



## PROVIDING CANCER CARE IN VIEQUES, PUERTO RICO

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# VIEQUES

- Population estimate 2022 - 8,043
- Median Household income 2022 - \$17,062
- Persons 65 and over – 25.1%

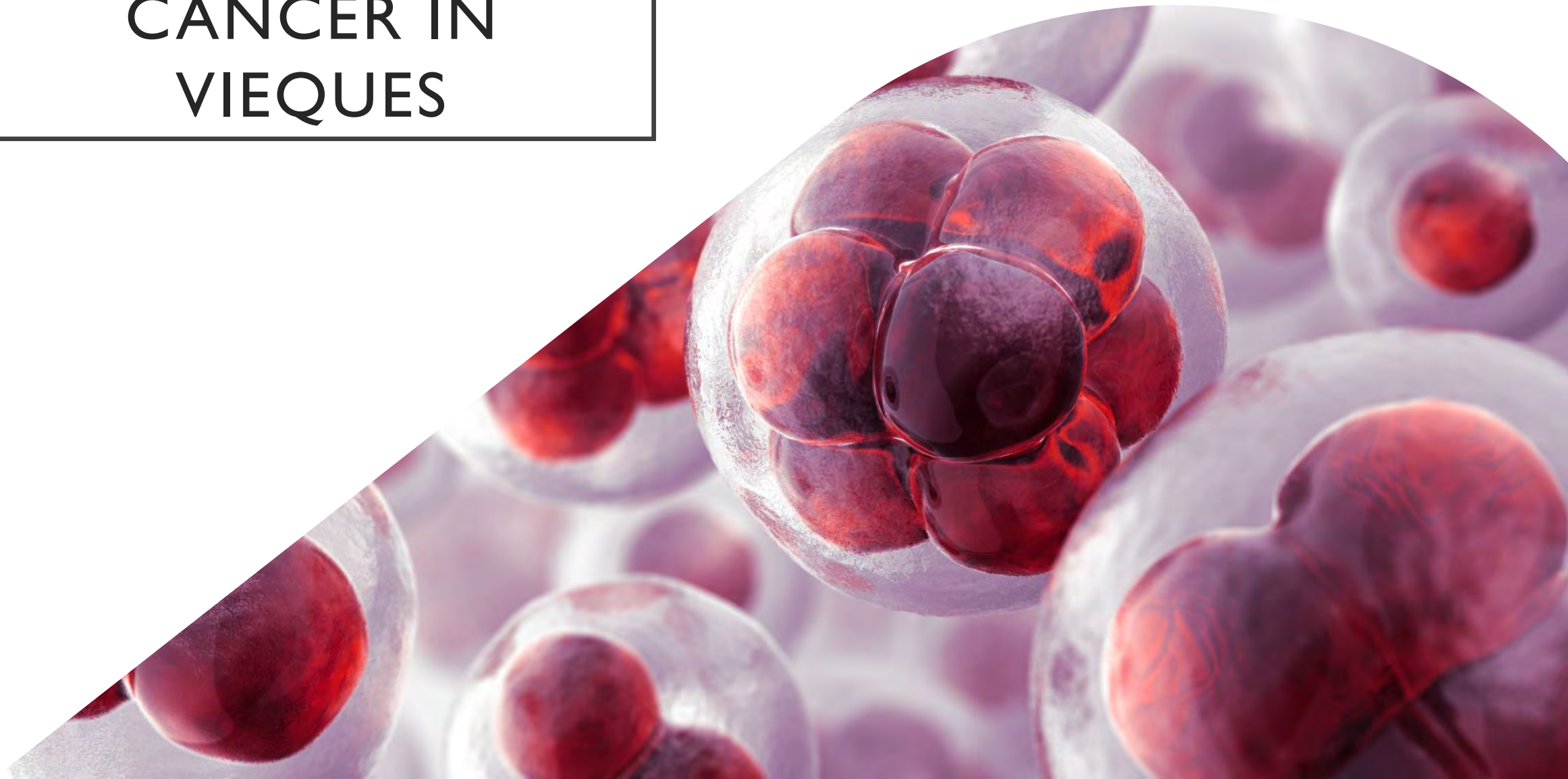




## HEALTHCARE IN VIEQUES

- Only limited number of primary physicians
- No sub-specialty physicians
- No hospital since Hurricane Maria (2017)
- No delivery Room
- No chemotherapy provided
- Provisional ER at Community Center only for stabilization and transfers to main Island

