

Norovirus outbreaks in nursing homes in the city of Barcelona. 2011-2015.

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Impact of NV infections in nursing homes

- Particular vulnerable patient population.
- NV introduction by infected patients, staff, visitors or contaminated food.
- Rapid spread of secondary infections: static environments, high levels of contact and reduced personal hygiene. Environmental surfaces contamination.
- Difficult outbreak onset identification.





Objectives

- Determine epidemiological characteristics of outbreaks occurred in nursery homes in the city of Barcelona between January 1, 2011 and october 31, 2015.
- Explore the circumstances of reporting and its possible association with severity of outbreaks.
- Evaluate the effectiveness of the RT-PCR technique to confirm NV outbreaks.
- Characterize the NV strains involved in outbreaks.



Epidemiological Surveys

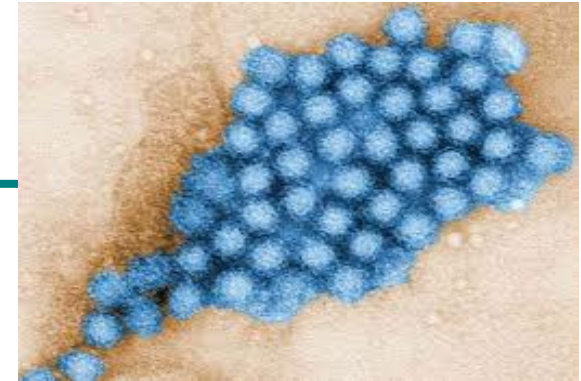
- Data documented in outbreaks:
 - ✓ Notification date
 - ✓ Date of onset of first case and the last one
 - ✓ Total number at- risk of illness (resident and staff)
 - ✓ Total number ill (resident and staff). Hospitalisations and deaths

- Laboratory Testing. Confirmation of outbreaks.
 - ✓ Collection of faecal specimens of resident and staff (> 2 specimens collected per outbreak)
 - ✓ Suspected food involved in food-borne associated outbreak

- Control measures and follow up of outbreaks.



Laboratory Testing



- 10 outbreaks were analysed for NV detection and identification of genogroup I, II :

**Real Time RT-PCR (CEERAM Tools NoV GI & GII Detection kit)
ASPB Laboratory**

- In 4 outbreaks NV strains were genotyped:

**Sequencing by RT-PCR semi-nested (Noronet Genotyping Tool).
Enteric viruses Laboratory. UAB.**

- In 1 outbreak microbiological investigation of enteropathogens in food items was performed.

ASPB Laboratory



Results. Epidemiological data.

- 37 NV outbreaks were reported over 2011-2015.
12 outbreaks occurred in nursery homes : 32,4%.
- Global attack rate among residents: 26,7% (285 ill /1064 exposed)
- Global attack rate among staff members: 23,3% (49 ill /210 exposed)
(Outbreaks included in analysis: 6)
- Average global attack rate among outbreaks: 39.2%.
Range 20,3% - 52,3%. (Outbreaks included in analysis : 6)



Results. Epidemiological data

- Symptoms were mild. Two residents hospitalized and one died.
 - ✓ Lethality: 0.3%
 - ✓ Mean duration of symptoms: 2,2 days (1-7days)
- Means of transmission: 90.9% interpersonal (one food borne outbreak with interpersonal secondary cases)
- Seasonality: 83,3 % in autumn-winter months (one outbreak in July)
- Duration of outbreaks: 4-90 days.
 - ✓ Median: 10 days. Mean: 16.5 days

