

Epidemiology and clinical features of calicivirus gastroenteritis in Catalonia in pediatric and adult population

Maria Rosa Sala

Epidemiological Surveillance Unit of Vallès Occidental and Vallès Oriental

Subdirectorate of Surveillance and Response to Emergencies in Public Health.

Agency of Public Health of Catalonia

Background

The Caliciviridae family (RNA viruses) : Norovirus and Sapovirus both cause acute gastroenteritis (AG) in humans.

Calicivirus	Incidence	Transmission	Symptoms
Norovirus	1st AG outbreaks 1st sporadic AGE in adults 2n in children	person-to-person Food and water fomites aerosol	mild - moderate (50% vomiting) 12-60 h More severe in elderly
Sapovirus	AG in children	person-to-person food and water fomites	mild - moderate

Objective

FIS Project PS09/02516 – AGAUR 2009/SGR42

Calicivirus acute gastroenteritis outbreaks in Catalonia

- To analyze clinical differences by
 - age group
 - agent involved
- to provide useful evidence for the detection and investigation of AG outbreaks.

Methods

- Outbreaks reported to the Catalonia Public Health Agency.
- 2010-2011 , Catalonia, 7 500 000 p.
- Outbreak: ≥ 2 cases of AG epidemiologically linked by time and place.
- Number of cases, the relationship, the transmission route.
- Faecal samples:

PCR for Norovirus and Sapovirus
other virus, bacterial and parasites

Cases

- **Confirmed cases:**
 - ≥2 loose stools and/or ≥2 episodes of vomiting within 24 h
 - PCR +
- **Confirmed and probable cases:**
 - Sociodemographic data
 - Type and duration of symptoms
 - Healthcare assistance
- **Standardized questionnaire, staff of epidemiologist units**

Results

101 outbreaks:

- **2 Sapovirus (29 cases)**
- **99 Norovirus (2727 cases)**

No other virus detected

2 Sapovirus outbreaks

2 in child care centre

Person-to-person and/or fomites

Genogroup I

99 Norovirus outbreaks

50 food-borne (45.6% catering)

