Hurricane Maria: Experience of the Puerto Rico NBS Program

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Associate Director

2019
APHL NBSGT SYMPOSIUM
Nothing to disclose.
Hurricane Maria: September 20, 2017

Maria’s path through Puerto Rico

Forecast

5 p.m. position

DOMINICAN REPUBLIC

Puerto Rico

Arecibo

Caguas

San Juan

Ponce

Atlantic Ocean

BRITISH VIRGIN ISLANDS

U.S. VIRGIN ISLANDS

CUBA

HAITI

ANGUILLA

ST. KITTS & NEVIS

Track and position as of 5 p.m. AST Wednesday
Sources: Mapzen, OpenStreetMap, NOAA

Angelica Quintero / @latimesgraphics

Obtained from Los Angeles Times
Hurricane Maria:  September 20, 2017
After the hurricane.......  

- The building and our facilities (cement-based) suffered minor damages.
- Water service available
- Power (no stable)
- Internet (no stable)
- One telephone line (with some occasional problems but working)
- Health information system available
- Reduced personnel available
- No major damages so we were ready to continue saving babies!!

Localized in the University Pediatric Hospital at San Juan Medical Center
Impact on PR NBS Service
Age of Sample Collection

NewSTEPs 360 Timely Specimen Collection Bar Chart
Percent of first dried blood spot specimens collected in the specified time intervals from birth

Select NBS Program ID: Jan 2017 to Feb 2019

<table>
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<tr>
<th>Year</th>
<th>Month</th>
<th>&lt;12 Hours</th>
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Percent of Specimens Collected

Obtained from NewSTEPs website
Transit Time

NewSTEPs 360 Specimen Transit Time Bar Chart
Percent of first dried blood spot specimens received on in the specified time intervals from specimen collection

<table>
<thead>
<tr>
<th>Select NBS Program ID</th>
<th>Change Date Range</th>
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| Year | Month | 0% | 5% | 10% | 15% | 20% | 25% | 30% | 35% | 40% | 45% | 50% | 55% | 60% | 65% | 70% | 75% | 80% | 85% | 90% | 95% |
|------|-------|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 2016 | Jan   |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|      | Feb   |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|      | Mar   |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|      | Apr   |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|      | May   |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|      | Jun   |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|      | Jul   |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|      | Aug   |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|      | Sep   |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 2017 | Jan   |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
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|      | Sep   |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 2018 | Jan   |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|      | Feb   |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
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|      | Sep   |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

Legend:
- Day 0 (Same Day)
- Day 1 (Next Day)
- Day 2
- Day 3
- Day 4
- Day 5
- Day 6
- Unknown

Obtained from NewSTEPs website
Hospital Run Chart: Percent of Specimens Received <=48 Hours After Specimen Collection

- Hospital ID: 46

Obtained from NewSTEPS website
Repeats

Increase in the number of repetitions for some tests
  - Aged samples
  - Not adequate storage of samples
### Follow-up

#### Situation:
- NO communication in our country
- Increase in the number of repetitions needed for some tests
- We were running with a delay
- 24 presumptive positive cases were identified the next weeks after Maria

#### Strategies to find families:
- Social media (facebook)
- Police
- List of cases sent to hospitals
- Volunteers from different municipalities
- Mail office
- Text messages sent by our Follow-up staff during the day and night
- WhatsApp Groups
  - Department of Pediatrics
- Government Offices and Churches
- Our Follow-up supervisor visited families to inform the results and bring the newborn to evaluation
Time to report out critical results from birth

The line graph shows the median time to report out critical results from birth over the period from February 2017 to August 2018. The y-axis represents the median time in days, while the x-axis represents the months from February 2017 to August 2018. The data peaks in October 2017 and March 2018, with lower values observed in other months.
2017

- 47 Confirmed Cases

- **Just after María we identified:**
  - 5 Metabolic Diseases
  - 5 SCD
  - 3 CH
  - 2 BIOT Deficiency

- **All cases were efficiently managed and referred to specialist.**
Emergency Preparedness for Newborn Screening

- Laboratory
- Follow-up

- Service contract with another program prior the emergency
Lessons learned!!!

- Prepare for the worst, prepare for what you don’t expect.
  - Evaluation of facilities
  - No water
  - No power; Is any backup power system available in your facility?
  - No internet
  - No communication with hospitals, families or healthcare providers
  - Reduced personnel
  - Birthing facility is not operational
  - Problems with the delivery of samples
  - No reporting system

- Do back-up constantly
  - Important files
  - List of pending cases
  - Ideally all important files should be stored in a secure site available remotely
  - You can lose everything in an emergency

- Maintain an appropriate inventory of reagents, materials required for the service
Lessons learned!!!

- Identify groups, state agencies or community groups to contact who can provide help with the NBS service during the emergency
  - In PR, different initiatives have been developed:
    - Hurricane Hub Technical Assistance Center
    - Database of important agencies created by “Unidos por PR”

- Have a variety of contact information of hospitals, midwives, specialists, pediatricians, family support groups, community networks

- Revise emergency plans and develop strategies considering different situations
  - Discuss this plan with the staff and define roles
  - Use available references
    - e.g. NBS Contingency Plan prepared by US Department of Health and Human Services

- Continue with NBS education to families and health professionals
Commitment and Resilience!!
Thanks!!!