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Philadelphia College of Osteopathic Medicine
Graduate Program in Biomedical Sciences
School of Health Sciences

Asthma, Language Barriers, and Children

A Capstone in Public and Population Health Leadership by Karen Alejandres

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Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Science
in Biomedical Sciences, Public and Population Health Leadership Concentration

May 2021

ABSTRACT

In the United States, asthma affects nearly six million children annually and disproportionately affects minority children. Children who come from minorities are three times more likely to visit the emergency department than non-minority children. Additionally, Hispanic children are more likely to have avoidable asthma hospitalizations than non-Hispanic whites. Hispanic children also have decreased rates of asthma medication adherence. Previous research has identified that many social and cultural determinants like language barriers, socioeconomic status, and clinician attitudes play a crucial role in the delivery and treatment of pediatric asthma. More specifically, language barriers play a significant role in the overall understanding of pediatric asthma by parents and contribute to low medication adherence rates seen in pediatric patients. However, there is limited research addressing physician perspectives on language barriers. The purpose of this paper is to explore physician attitudes and beliefs about language barriers to better understand pediatric asthma treatment and health outcomes within Hispanic minority children.

INTRODUCTION

Asthma is a highly prevalent chronic condition in the United States, affecting approximately 18.7 million adults and 7.0 million children.¹ It has been shown by previous research that numerous racial and ethnic disparities exist in asthma prevalence, severity, and overall health outcomes.¹ In the United States, Hispanics are disproportionately affected by asthma.² Although overall asthma mortality rates have decreased in the U.S, ethnic minorities such as Hispanics have higher mortality rates than whites.² Along with increased mortality rates, Hispanics are twice as likely to visit the emergency department for asthma than non-Hispanic whites.³ Additionally, Hispanic children are 40 percent more likely to die from asthma than non-Hispanic whites.³ Although the exact reasons why these disparities exist remain unclear; research has shown that socioeconomic status, health care access, health literacy, and clinician bias are factors that may influence asthma health outcomes.⁴

BACKGROUND

Research has shown that language barriers significantly contribute to the asthma disparities seen within the Hispanic community. In the United States, approximately 58 million people or one in five people speak a language other than English, including Spanish, Chinese, and French.⁵ Among these languages, Spanish is the most common and is the second most common language spoken in the U.S.⁵ Additionally, among these 58 million people, 25 million report having limited English proficiency (LEP). LEP classification is given to individuals who do not speak English as their primary language

and have a limited ability to read, speak, write, or understand English.⁵ Hispanics comprise a vast majority of LEP individuals. Nearly 63 percent of all LEP individuals are of Hispanic and Latino descent.

LEP classification presents significant obstacles to accessing and receiving care in a medical system that is English-dominant.⁵ Individuals who identify as LEP often encounter language as a barrier to obtaining and receiving healthcare services. When LEP status is encountered in the medical system, it results in communication barriers in patient-physician encounters.¹ Research has also shown that providers may spend less time listening and making fewer supportive statements when working with families with limited English proficiency.¹ Other research suggests that LEP in asthma patients is also related to less effective patient care.¹ Although there are federal regulations requiring healthcare organizations to provide trained interpreters for LEP patients, many hospitals and clinicians fail to do so.⁵ Failure in providing these services may be due to lack of funding or limited time capacity. Many healthcare institutions rely on ad-hoc interpreting from family members or untrained medical staff. The underuse of professional interpreters and reliance on ad-hoc interpreting may also lead to compromised healthcare.¹ Healthcare organizations use these inequivalent forms of interpreting when patients speak a language other than the clinician's primary language or when professional interpreters are not available.