5 water-borne

44 person-to-person and/or fomites

12 cases were hospitalized, 8 >65y

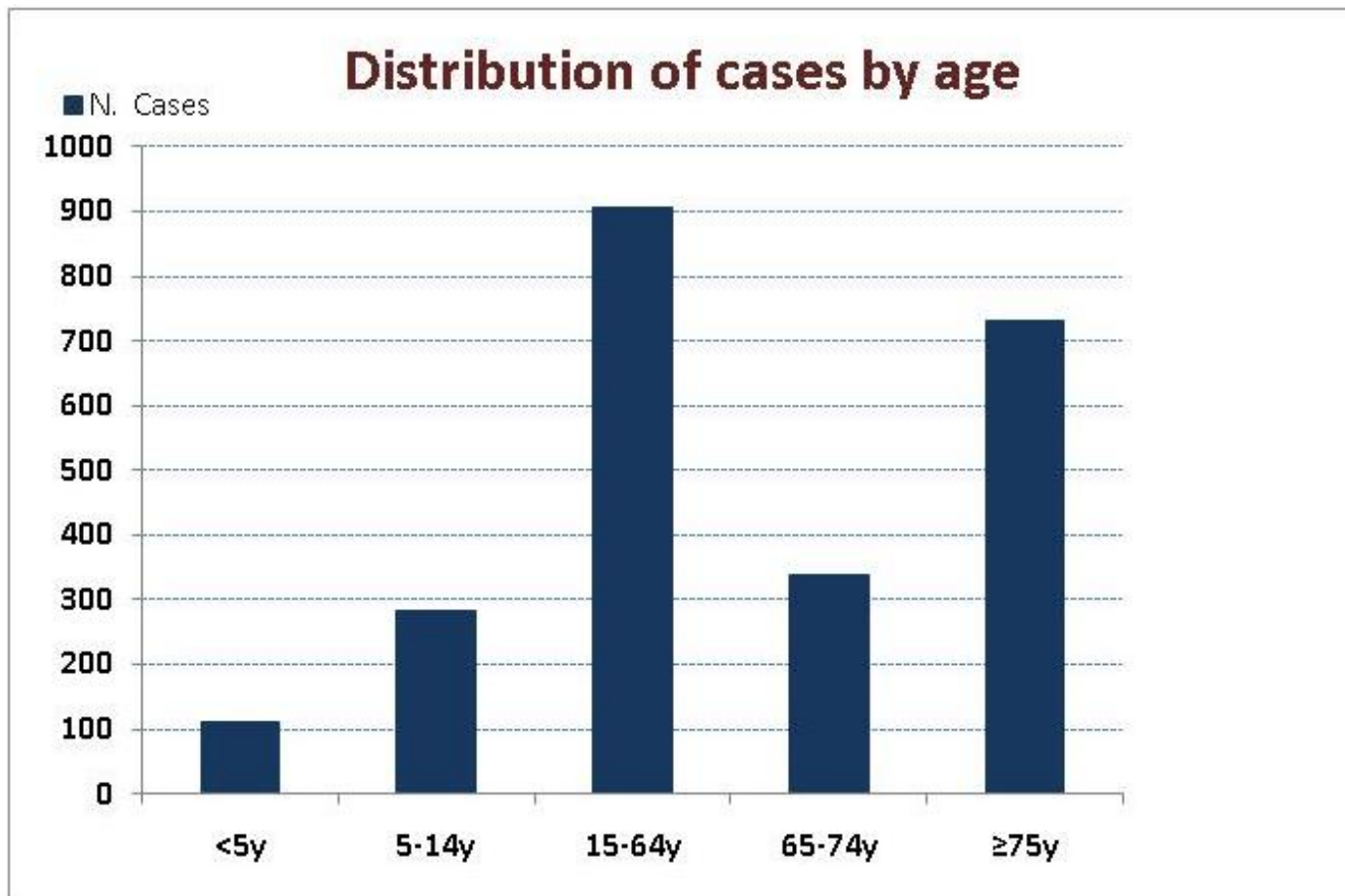
371 cases (13,5%) nosocomial

2 deaths

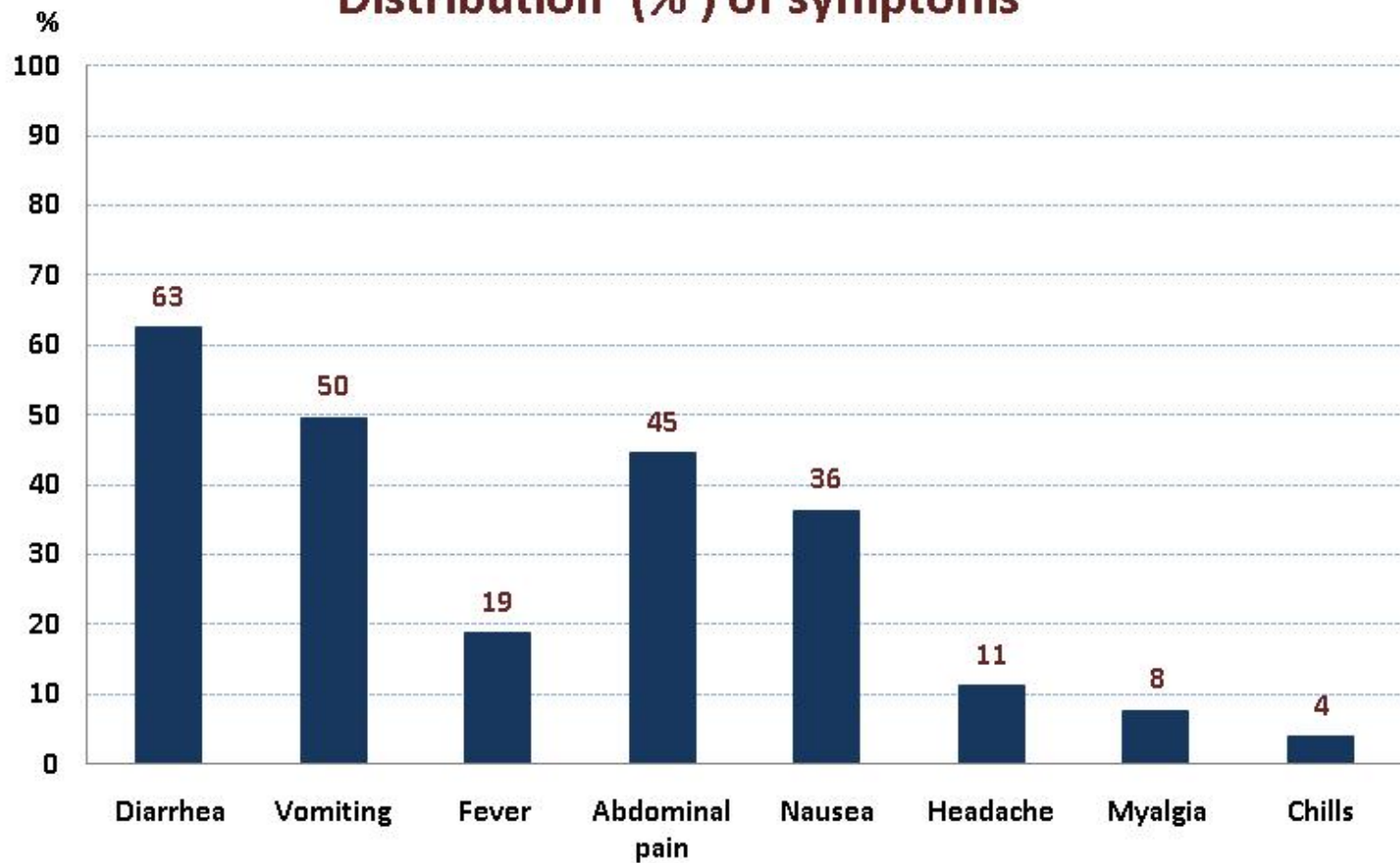
