

Diabetes Mellitus and Influenza

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Endocrinólogo



Access Bad Bunny ✓

@AccessBadBunny

MI DIABETES ESTÁ ATACANDO DIOS MIO SANBENITO

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Te va a dar diabetes (x4)
Si Sugar está en la loma,
tú te bajas en la novena.
Yo mismo me impresiono,
como Randy Arozarena.
Bad Bunny salió,
pongan sus discos en cuarentena.





MAGNITUD MUNDIAL

En el **2021**, aproximadamente **529 millones** de personas en el mundo vivían con diabetes. Se estima que para el **2050** alrededor de **1.3 billones** de adultos tendrán diabetes.(2) No obstante, adoptar un buen estilo de vida puede disminuir la probabilidad de desarrollar diabetes, en especial el tipo 2, o mejorar la calidad de vida en general.(3)



MAGNITUD ESTADOS UNIDOS Y PUERTO RICO

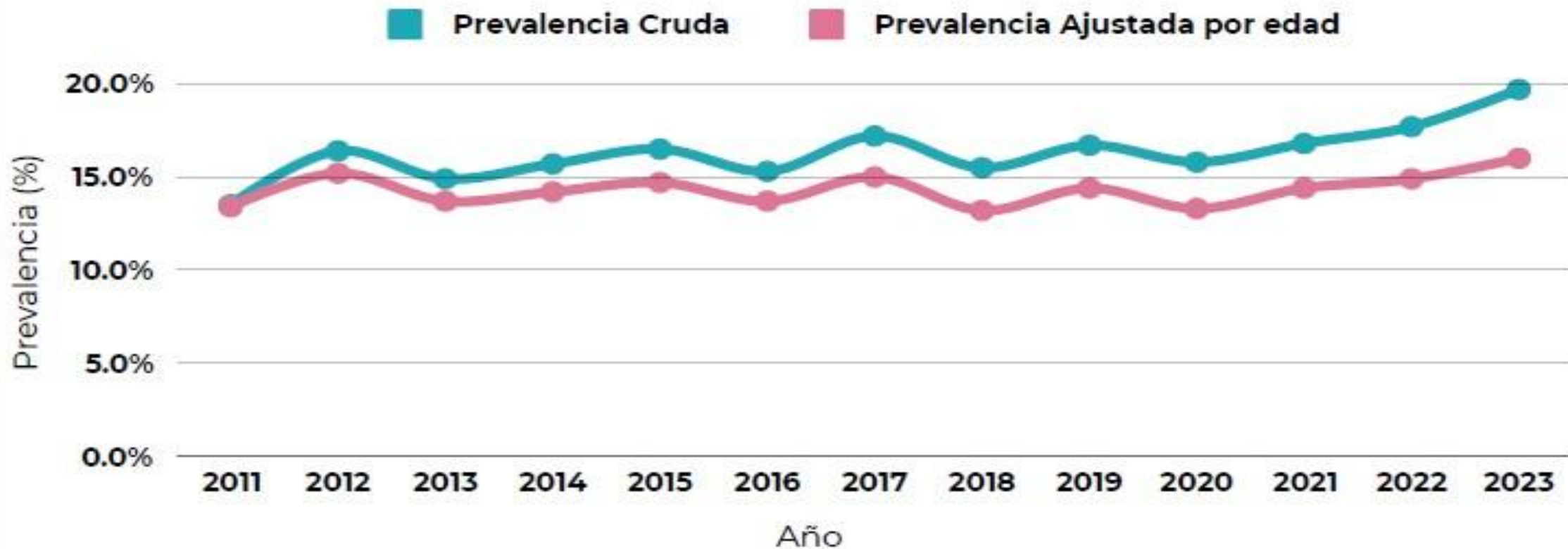
En el **2023**, la mediana de la prevalencia de diabetes para los adultos de 18 años o más en los Estados Unidos (EE.UU.) fue de **11.5%**.(4) Además, la prevalencia en Puerto Rico (PR) para esta enfermedad, en este mismo grupo de edad, fue **19.7%** (≈533,757). En otras palabras, alrededor de **2 de cada 10** adultos tenían diabetes en PR.