While language barriers themselves cause significant disparities in healthcare by influencing the outcomes of chronic conditions like pediatric asthma, their secondary effects, like impacting physician attitudes and implicit bias, also influence patient care. Although there is limited research addressing physician attitudes regarding language

barriers, one study showed that language barriers influenced pediatrician decision making regarding pain management.¹

Language barriers influence pain management and clinician decision-making and have crucial roles in how pediatric asthma is treated. According to the National Asthma Education and Prevention Program (NAEPP) of the National Heart, Lung, and Blood Institute to treat pediatric asthma clear and constant communication is needed between physicians and caregivers.⁶ To manage pediatric asthma the NAEPP recommends that treatment include patient education, trigger avoidance, and drug therapy regimens.⁶ Education for patients and their caregivers should focus on identifying and avoiding triggers, understanding the uses of prescribed medications, and the importance of medication compliance, monitoring, and proper use of inhalation devices.⁶

The NAEPP also recommends using Written Asthma Action Plans (WAAP) (see appendix A).⁷ These asthma action plans should be given to all patients and caregivers of patients with asthma. The use of these daily self-management plans provides patients and their caregivers with guidance in peak flow monitoring, medication usage, and symptom reporting.⁶ Ideally, these daily and emergency plans should be developed in accordance with patients, caregivers, and medical providers. WAAPs have been associated with greater medication adherence and reduced health care utilization, like fewer asthma-related hospitalizations and emergency department visits.⁷ Although WAAPs are integral parts of pediatric management and treatment, there are concerns about their complexity and degree of understanding for low-literacy populations.⁷

It is important to note that the health literacy scores for Black, Hispanic, American/Indian and multicultural adults are on average lower than those of white and

Asian/Pacific Islander adults.⁸ According to the 2003 National Assessment of Adult Literacy, 58% of Black and 66% of Hispanic adults exhibited "basic" or "below basic" health literacy compared to 28% of white adults.⁸ Additionally, bilingual adults who spoke a language other than English before starting school had lower average health literacy scores than adults who spoke only English before starting school.⁸ Low health literacy is likely to contribute to poor management of childhood asthma.⁷ Additionally, children of parents with low health literacy are at risk of worse asthma-related outcomes, including greater asthma symptom severity and higher hospitalization rates.⁷

As mentioned previously, the use of written asthma action plans are crucial in the treatment and management of pediatric asthma. However, there is a continuous debate on their effectiveness with low health literacy populations like the Hispanic population. Research has shown that although these WAAPs are an essential part of pediatric asthma treatment, less than half of all asthmatic patients receive them.⁷ In general, WAAPs are written at a sixth-grade reading level and can be challenging to understand for low literacy populations. Frequent issues presented with WAAPs include misunderstanding of medication instructions, confusion between daily and preventative medications, and difficulty recognizing symptoms of severe asthma exacerbations.⁷

For caregivers of children with asthma and who are of limited English proficiency, understanding and comprehending WAAPs can be extremely challenging and overwhelming. In medical settings where English is primarily the dominant language, WAAPs are often only available in English. Providing these plans in English has been found to be ineffective to limited English speakers.⁹ The language discordance of asthma action plans has been found to insufficiently promote adequate asthma

prevention and overall treatment planning and understanding.⁹ Additionally, when asthma action plans are available in Spanish, research has shown that caregivers sometimes find them difficult to understand.⁹ This may be partially due to the literacy level required to read and accurately comprehend these plans. However, there is limited research on the use and efficacy of written asthma action plans in Spanish.

Although the effectiveness of using asthma action plans in Spanish is not yet well understood, there has been research suggesting that low-literacy asthma action plans have been shown to improve parent and patient understanding of asthma management.⁷ These low literacy asthma action plans provide caregivers and families with easy-to-understand information in plain language and are pictogram and photograph-based. While these plans may seem beneficial only to low literacy populations, like the Hispanic population, they also have been shown to be effective for medical providers.⁷ The use of low literacy asthma plans have been found to improve physician ability to counsel about pediatric asthma compared to the use of a standard WAAP.⁷

Additionally, providers who used these low literacy asthma action plans were more likely to use clear communication principles than those who used standard plans.⁷ It was identified that these plans provided a framework for counseling that prompted clinicians to address critical issues that are often difficult for families to understand.⁷ Along with this, providers who used low literacy asthma plans gave instructions for taking daily medications by using time of day (morning vs. night) instead of less specific instructions, like twice per day.⁷ Lastly, research has shown that providers who used low-literacy plans used explicit words to describe respiratory signs and symptoms. These findings benefit low literacy communities and demonstrate how redesigning standard

asthma action plans can influence the content and style of provider counseling.⁷ This can be highly beneficial for caregivers who are of limited English proficiency and can potentially impact overall asthma health outcomes for children.