Genogroup II 77%, GI 5%, GII+GI 4%

2365 cases

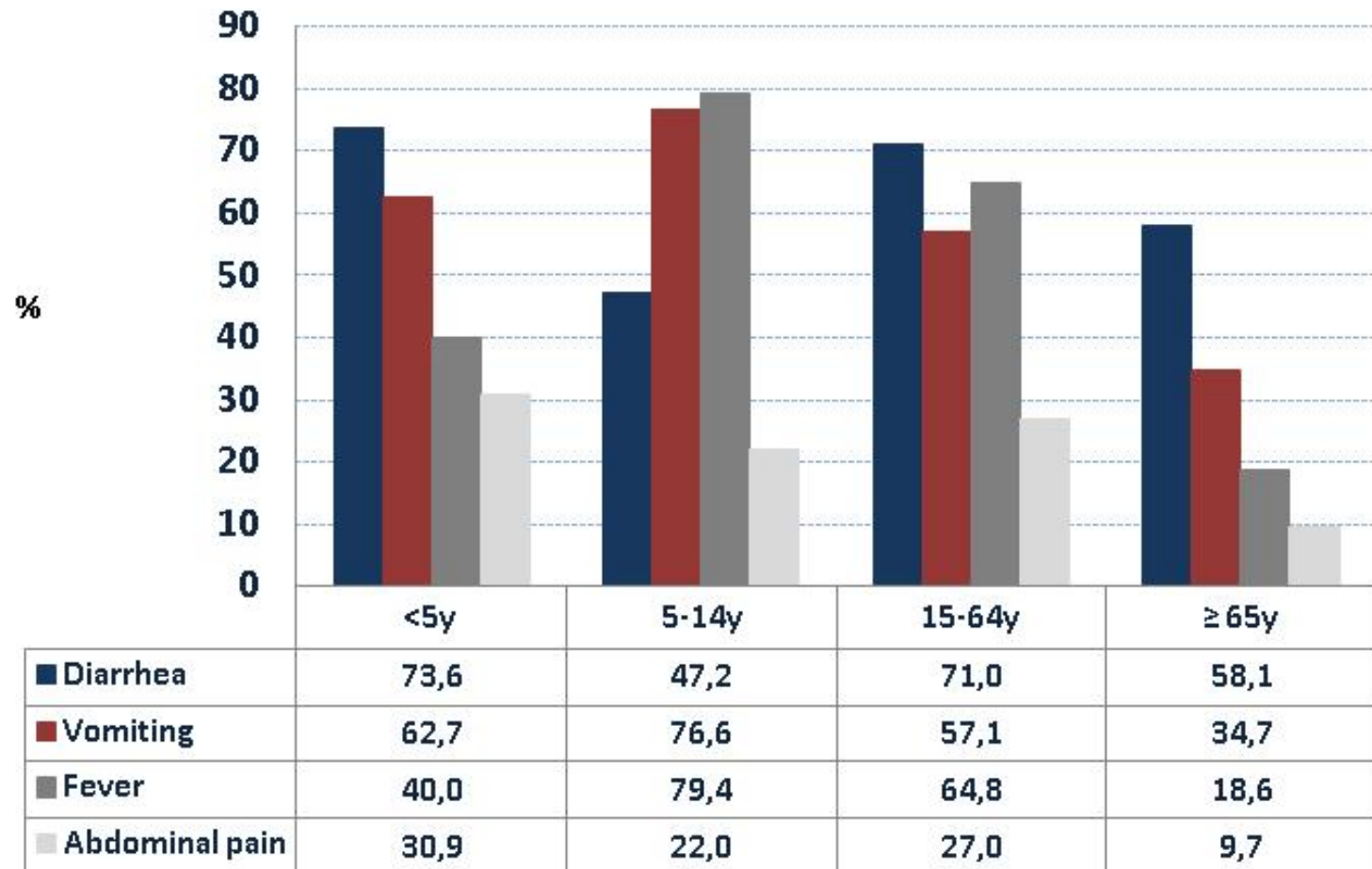
- 2727 cases
- Clinical information for 86%: 2365 cases included
- 60% females



