number of children impacted.
	Update PRAMCU asthma resources at the PRDoH's website. To see PRAMCU resources at the PRDoH website visit https://www.salud.pr.gov/CMS/88	Children with asthma, Caregivers, school nurses, health professionals, asthma Stakeholders and general public.	PRAMCU through PRDoH's Communications Office.	PRDoH website.	Number of website hits.

Table 9: Strategy 2 - Engage and educate school community on asthma management through implementation of EXHALE strategies.

Strategy 2: Engage and educate school community on asthma management through implementation of EXHALE strategies.					
Needs	**Activity**	**Audience**	**Sender**	**Tactic/Channel**	**Measurement**
Education about asthma management and control including: • Asthma medication and administration techniques. • Access to the Asthma Action Plan.	Host and promote the Asthma Control in Schools course to at least 50 schools per year (see appendix no. 7 for more information about the course).	School Professionals.	PRAMCU Health Promoters, Health Educator and/or Nurses.	Virtual / REDCap.	Number of participants that completed the course.
	Provide asthma management workshops for at least 100 students with asthma (see appendix no. 1 for more information about the workshop).	School-aged (K-12) children.	PRAMCU Health Promoters, Health Educator and/or Nurses.	In person.	• Number of participants. • Number of students that completed pre and post-test.
	Provide training in Asthma School Registry, Law 56 and Regulation 9224 to at least 50	School nurses.	PRAMCU Program Manager, Epidemiologist, Health Educator and/or Nurses.	Virtual (Zoom or Teams).	Number of school nurses trained.

	(public or private) school nurses. For more information about Asthma School Registry, visit: www.salud.pr.gov/registro_asma				
	Deliver Asthma Action Plans and flyers about PRAMCU services in schools upon request (see appendix section to learn about all PRAMCU services and asthma action plan).	School nurses.	PRAMCU Health Promoters, Health Educator and/or Nurses.	In person.	• Number of action plans delivered. • Number of flyers delivered.
	Implement OAS project to 3 of the 10 primary schools with more students with asthma in Puerto Rico (see appendix no. 5 for	Students with asthma between 8 to 11 years.	PRAMCU Health Promoters, Health Educator and/or Nurses.	In person.	Number of schools that completed the 6 lessons workshop.

	more information about the project).				
	Offer AMED project to at least 5 school nurses of the Arecibo Region (see appendix no. 6 for more information about the project).	School nurses.	PRAMCU Program Manager, Health Promoters, Health Educator and/or Nurses.	In person.	Number of school nurses trained.

Table 10: Strategy 3 – Engage and educate health professionals on asthma management through implementation of EXHALE strategies

Strategy 3: Engage and educate health professionals on asthma management through implementation of EXHALE strategies.					
Needs	**Activity**	**Audience**	**Sender**	**Tactic/Channel**	**Measurement**
Education about asthma management and control including: • Asthma medication and administration techniques.	Provide training with continuing education for health professionals based on EPR-3 and its 2020 updates.	Health professionals.	PRAMCU and Stakeholders.	In person or virtual conferences.	Number of health professionals trained.
	Implement AMED project to at least 10 health professionals in 3	Health professionals.	PRAMCU Project Manager, Health Promoters, Health	In person at workspace.	Number of health professionals trained.

• Access to the Asthma Action Plan.	Community Health Centers (also known as Federal Quality Health Centers - FQHC).		Educator and/or Nurses.		
	Disseminate educational materials including asthma epidemiological data.	Health professionals.	PRAMCU Health Promoters, Health Educator and/or Nurses.	In person or via email.	Number of materials disseminated.
	Publish two (2) newsletters about asthma updates per year.	Health professionals.	PRAMCU, PRDoH Communications Office.	PRDoH website or via email.	Number of website hits or emails sent.
	Deliver the Asthma Action Plan.	Health Professionals.	PRAMCU Health Promoters, Health Educator and/or Nurses.	In person.	Number of action plans delivered.

Table 11: Strategy 4 - Engage and educate the general public on asthma management through implementation of EXHALE strategies.