Along with the use of low literacy asthma plans for LEP caregivers, research has shown that outpatient asthma education programs have been beneficial for minority communities.¹⁰ The NAEPP believes that adequate asthma control through modern treatment, treatment plans and education programs are useful for minority populations who are disproportionately affected by asthma.¹⁰ Moreover, the NAEPP suggests that these programs can be reinforced with the development of partnerships with caregivers, schools, and healthcare providers.¹⁰ Likewise, the National Heart, Lung, and Blood Institute guidelines for asthma treatment strongly recommend a focus on asthma education as it has been related to lowered asthma morbidity overall.¹¹ Studies have shown that asthma education programs that involve both the caregiver and patient while offering concepts of preventative care improve asthma management skills, reduce morbidity, hospitalization, and enhance the quality of life for minority communities.¹²

Although there is a widespread agreement that asthma education is an essential element of asthma treatment, unfortunately for minority communities like LEP and Hispanics, these resources are not always available. As recent studies continue to show the importance of preventive therapies in pediatric asthma, research also shows that many urban minority children of Hispanic descent are not receiving these services.¹² In fact, many urban children receive only episodic care from health care providers when they present to inpatient settings.¹² Often, the care these children receive is not in accordance with the standards established by the NAEPP for the diagnosis and management of

asthma.¹² Although there is limited research examining why there continues to be discrepancies on the access of asthma education materials for Hispanic caregivers, limited healthcare funding, the absence of translational services, or undeveloped asthma health education programs may be influencing factors.

As it has been described, the use of appropriate asthma education programs can serve as essential tools for limited English proficiency caregivers and their children. Most importantly, research has shown that asthma education programs involving caregivers are crucial for asthma management in children.¹⁰ Although there are many educational materials like pamphlets, books, and videos, in-person educational programs seem to be more frequented by the Hispanic community.¹¹ Specifically, programs that are school-based or community-based have increased attention. These programs have not only been found beneficial for minority children but also for their caretakers.^{10,11} For children, having these educational programs in schools facilitates learning in an environment in which they are already accustomed to do so.¹⁰ While for parents, these school-based programs provide environments outside of a medical setting where they can engage and ask questions regarding their child's medical condition. One study, in particular, found that disease management training for children, which also included handouts and homework for parents, resulted in better asthma disease management.¹⁰ This training showed improved control of daytime and nighttime asthma symptoms and reduced absences from school and work (for caregivers) related to asthma exacerbations.¹⁰

Other educational programs outside of school-based environments like community-based programs have also been shown to be beneficial for minority communities. One study designed a program called "Asthma Amigos" (Spanish for

Asthma Friends) to educate community volunteers about asthma and relay this information to Hispanic caregivers.¹³ Asthma Amigos provided informational material in both English and Spanish and provided this information in a culturally tailored manner while addressing common misconceptions about asthma in the Hispanic community.¹³ Furthermore, the Asthma Amigos teaching sessions were conducted outside of medical settings, in casual environments, including barbeques, first communion parties, caregivers' homes, and work environments. These environments facilitated the conversations regarding asthma care for Hispanic caregivers and allowed for open discussion on common asthma triggers and misconceptions. Overall, the Hispanic community and the Asthma Amigos volunteers benefited from these discussions. Most importantly, Hispanic caregivers felt more confident in their overall understanding of pediatric asthma.¹³ The train-the-trainer model used in this educational program for Hispanic caregivers should be implemented as an additional way for limited English proficiency caretakers to learn about their children's condition. It was evident from this study that the use of bilingual staff, invested task force, and culturally appropriate educational materials were vital to the success of Asthma Amigos.¹³ Programs like Asthma Amigos should be readily accessible for LEP speakers to gather information on pediatric asthma outside of a medical environment and to help improve caregivers' perspectives of asthma management and treatment.