TENDENCIA EN PREVALENCIA

Durante el período de 2011 a 2019, la prevalencia de diabetes en Puerto Rico, tanto cruda como ajustada por edad, se mantuvo constante. Sin embargo, a partir del año 2020 se ha visualizado un **incremento gradual**.⁽⁴⁾

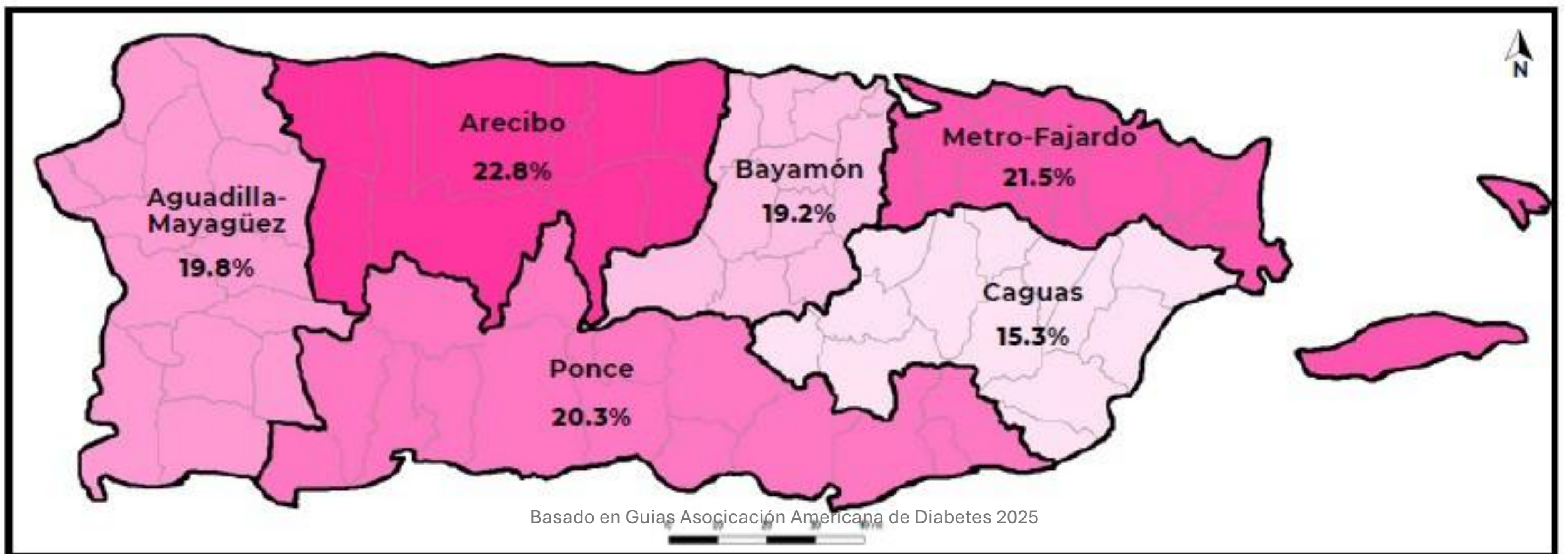
GRÁFICA 1. TENDENCIA EN LA PREVALENCIA DE DIABETES, PUERTO RICO, ADULTOS 18 AÑOS O MÁS, BRFSS, 2011-2023.*