Strategy 4: Engage and educate the general public on asthma management through implementation of EXHALE strategies.					
Needs	**Activity**	**Audience**	**Sender**	**Tactic/Channel**	**Measurement**
Education about asthma	Conduct education on community	General public.	PRAMCU's Health Promoters, Health	In person.	Number of people listed in attendance sheet.

management and control including: • Asthma triggers ongoing through the year. • Asthma medication and administration techniques.	outreach about asthma basics.		Educator and/or Nurses.		
	Create at least two (2) monthly social media posts related to the EXHALE strategies.	General public.	PRAMCU through PRDoH Communication Office.	Social media (Facebook).	Number of views per-share at the beginning of the second semester.
	Provide at least two (2) workshops related to asthma management (see appendix no. 3 for more information about the project).	General public.	PRAMCU's Health Promoters, Health Educator and/or Nurses.	In person.	Number of people listed on the attendance sheet.
	Make at least one (1) radio or tv appearance discussing Asthma related topics.	General public.	Program Manager, Health Educator or Health Promoters.	Radio, social media Live video or TV.	Number of appearances made.
	Publish Medical Services Directory on the PRDoH website.	General public.	PRAMCU, PRDoH's Communication Office.	PRDoH´s website.	Number of website hits.

Table 12: Strategy 5 - Engage and educate all key audiences about asthma public policies in Puerto Rico.

Strategy 5: Engage and educate all key audiences about asthma public policies in Puerto Rico.					
Needs	**Activity**	**Audience**	**Sender**	**Tactic/Channel**	**Measurement**
Engage advocacy in Public Health.	Disseminate information about Law 56, Regulation 9224 and Administrative Order 473. For more information about Public Health Policies, please visit page no. 6 on this document.	All key audiences.	PRAMCU through PRDoH Communication Office.	PRDoH´s website, social media (Facebook).	Number of hits on PRDoH's website. Number of social media impressions (likes and shares per post).
	Include information about Public Policies in asthma workshops for Caregivers and Health Professionals training (including the School Nurses Training).	Caregivers and Health Professionals.	Stakeholders and PRAMCU Health Promoters, Health Educator and/or Nurses.	In person presentations.	Number of people reached.

	Create at least two (2) monthly social media posts related to Law 56, Regulation 9224 and Administrative Order 473.	All key audiences.	PRAMCU through PRDoH Communications Office.	Social media (Facebook).	Number of social impressions (likes and shares) per post.

Table 13: Strategy 6 - Raise awareness and educate key audiences about epidemiologic burden of asthma in Puerto Rico.

Strategy 6: Raise awareness and educate key audiences about epidemiologic burden of asthma in Puerto Rico.					
Needs	**Activity**	**Audience**	**Sender**	**Tactic/Channel**	**Measurement**
Access to reliable and up-to-date data on asthma.	Raise awareness among the population about the epidemiological burden of asthma in Puerto Rico.	All key audiences.	PRAMCU.	Social media (Facebook), PRDoH's website.	• Number of impressions (likes and shares) per post. • Number of website hits.
	Publish at least 2 educational materials with asthma data per year.	All key audiences.	PRAMCU Epidemiologist through PRDoH Communications Office.	In person, via email and PRDoH's website.	• Number of materials disseminated. • Number of website hits.
	Disseminate the asthma	All key audiences.	PRAMCU through PRDoH	PRDoH website.	• Number of website hits.

	surveillance report annually.		Communication Office.		

Table 14: Strategy 7 - Advance to a greater health equity in asthma control.

Strategy 7: Advance to a greater health equity in asthma control.					
Needs	**Activity**	**Audience**	**Sender**	**Tactic/Channel**	**Measurement**
Address in disparities that disproportionately affects population with asthma.	Review asthma materials and activities to ensure they meet health equity.	All key audiences.	PRAMCU Evaluator and Health Educator.	In person.	Percentage of reviewed materials.
	Review educational materials with established rubric to assure that the messages are clear, easy to understand and culturally appropriate.	All key audiences.	PRAMCU Evaluator and Program Manager through PRDoH Communications Team.	In person.	Reviewed materials.
	Prioritize the Arecibo Health Region (Region with the most prevalence of Asthma) in the dissemination of	Arecibo Health Region.	PRAMCU´s Team.	In person, via email.	Number of materials given in the region.

	educational materials.				
	Bring at least one (1) educational service to the island's municipality of Vieques or Culebra.	School groups in Vieques and Culebra islands.	PRAMCU's Health Promoters, Health Educator and/or Nurses.	In person.	Number of participants reached.