There are numerous barriers that limited English proficiency speakers and the Hispanic community face regarding pediatric asthma. Such factors include language, health literacy, asthma treatment and planning, and overall access to educational materials. However, language barriers have additional effects on the LEP community,

including influences on physician attitudes, perspectives, and biases. The influences that language barriers have on physician beliefs can impact how pediatric asthma is treated and managed. Research has shown that medication adherence behavior has been influenced by the individual patient, the healthcare system (insurance, resources, and coverage), and the patient-physician interaction (communication and relationship).¹

The patient-physician relationship can be influenced in many ways, but for LEP speakers, language barriers play a prominent role.¹ Studies of communication patterns have shown that in the healthcare setting, physicians may spend less time listening and making fewer supportive statements when working with LEP communities.¹ Other research has also found that Spanish-speaking Latino parents of children with asthma had poorer experiences with care (less communication about specific asthma practices) with their medical teams than compared to parents of white children.¹ Although the exact reasons for these discrepancies have not been defined, there is evidence suggesting that unintentional bias or implicit biases may play a role in affecting communication patterns with patients and management of medical recommendations.¹ Moreover, research has indicated that health care provider biases and communication patterns with culturally diverse patients like the LEP community affect providers' skills in communicating about controller asthma medication use in a culturally sensitive manner.¹

While there is limited research suggesting that language barriers alone influence clinician and medical staff bias, culture also seems to be a barrier to receiving quality care for Hispanic and other ethnic minorities. Both language barriers and culture can influence physician and patient interactions and contribute to lower quality clinical relationships.¹⁴ Research has also suggested that implicit bias may not be consciously

acknowledged and can operate in subtle ways.¹⁴ It has been shown in laboratory studies, clinicians with implicit bias may unconsciously exhibit negative behavior or poor communication with black patients.¹⁴ These attitudes and behaviors may be seen similarly with the Hispanic community as well. Moreover, not only does clinician implicit bias reduce patient's comfort and trust, but it may also impede the flow of information, reduce interview times, and decrease patient's understanding of medical advice.¹⁴

As it has been demonstrated in research, language and culture influence providers' perceptions of ethnic minority communities and affect implicit biases.¹⁴ However, both language and culture may also play a role in cultural health beliefs for both physicians and caretakers. Common cultural beliefs related to asthma include asthma causation, the safety of long-term inhaled corticosteroids, and the benefits of herbal therapies.¹⁵ These cultural beliefs may affect caretaker decisions on following recommended medical management.¹⁵ For providers, these cultural beliefs may influence their attitudes and perspectives on Spanish-speaking caretaker's ability to manage chronic conditions like pediatric asthma.

To bridge the gap between physician perspectives, implicit biases, language, and cultural barriers, researcher suggests physicians must first recognize the complexity of these issues and make meaningful practice changes to better care for these minority patient populations.¹⁵ Changes that should be implemented include identifying patients who need interpretation services, providing language services in live and virtual settings, and written communications in the caretaker's native language.¹⁵ Moreover, there is a need to increase the diversity of medical staff, not only to increase communication with

limited-English proficiency speakers but also to expose other medical colleagues and staff on how to effectively communicate with ethnic minorities.¹⁵

To address cultural barriers and nonmedical views on health and wellness, which may be present in minority groups, medical providers need to understand illness representation. In western society, illness is seen through biomedical lenses of health, and assumptions are made that illness is secondary to disease, and cultural influences on health are oftentimes ignored.¹⁵ However, in other communities, illness and cultural factors are directly correlated. These direct correlations of illness influence how patients understand disease, cope, and make decisions on treatment adherence.¹⁵ To allow physicians to be acquainted with customary beliefs of ethnic minorities, they must engage in diversity and communication training and work with community health workers to obtain a better understanding on how culture influences medicine.¹⁵

Overall, language barriers continue to affect the quality of asthma healthcare limited English proficiency families receive. In terms of pediatric asthma, language barriers play significant roles in the provision of asthma education programs, written asthma action plans, and asthma health outcomes. Moving forward, limited English proficiency communities would benefit from low literacy written asthma action plans, community-based education programs, and physician cultural health training.

RESEARCH STRATEGIES

Research for the formation of this paper was gathered using search engines including google scholar and PubMed. The google scholar search engine was used to obtain general overview information on asthma statistics and language barriers in the United States. PubMed was used to obtain focused information pertaining to language barriers, including but not limited to physician attitudes, asthma management, and asthma educational resources. Keywords used to search through both databases included "Hispanic, language barriers, pediatrics, and asthma."