REGIONES DE SALUD

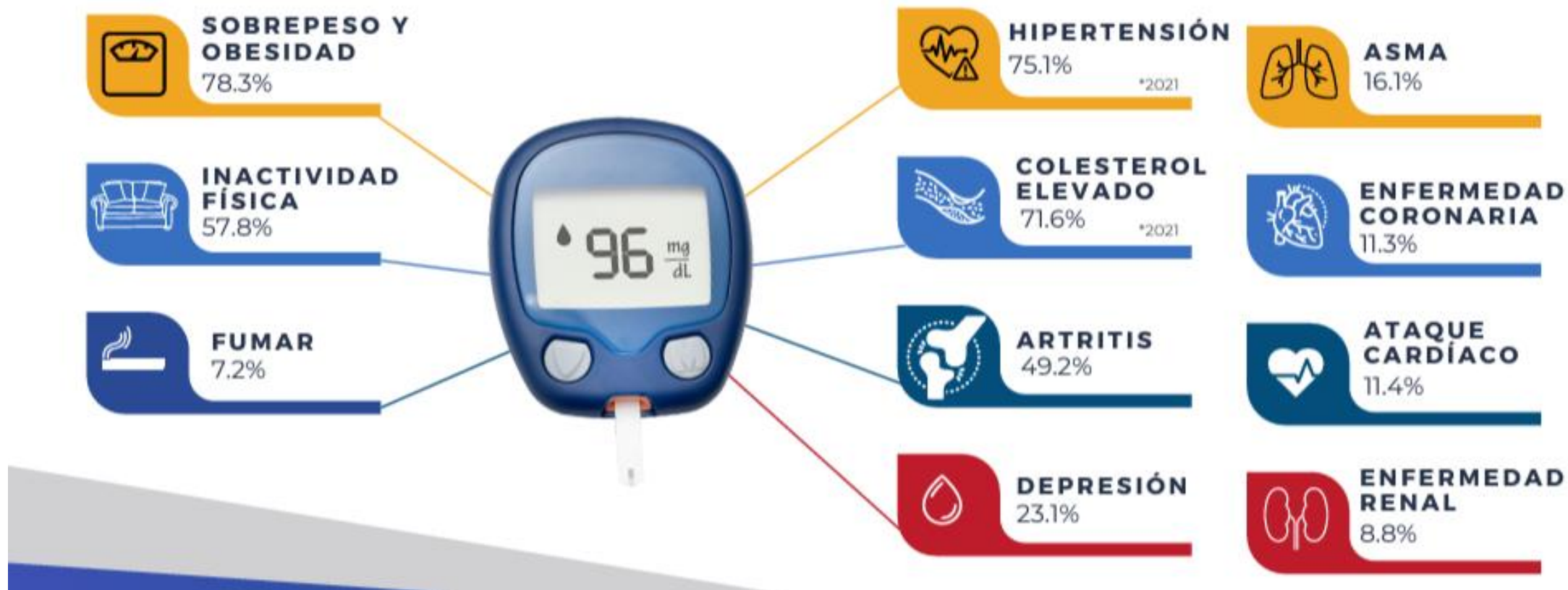
Para el 2023, los residentes de las regiones de salud de **Arecibo (22.8%)**, Metro-Fajardo (21.5%) y Ponce (20.3%) representaron las prevalencias más altas de diabetes (ver Figura 1).

FIGURA 1. PREVALENCIA DE DIABETES POR REGIÓN DE SALUD, ADULTOS 18 AÑOS O MÁS, PUERTO RICO, BRFSS, 2023.*

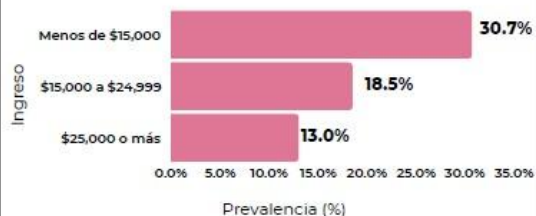


FACTORES DE RIESGO

COMORBILIDADES



GRÁFICA 5. PREVALENCIA DE DIABETES POR INGRESO, ADULTOS 18 AÑOS O MÁS, PUERTO RICO, BRFS, 2023.*

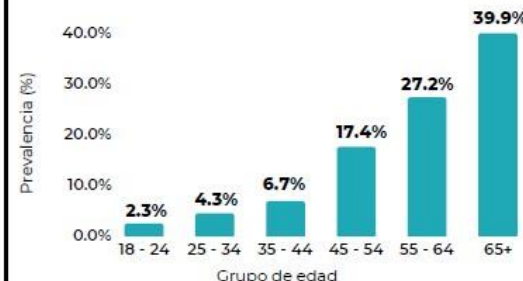


PREVALENCIA POR INGRESO

Durante el año 2023, se observó que la prevalencia de diabetes pareció ser mayor para las personas con un **ingreso anual menor de \$15,000**, representando un 30.7%. También, se visualizó una tendencia de disminución en la prevalencia a medida que aumenta el ingreso anual (ver Gráfica 5).



GRÁFICA 2. PREVALENCIA DE DIABETES POR GRUPOS DE EDAD, ADULTOS 18 AÑOS O MÁS, PUERTO RICO, BRFS, 2023.*



PREVALENCIA POR GRUPOS DE EDAD

Durante el año 2023, se observó que la prevalencia de diabetes aumenta a medida que incrementa la edad, siendo los **adultos de 65 años o más** el grupo de edad en el que la enfermedad aparentó ser más prevalente (39.9%; ver Gráfica 2).

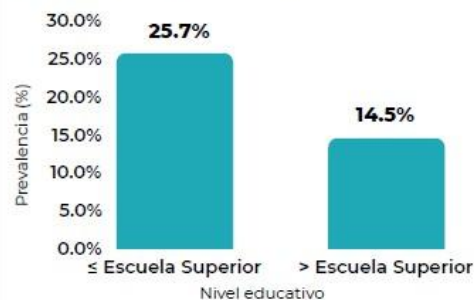


PREVALENCIA POR EDUCACIÓN

Durante el año 2023, se observó que las personas con un **nivel educativo menor o igual a la escuela superior** representaban el grupo de mayor prevalencia de diabetes, siendo esta 25.7% (ver Gráfica 6).