Table 15: Strategy 8 - Disseminate PRAMCU's program evaluation results

Strategy 8: Disseminate PRAMCU's program evaluation results					
Needs	**Activity**	**Audience**	**Sender**	**Tactic/Channel**	**Measurement**
Provide evaluation findings to stakeholders in order to address decision making process.	Update the evaluation category on the PRDoH's website annually. To see the evaluation category in the PRDoH website visit https://www.salud.pr.gov/CMS/88	All key audiences.	PRAMCU and PRDoH's Communication Office.	PRDoH's website.	Number of evaluation reports disseminated.

	Share the evaluation findings implemented and provide updates at annual stakeholder's meetings.	Stakeholders.	Program Manager and PRAMCU´s Evaluator.	In person and virtual.	Number of stakeholders listed in the attendance sheet.

Surveillance

PRAMCU will maintain and enhance its asthma surveillance system to ensure continuous monitoring and use of data to guide strategic action aimed at asthma control in Puerto Rico. This process will involve obtaining, analyzing, interpreting, and reporting key datasets and related measures on asthma prevalence, hospitalizations, emergency department visits, and mortality, focusing on both children (under 18 years) and adults (18 years and older).

The core datasets collected annually will include data on hospitalizations and emergency department visits from both public and private health insurers in Puerto Rico. The core measures will focus on hospital discharge rates (first-listed diagnosis) and emergency department visit rates (first-listed diagnosis), providing a detailed picture of asthma-related healthcare utilization.

Additionally, PRAMCU will utilize data from the Behavioral Risk Factor Surveillance System (BRFSS), including the BRFSS Core, BRFSS Random Child Selection Module, and BRFSS Child Prevalence Module. The core measures from BRFSS will include adult and child lifetime prevalence rates, as well as adult and child current prevalence rates, offering a comprehensive overview of asthma rates in the population.

Vital statistics from the Puerto Rico Demographic Registry will also be included, with a focus on mortality rates, specifically related to asthma as the underlying cause. This data will further enrich the understanding of asthma's impact on public health in Puerto Rico.

The PRAMCU's epidemiologist will oversee the continuous maintenance and enhancement of the Puerto Rico Asthma Surveillance System (PRASS), ensuring the system's robustness in tracking asthma prevalence, hospitalizations, emergency

department visits, and mortality over time. This effort includes compiling and annually reporting these measures to the CDC, as well as analyzing additional datasets and measures needed to support effective asthma control program planning, implementation, and evaluation. The Public Health Unit of the Prevention and Control of Chronic Conditions Section will collaborate with PRAMCU's epidemiologist to support the efforts of the PRASS.

Additional datasets to be incorporated include:

- Youth Risk Behavior Survey (YRBS) data from the CDC YRBS Explorer.
- Worker's compensation claims from the State Insurance Fund Corporation.
- Asthma prevalence data from Puerto Rico Head Start (Office of Head Start).
- Home-based VIAS Project data from PRAMCU.
- Public school's student health conditions from the PRDoE.
- Asthma health services and drug costs from public and private insurers.
- The School Asthma Registry developed in collaboration with the PRDoE School Nursing Program.

These datasets will provide a comprehensive understanding of asthma burden in Puerto Rico, identifying sub-populations disproportionately affected by asthma.

Additionally, to disseminate valuable data that supports asthma control programs, PRASS efforts currently include creating and publishing maps, tables, reports and educational materials that illustrate asthma burden. To access the latest reports and educational materials, please visit the Puerto Rico Asthma Management and Control Unit webpage at https://www.salud.pr.gov/programa_asma and select the "Epidemiology" category under the Digital File section.