Overall, information for the topics presented in this paper was generally accessible. However, very few reports were available for physician perspectives and implicit bias due to language barriers. This may have been due to limited studies focusing on physician perspectives or narrow search terminology. Therefore to gather information on such issues, fewer key terms were used. The terminology used included terms and phrases such as "implicit bias and minorities" and "language barriers and physician attitudes." With the use of more indirect terminology, more resources became available. For topics where research was limited, google scholar seemed to offer more research studies.

DISCUSSION

Limited English Proficiency (LEP) status continues to be a constant barrier for ethnic communities like the Hispanic community. Language creates barriers in pediatric asthma in access to translational services, overall caretaker understanding of asthma management, and educational resources and materials. Most importantly, language barriers can influence patient-physician relationships, impacting comprehensive pediatric asthma management and treatment adherence.

There may be various reasons why ethnic minorities and limited English speakers continue to face these discrepancies in the healthcare setting. One of these reasons can be due to the limited financial resources of medical institutions. Specifically, medical institutions may not have the appropriate funds to provide translational services like onsite interpreters or additional translational services. Government institutions should be more involved in administering where funding for minority services goes to help bridge the effects of language barriers experienced by both physicians and LEP care providers.

Lack of funding can also affect access to educational programs and materials LEP caretakers receive. As research has shown, educational programs are essential to the management and treatment of pediatric asthma.^{10,11} However, if the proper funds are not available for these programs, many pediatric asthma patients may be at risk for increased asthma exacerbations and emergency department visits.¹² Therefore, medical institutions should work with government authorities and community stakeholders to secure funding for asthma education programs.

Medical institutions should also ensure that asthma education programs are community and school-based. These programs should present information in the caretaker's native language and present information in a culturally tailored manner. Common misconceptions, folk medicine, and the use of inhaled corticosteroids should therefore be addressed. These programs should occur in environments where minority communities feel safe and are willing to engage in discussion. The Asthma Amigo's education program found settings like barbeques, family parties, or after religious ceremonies to be practical areas to initiate these discussions.¹³

Another vital aspect to consider in the management of pediatric asthma for limited English caregivers is the use of written asthma action plans (WAPPs). As the NAEPP suggests, written asthma action plans are crucial in the management of pediatric asthma.⁶ However, oftentimes, these plans are not available in Spanish or are not written at the literacy level of limited English proficiency speakers. Medical institutions should ensure that these WAPPs are provided to caretakers in their native language and ensure that these minority individuals can understand them.

Proyecto INSPIRAR (Project Inspire) is a program that focuses on providing research focusing on improving the health of children who have asthma and who are under the care of Spanish-speaking caregivers.¹⁶ They provide research on how LEP status affects pediatric asthma and provide written asthma action plans in Spanish and for low health literacy populations (see appendix B). These written asthma action plans are picture and color-based and may be easier to understand than conventional written asthma action plans (see appendix A). Moving forward, medical providers should use

WAPPs that are similar to Proyecto Inspirar's action plans when working with limited English speakers and low health literacy populations.

Lastly, in addition to increased translational services, education programs, and written asthma action plans, physician perspectives on culture and language should be addressed. Training on implicit bias and cultural sensitivity should be required as part of medical training. Moreover, there needs to be a call to action to diversify the medical field. This would allow for patients to feel more comfortable in speaking with physicians and improve the patient-physician provider relationship.

RECOMMENDATIONS FOR FUTURE STUDIES

Future studies in this area should be centered around physician's perspectives on language barriers and pediatric asthma. More specifically, they should focus on why language barriers may cause implicit biases in medical staff. More research should be done on the perspectives of medical translation services for both providers and caregivers. By focusing on what providers believe works and what areas need improvement regarding translational services, medical systems can work together to address these issues.

There is also limited research in the area surrounding the provision of asthma educational materials in Spanish. Few studies show which materials Spanish caretakers prefer and which seem more successful in the long term. Studies focusing on these areas may allow for the overall improvement of asthma understanding in Spanish-speaking communities. These studies could also improve access to these materials for both physicians and caregivers.

Lastly, additional areas of study may include the role of the healthcare team and their attitudes toward limited English-speaking caretakers. Addressing the healthcare team may be beneficial in addressing underlying implicit bias and offer increased communication between the healthcare team and ethnic minorities. Overall, understanding how medical teams feel when working with language or cultural barriers may help improve chronic disease management and health outcomes with children dealing with asthma.