GRÁFICA 6. PREVALENCIA DE DIABETES POR EDUCACIÓN, ADULTOS 18 AÑOS O MÁS, PUERTO RICO, BRFS, 2023.*



PREVALENCIA POR SEXO

Durante el año 2023, se observó que las **mujeres** representan el sexo con la prevalencia de diabetes más alta, siendo esta 20.3% (ver Gráfica 3).



GRÁFICA 3. PREVALENCIA DE DIABETES POR SEXO, ADULTOS 18 AÑOS O MÁS, PUERTO RICO, BRFS, 2023.*



Diabetes and influenza: risk of complications

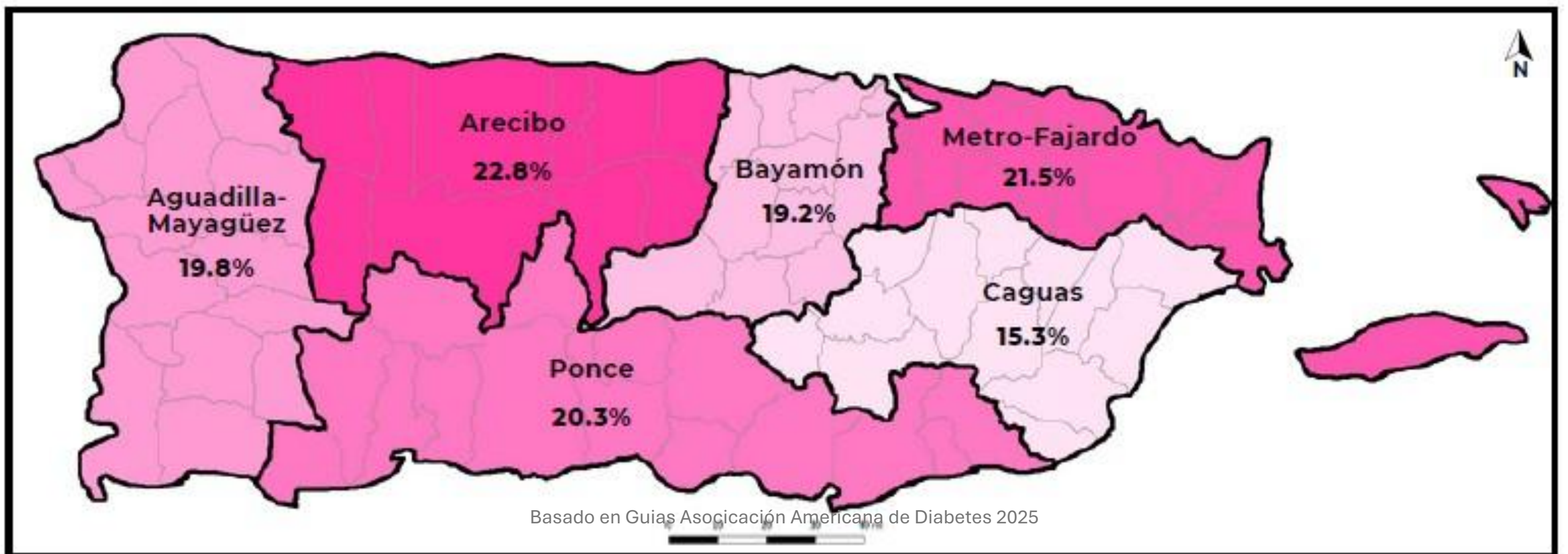
Diabetes increases the risk for severe flu-related illness. In a cohort study of 166,715 individuals in Manitoba, Canada, Lau and colleagues found that adults with diabetes were at significantly greater risk for serious illness related to influenza compared with those without diabetes; this justifies guideline recommendations for influenza vaccination in this population. After controlling for age, sex, socioeconomic status, location of residence, comorbidities, and vaccination, adults with diabetes had a significant increase (6%) in all-cause hospitalizations associated with influenza ($P = .044$). Only 16% of the patients with diabetes in the cohort and 7% of the patients without diabetes had been vaccinated. [19, 20]

Melville N. New Evidence: Diabetes Does Up Risk for Flu-Related Illness. Medscape [serial online]. Available at <https://www.medscape.com/viewarticle/819737>. January 27, 2014; Accessed: April 26, 2024.