Evaluation and performance measurement plan

PRAMCU developed an Strategic Evaluation Plan (SEP), which involved key stakeholders, including representatives from the American Lung Association, the PR

Health Insurance Administration, academia, and the PRDoH, with evaluators from the Suicide and Prevention Commission and the Programmatic Management Unit, along with PRAMCU staff, who formed the Evaluation Team. Drawing on the CDC's "Learning and Growing through Evaluation" Guide, this SEP incorporated both qualitative and quantitative methods to assess the program's effectiveness and inform quality improvement over a four-year period (2024-2028).

The SEP aims to answer the following key questions:

- To what extent PRAMCU strengthened and expanded programmatic infrastructure to support optimizing services and health systems?
- To what extent has PRAMCU leveraged partnerships and policies to expand the EXHALE strategies to ensure availability, efficiency, effectiveness, and health equity?
- To what extent has PRAMCU successfully engaged with health plans or health care practices in efforts to improve quality of care?
- To what extent has PRAMCU made progress toward achieving the long-term outcomes associated with asthma control, including the reduction of asthma disparities?

The key performance measure (PMs) to be addressed in the EMPM are:

- PM A - Analysis and Use of Core Data Sets and Measures
- PM B - Expansion of Partnerships to Advance Health Equity and Sustainability
- PM C - Comprehensive Services Expansion in High Burden Areas
- PM D - Improvement in Linkages to Better Serve Focus Populations and Reduce Impact on Drivers of Health Inequity
- PM E - Use of Evaluation Findings.

This SEP is designed to rigorously evaluate PRAMCU's implementation of EXHALE strategies and its impact on asthma control and health equity promotion. By integrating a broad range of stakeholders in the evaluation process, PRAMCU aims to enhance the effectiveness and reach of its interventions, ultimately reducing the

burden of asthma across Puerto Rico. For more information, please consult the Puerto Rico Asthma Program Strategic Evaluation Plan on our webpage at https://www.salud.pr.gov/programa_asma. At the end of the page, under the Digital File section, select the "Plan Estratégico" category.

Conclusion

The Strategic Plan for Asthma Control in Puerto Rico aims to enhance asthma management and reduce the burden of asthma on the population of Puerto Rico through a comprehensive, multi-faceted approach. By focusing on education, community engagement, regulatory compliance, and the implementation of evidence-based practices, this plan seeks to improve the quality of life for individuals living with asthma. Collaboration with key stakeholders, including other programs in the PRDoH, healthcare providers, government agencies, schools, and community organizations, is essential for ensuring the success of this initiative.

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Appendix

List of Acronyms

AMED	Asthma Medication: Education and Demonstration
AS-ME	Asthma Self-Management Education
ACEC	Puerto Rico Alliance for Chronic Disease Control (by its acronym in Spanish)
BRFSS	Behavioral Risk Factor Surveillance System
CDC	Centers for Disease Control and Prevention EPA Environmental Protection Agency
EPA	Environmental Protection Agency
EPR	Expert Panel Report-3
FQHCs	Federally Qualified Health Centers
HCO	Health Care Organization
HUD	US Department of Housing and Urban Development
NACP	National Asthma Control Program
NAEPP	National Asthma Education and Prevention Program
NHLBI	National Heart, Lung, and Blood Institute
OAS	Open Airways for Schools
OCS	Office of the Insurance Commissioner
PEHSU	Pediatric Environmental Health Specialty Units
PI	Principal Investigator

PM	Performance Measures
PR	Puerto Rico
PRAAP	American Lung Association, Puerto Rico Chapter - American Academy of Pediatrics
PRASS	Puerto Rico Asthma Surveillance System
PRAMCU	Puerto Rico Asthma Management and Control Unit
PRDOH	Puerto Rico Department of Health
PRDOE	Puerto Rico Department of Education
PRHIA	Puerto Rico Health Insurance Administration
SEP	Strategic Evaluation Plan
UPR	University of Puerto Rico
U.S.	United States
VIAS	Asthma Interactive Home Visits
YRBS	Youth Risk Behavior Survey