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APPENDIX A

ASTHMA ACTION PLAN



Name:	Date:
Doctor:	Medical Record #:
Doctor's Phone #: Day	Night/Weekend
Emergency Contact:	
Doctor's Signature:	

The colors of a traffic light will help you use your asthma medicines.



- GREEN means Go Zone!**
Use preventive medicine.
- YELLOW means Caution Zone!**
Add quick-relief medicine.
- RED means Danger Zone!**
Get help from a doctor.

Personal Best Peak Flow: _____

GO	Use these daily controller medicines:		
<p>You have <i>all</i> of these:</p> <ul style="list-style-type: none"> • Breathing is good • No cough or wheeze • Sleep through the night • Can work & play <p>Peak flow:</p> <div style="border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin: 0 auto;"> <div style="text-align: center;">from</div> <div style="width: 10px; height: 10px; border: 1px solid black; margin: 0 5px;"></div> <div style="text-align: center;">to</div> </div>	MEDICINE	HOW MUCH	HOW OFTEN/WHEN
For asthma with exercise, take:			
CAUTION	Continue with green zone medicine and add:		
<p>You have <i>any</i> of these:</p> <ul style="list-style-type: none"> • First signs of a cold • Exposure to known trigger • Cough • Mild wheeze • Tight chest • Coughing at night <p>Peak flow:</p> <div style="border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin: 0 auto;"> <div style="text-align: center;">from</div> <div style="width: 10px; height: 10px; border: 1px solid black; margin: 0 5px;"></div> <div style="text-align: center;">to</div> </div>	MEDICINE	HOW MUCH	HOW OFTEN/ WHEN
CALL YOUR ASTHMA CARE PROVIDER.			
DANGER	Take these medicines and call your doctor now.		
<p>Your asthma is getting worse fast:</p> <ul style="list-style-type: none"> • Medicine is not helping • Breathing is hard & fast • Nose opens wide • Trouble speaking • Ribs show (in children) <p>Peak flow:</p> <div style="border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin: 0 auto;"> <div style="text-align: center;">reading below</div> <div style="width: 10px; height: 10px; border: 1px solid black; margin: 0 5px;"></div> </div>	MEDICINE	HOW MUCH	HOW OFTEN/WHEN

GET HELP FROM A DOCTOR NOW! Your doctor will want to see you right away. It's important! If you cannot contact your doctor, go directly to the emergency room. DO NOT WAIT.
Make an appointment with your asthma care provider within two days of an ER visit or hospitalization.

Figure 1. Example Asthma Action Plan provided by the Asthma and Allergy Foundation of America

Appendix B

asmaplan.com

TODO BIEN

- * Respira bien
- * No tiene tos o silbido
- * Puede dormir toda la noche
- * Puede jugar sin dificultad



Precaución

- Empieza un resfriado
- Tos nueva (día o noche)
- Sonido de silbido: "wheeze"
- Siente el pecho apretado
- Contacto con algo que provoca el asma



Muy enfermo

- Las medicinas no ayudan
- Respira rápido y fuerte
- La nariz se nota abriéndose
- Las costillas se hunden
- No puede hablar bien
- No puede jugar ni andar



Nombre	Fecha
Médico	# Récord médico
En case de emergencia #	
Firma del Médico	

Tome esta medicina **TODO LOS DÍAS:**

 <p>Mañana</p>	 <p>Noche</p>
---	--

Continúe con su tratamiento diario y **TOME TAMBIÉN LA MEDICINA DE RESCATE:**

MEDICINA DE RESCATE

ProAir
(Albuterol)







CUÁNTO
2 inhalaciones con espaciador cada 4 horas



PORFAVOR HAGA CITA CON SU MÉDICO

Use la medicina de rescate y **LLEVE EL NIÑO AL MÉDICO AHORA**

ProAir
(Albuterol)







URGENTE





CUÁNTO
2 inhalaciones con espaciador



LLAME AL 911/ TIENE QUE VER UN MÉDICO

Figure 1. Example Asthma Action Plan in Spanish for ProAir Medication
Asthma Action Plan provided by the Proyecto Inspirar