# CANCER IN VIEQUES







REGISTRO CENTRAL DE CÁNCER



**INCIDENCIA Y MORTALIDAD  
DE CÁNCER EN VIEQUES  
1990-2004**

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This study presents the incidence and mortality in Vieques during the three time periods:

1990-1994,

1995-1999

2000-2004

# RESULTS

“The 1995-1999 period was the one with the highest risk excess of cancer in Vieques in the overall category. Considering both sexes (analyzed together), during this period we found that the overall cancer cases observed in both sexes in Vieques were 26% higher than expected ( $p < 0.05$ )”



Fuente: Registro Central de Cáncer de PR, Universidad de PR, Octubre 2009.  
Figura 11 Incidencia por grupo de edad de todos los cánceres, ambos sexos, en Vieques y Puerto Rico: 1996-1994.



Fuente: Registro Central de Cáncer de PR, Universidad de PR, Octubre 2009.  
Figura 14 Incidencia por grupo de edad de todos los cánceres, ambos sexos, en Vieques y Puerto Rico: 1995-1999.



Fuente: Registro Central de Cáncer de PR, Universidad de PR, Octubre 2009.  
Figura 13 Incidencia por grupo de edad de todos los cánceres, ambos sexos, en Vieques y Puerto Rico: 2005-2004.

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# In Vieques, Puerto Rico, cancer rates are high. Advocates say Navy bombing may be to blame

*The U.S. Navy used Vieques, Puerto Rico as a training site for six decades. Experts, residents of Vieques believe the contaminants in their soil, water and air have contributed to higher cancer rates.*



## Civilian exposure to munitions-specific carcinogens and resulting cancer risks for civilians on the Puerto Rican island of Vieques following military exercises from 1947 to 1998

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### ABSTRACT

Estimation of legacy public health risks from munitions residues near or at former military test ranges has for the past decades been a challenge to health authorities. Parts of the island of Vieques (PR) were for six decades used for military training, and these are now declared as a Superfund site. ATSDR has conducted site assessments there and found no cause for public health concerns. The reports and findings of ATSDR have since been heavily contested and disputed. This paper provides a case study on cancer risk screening of munitions-specific carcinogens for the full period of military training on Vieques. Added cancer risks and Margins of Exposure for the different carcinogens for each year were derived. We found that there is a potential for cancer risk concern related to BaP exposures. Furthermore, there were health risks from TNT exposures. The primary exposure route of these compounds was oral. The period 1992–1997 showed a significantly elevated lung and bronchus cancer incidence rate in Vieques compared to Puerto Rico mainland mainly among women <50 yr and men 50–64 yr. These correlate with high munitions exposures in the period 1977–1984.

### ARTICLE HISTORY

Received 4 January 2017  
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### KEYWORDS

Munitions; Vieques; cancer; munitions residues; military training area



# CANCER DEATHS

During the period of 1990-1994, we found that the observed overall cancer deaths in both sexes (analyzed together) from Vieques were approximately 27% higher than expected ( $0.05 \leq p \leq 0.10$ )

1990-1994

For the period of 2000-2004 the excess was 18% and was not significant. An increase of 40% in the risk of men was observed for the period of 2000-2004, this increase was statistically significant ( $p < 0.05$ )

2000-2004

1995-1999

During the period of 1995-1999 an excess of 35% was observed ( $p < 0.05$ )

## TYPES OF CANCER

During the period of 1990-1994 study found that lung and bronchus cancer cases observed in both sexes in Vieques doubled the expected ( $p < 0.05$ ), and during the second period (1995-1999) were 68% higher than expected ( $0.05 \leq p \leq 0.10$ )

During the period of 1990-1994 the study found that the colorectal cancer cases observed in women in Vieques were 81% higher than expected ( $0.05 \leq p \leq 0.10$ ).