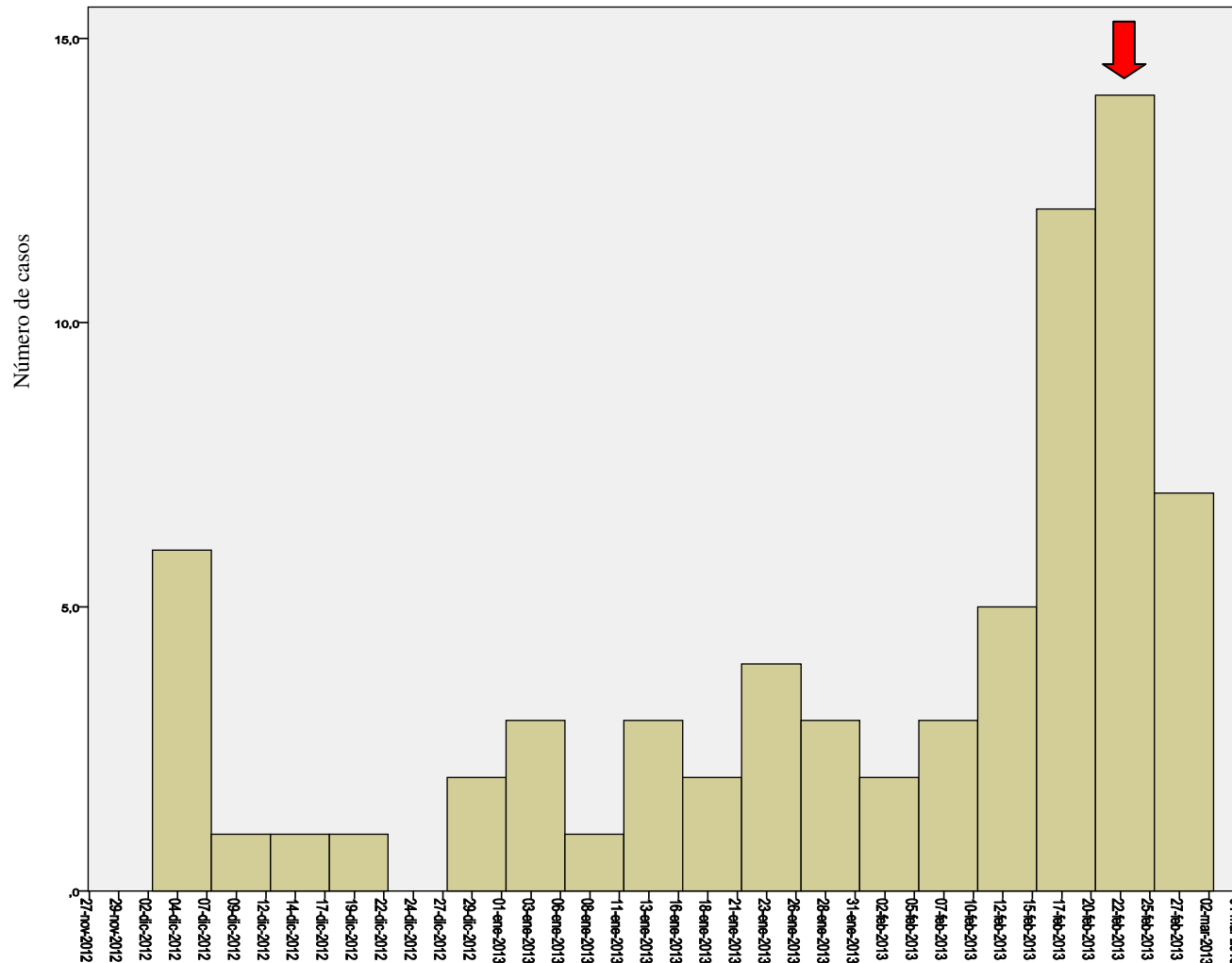


Results.Outbreak reporting

- 42% of outbreaks were not reported by nursery homes (primary health care...)
- Days to reporting: 1 - 85
 - ✓ Median: 7 Mean:14
- Cases before reporting: 5 - 71
 - ✓ Median : 16 Mean: 25
 - ✓ 36,3%were reported after the last case
- The delay in reporting >10 days was statistically associated with a higher attack rate.



Distribution of cases in an outbreak with delayed notification.



Outbreak data:

- 85 days to notification
- 79 total cases
- 71 before notification
- 90 days duration



Results. Laboratory testing.

- In all outbreaks with faecal specimens sent to laboratory (n=10) the presence of NV was confirmed.
- Average NV detection rate in faecal specimens: 61.4 % (5% - 87,5%).
- In nine outbreaks (90%) genogroup G.II was detected in both residents and staff. In the July outbreak G.I was detected.
- NV GII.4 was identified in 3 outbreaks and GII. 6 in one outbreak (n=4)
- No bacterial enteropathogens detected in food items in food-borne outbreak. NV presence was not analyzed.



Conclusions

- The NV outbreaks in nursery homes in Barcelona are common and place a considerable burden on residents, facilities and on public resources.
- The attack rates among residents and staff are similar.
- The interpersonal transmission of NV in nursing homes is the most frequent.
- The NV strains detected in nursery homes outbreaks are the circulating ones in the community.
- Long delay in reporting is usual in nursery homes and is associated with higher outbreak attack rates.



Control of NoVs outbreaks in nursery homes remains a challenge

- Encourage nursery homes to notify any gastroenteritis outbreak and notify it promptly.
- Promote early recognition of progressive NV infection transmission. Identification of digestive symptoms threshold.
- Meticulous enforcement of infection control measures and prevention by administrators and staff.





This study is only an approach to a
very complex problem

THANK YOU

MOLTES GRÀCIES