REGIONES DE SALUD

Para el 2023, los residentes de las regiones de salud de **Arecibo (22.8%)**, Metro-Fajardo (21.5%) y Ponce (20.3%) representaron las prevalencias más altas de diabetes (ver Figura 1).

FIGURA 1. PREVALENCIA DE DIABETES POR REGIÓN DE SALUD, ADULTOS 18 AÑOS O MÁS, PUERTO RICO, BRFSS, 2023.*



AREAS WITH HIGHE PREVALENCE OF DIABETES HAD MORE CASES OF INFLUENZA IN PUERTO RICO

Tabla 1. Casos de influenza según prueba rápida reportados para la Semana Epidemiológica 43, Temporada 2024 – 2025.

Influenza	Semana Epidemiológica 43*	Temporada 2023 – 2024	Temporada 2024 – 2025**
Casos totales reportados <i>(incluye hospitalizaciones)</i>	620	92,737	9,163
Regiones de salud con tasas más altas	Arecibo	Ponce	Fajardo
Vacunados***	17	6,716	723

AREAS OF HIGHER PREVALENCE OF DM AND INFLUENZA RELATED DEATHS

Tabla 6. Fatalidades asociadas a influenza en la temporada 2024 – 2025, Puerto Rico.

Región	Fatalidades
Arecibo	1
Bayamón	6
Caguas	3
Fajardo	2
Mayagüez	2
Metropolitana	6
Ponce	9
Total	29

Nota: Los datos son preliminares.

PRELIMINARY REPORT : MUST
VERIFY WITH OFFICIAL
STASTISTICS

Tabla 3. Distribución de casos y hospitalizaciones por regiones de salud para la Semana Epidemiológica 52, Temporada 2023 – 2024.

SEE THAT PONCE AND ARECIDO HAVE THE HIGHEST PREVALENCE OF DM IN
PUERTO RICO

Región	Número de casos	Hospitalizaciones	Total
Arecibo	131	19	150
Bayamón	196	8	204
Caguas	297	6	303
Fajardo	42	0	42
Aguadilla/Mayagüez	206	5	211
Metro	260	5	265
Ponce	240	12	252
Otro*	22	3	25
Total	1,394	58	1,452

Nota: Los casos clasificados como "Otro" corresponden a 0 casos de los cuales la información de municipio de residencia se encuentra en proceso de investigación y 25 caso no residentes de Puerto Rico. Los datos son preliminares.

Tabla 6. Fatalidades asociadas a influenza en la temporada 2023 – 2024, Puerto Rico.

Región	Fatalidades
Arecibo	9
Bayamón	12
Caguas	17
Fajardo	4
Aguadilla/Mayagüez	5
Metro	13
Ponce	25
Total	85

Nota: Los datos son preliminares.

WE SHOULD INCREASE VACCINATION EFFORTS IN AREAS WITH HIGHER PREVALENCE OF DM DUE TO DEATHS AND HOSPITALIZATIONS

Tabla 7. Distribución de fatalidades asociadas a influenza por Semana Epidemiológica, Temporada 2023 – 2024.

Diagnostic tests for Influenza

It should be kept in mind, however, that these rapid tests have limited sensitivities and predictive values; false-negative results are common, especially when influenza activity is high, and false-positive results can also occur, especially when influenza activity is low.^[3] Nevertheless, influenza virus testing may be considered if the results will change the clinical care of the patient (especially if the patient is hospitalized or has a high-risk condition) or influence the care of other patients.^[3]

The gold standard for confirming influenza virus infection is reverse transcription-polymerase chain reaction (RT-PCR) testing or viral culture of nasopharyngeal or throat secretions. However, culture may require 3 to 7 days, yielding results long after the patient has left the clinic, office, or emergency department, and well past the time when drug therapy could be efficacious.