During the period of 1995-1999 the study found that prostate cancer cases observed in men in Vieques were 53% higher than expected ( $p < 0.05$ )

## OUR CLINIC

Hema-Onco Monthly Clinic

2 Nurses

Sponsored by Fundacion VER

10-15 patient evaluated monthly

# OUR PATIENTS

## Males

Prostate 42%

Lung 33 %

Colorectal 7%

Head and Neck 6 %

Lymphoma 4%

## Females

Breast 38 %

Colorectal 36 %

Lung 10 %

Uterus 8%

Multiple myeloma 2%



# CHALLENGES

- Transportation
- Journey to mainland require 1 hour ferry ride or 15 minutes flight (expensive) to Ceiba
- From Ceiba patient will need a Taxi Ride to another town where cancer care is available
  - San Juan
  - Humacao
  - Fajardo





## Mortality due to cancer treatment delay

Quantification to support prioritisation and modelling

### Summary



Policies minimising system level delays to starting treatment could potentially improve survival after cancer diagnosis

### Study design



Systematic review and meta-analysis | Patients of all ages with seven major cancer types

### Data sources



34 studies on 17 cancer treatment indications  
1 272 681 participants treated

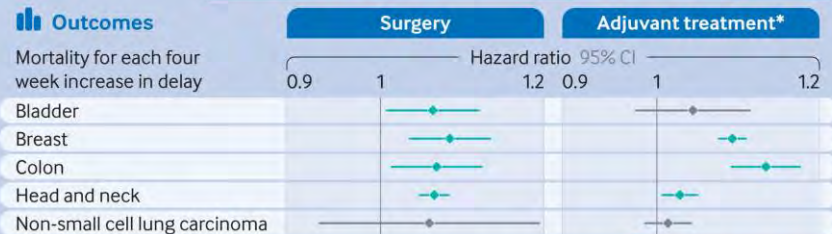
### Comparison



#### Exposure and outcome

Patient survival according to wait time for treatment including surgery, systemic treatment, or radiotherapy

### Outcomes



### Mortality increases as delay increases

Breast cancer surgery delay for 1000 women (baseline 12% mortality)

### Projected additional deaths due to delay:

4 weeks +10  
8 weeks +20  
12 weeks +31

### Evidence quality

Only high validity studies accounting for major prognostic factors were included

# CHALLENGES

## Overall Delay in Cancer Care

No imaging studies available for appropriate staging

Delay in referrals

Surgery

Oncologist

RT

Molecular testing not available at Vieques



## CHALLENGES

- No IV chemo provided at Vieques
- Need to
  - Increase use of oral therapies
  - Decrease time of infusions if patient require IV therapy
  - Longer cycle schedules



## CHALLENGES

- Need to consider side effects and prevent them
  - Nausea -> Try to provide multiple agents for prophylaxis
  - Neutropenia -> Consider Pegfilgrastim On Body Injector
  - Infections -> Consider prophylaxis



# CHALLENGES

- Surveillance
- Discuss with primary physician surveillance strategies
- Order test and imaging earlier than recommended by guidelines considering delay
- Provide methods of communication
  - Email
  - Phone



# FUTURE PROJECTS

Collect recent data on cancer incidence and mortality

Increase screening strategies for earlier diagnosis

Collaboration with community oncologist/surgeons and radiation-oncologist close to Vieques

Improve transportation

Improve access to primary care physicians

Education about risk factors

- Obesity, smoking

## VIEQUES EN RESCATE



A non-profit organization dedicated to provide assistance for cancer patients of Vieques and their families.

They organized the monthly oncology clinic, provide transportation and support to cancer patient of Vieques

(787) 408-7161

# QUESTIONS