Gold standard

DO NOT WAIT: FOLLOW CLINICAL JUDGEMENT TAKE PROMPT
ACTION WHEN NEEDED

Clinical presentation influenza

Onset of illness can occur suddenly over the course of a day, or it can progress more slowly over the course of several days. Typical signs and symptoms include the following (not necessarily in order of prevalence):

- Cough and other respiratory symptoms
- Fever
- Sore throat
- Myalgias
- Headache
- Nasal discharge
- Weakness and severe fatigue
- Tachycardia
- Red, watery eyes

NOTE: IN MY EXPERIENCE I DO NOT SEE RED WATERY EYES THAT OFTEN

Complications 2(in addition to viral pneumonia, staph and strep)

Pulmonary aspergillosis is increasingly recognized as a complication of influenza in critically ill adults, occurring relatively early during severe influenza infection. Risk factors leading to disease include damage to the respiratory epithelium, immunomodulatory agents, and use of neuraminidase inhibitors. [24]

Myositis is a rare complication. This group of patients may develop frank rhabdomyolysis, with elevated creatine kinase levels and myoglobinuria. **Myocarditis** and pericarditis have been associated with influenza infection. [25]

A review of avian influenza cases in four countries found that the clinical course progressed to ARDS and respiratory failure in 70-100% of patients. [26] The mean time to the development of ARDS was 6 days. Lymphopenia at presentation is a significant predictor of the progression to ARDS and death. [27]

Severe cases of avian influenza may progress to multiorgan failure. In a study of 12 hospitalized patients with confirmed H5N1 influenza, 75% had respiratory failure, 42% had cardiac failure, and 33% had renal failure. [26]

Physical findings in patients with influenza

- Fever of 100-104°F; fever is generally lower in elderly patients than in young adults
- Tachycardia, which most likely results from hypoxia, fever, or both
- **Pharyngitis** - Even in patients who report a severely sore throat, findings may range from minimal infection to more severe inflammation
- Eyes may be red and watery
- Skin may be warm to hot, depending on core temperature status; patients who have been febrile with poor fluid intake may show signs of mild volume depletion with dry skin
- Pulmonary findings may include dry cough with clear lungs or rhonchi, as well as focal wheezing
- Nasal discharge is absent in most patients
- Fatigued appearance

Acute encephalopathy has been associated with influenza A virus infection. In a case series of 21 patients, Steininger et al described clinical, cerebrospinal fluid (CSF), magnetic resonance imaging (MRI), and electroencephalographic (EEG) findings. ^[21] Clinical features included altered mental status, coma, seizures, and ataxia. Of patients who underwent further testing, most had abnormal CSF, MRI, and EEG findings.

Treatment considerations

People at increased risk

- Adults 65 years and older
- Children younger than 2 years old [\[A\]](#)
- People with asthma
- People with chronic lung disease (such as chronic obstructive pulmonary disease [COPD] and cystic fibrosis)
- People with neurologic and neurodevelopment conditions
- People with blood disorders (such as sickle cell disease)
- People with endocrine disorders (such as diabetes mellitus)
- People with heart disease (such as congenital heart disease, congestive heart failure and coronary artery disease)
- People with kidney disorders
- People with liver disorders
- People with metabolic disorders (such as inherited metabolic disorders and mitochondrial disorders)
- People with a [body mass index \(BMI\) of 40 kg/m² or higher](#)
- People younger than 19 years old on long-term aspirin- or salicylate-containing medications.
- People with a weakened immune system due to disease (such as people with HIV or AIDS, or some cancers such as leukemia) or medications (such as those receiving chemotherapy or radiation treatment for cancer, or persons with chronic conditions requiring chronic corticosteroids or other drugs that suppress the immune system)

Neuraminidase inhibitors treatment

Balaxavir xofluza

Neuraminidase Inhibitors

Neuraminidase Inhibitors are chemically related antiviral medications that block the viral neuraminidase protein and have activity against both influenza A and B viruses. The neuraminidase inhibitors include:

- **Oseltamivir** (available as a generic formulation or under the trade name Tamiflu® for oral administration) is FDA-approved for early treatment of uncomplicated influenza in people two weeks and older, and for chemoprophylaxis to prevent influenza in people one year and older. Although not part of the FDA-approved indications, use of oral oseltamivir for treatment of influenza in infants younger than 14 days old, and for chemoprophylaxis in infants 3 months to 1 year, is recommended by CDC and the American Academy of Pediatrics. If a child is younger than 3 months old, use of oseltamivir for chemoprophylaxis is not recommended unless the situation is judged critical, due to limited data in this age group.
- **Zanamivir** (trade name Relenza®) for oral inhalation is FDA-approved for early treatment of uncomplicated influenza in people 7 years and older and to prevent influenza in people 5 years and older. It is not recommended for use in people with underlying respiratory disease, including people with asthma.
- **Peramivir** (trade name Rapivab®) for intravenous administration is FDA-approved for early treatment of uncomplicated influenza in people 6 months and older.



ES MEJOR PRENDER UNA VELITA
QUE MALDECIR LA OSCURIDAD

Vacúnese