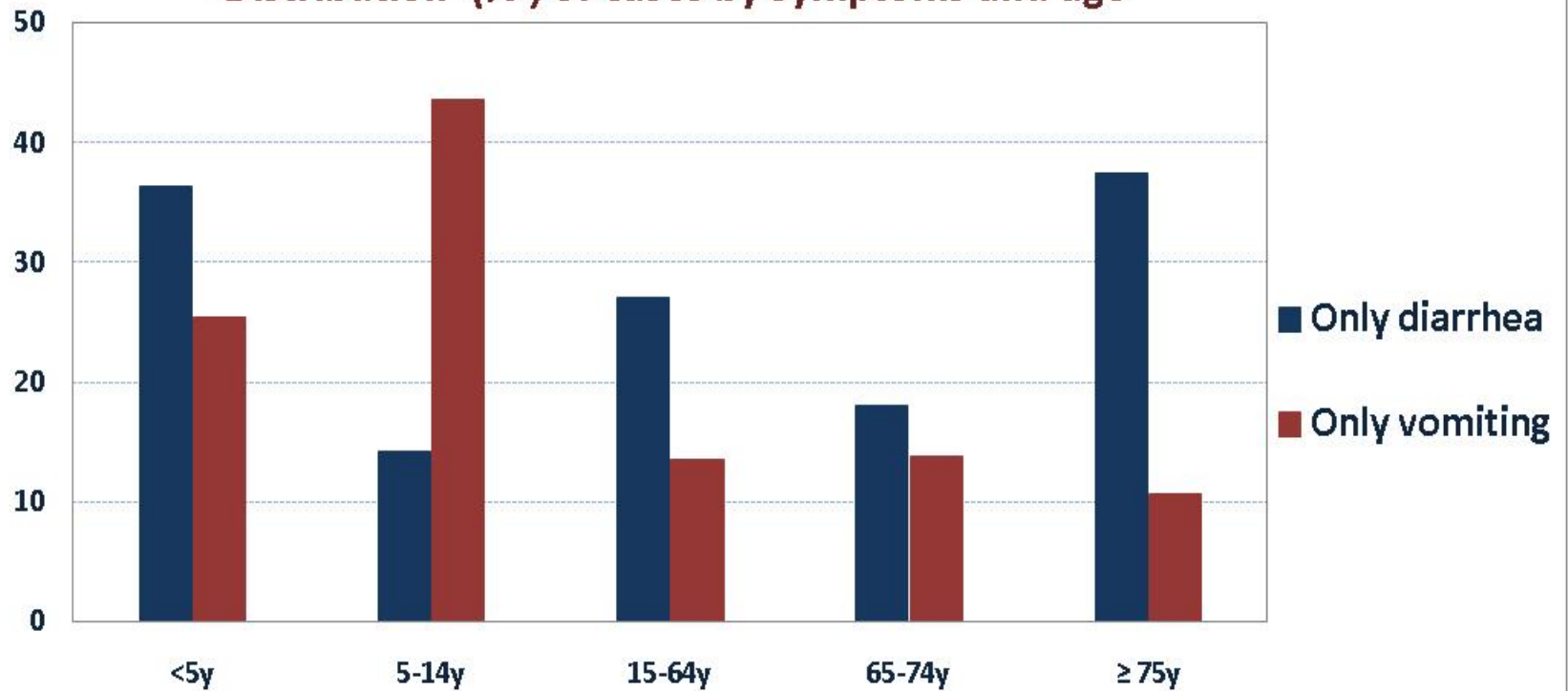
Distribution (%) of symptoms



Distribution (%) of cases by symptoms and age



Distribution (%) of cases by symptoms and age



Clinical differences between cases aged <15 and ≥15 years old

Symptoms	< 15 y N=392	≥ 15 y N=1973	OR (95% IC)	p-value
Diarrhea	214	1264	0.67 (0.54-0.84)	< 0.001
Vomiting	285	888	3.25 (2.56-4.13)	< 0.001
Fever	96	348	1.51 (1.17-1.96)	0.002
Abdominal pain	268	785	3.27 (2.6-4.12)	< 0.001
Nausea	173	685	1.49 (1.19-1.85)	< 0.001
Headache	45	223	1.02 (0.72-1.43)	0.920
Myalgia	20	161	0.61 (0.38-0.98)	0,038
Chills	5	90	0.27 (0.11-0.67)	0,003
Hospitalization	3	8	1.68 (0. 42-6.24)	>0.05

Distribution of symptoms (medians) by age

	< 5y	5-14y	15-64y	65-74y	≥75y	Total	p
N. diarrheal stools/day	2	2 ^{a,b}	4 ^a	4 ^b	3	4	0.002
N. vomiting/day	5 ^{c,d}	1	3 ^c	4	2 ^d	2	0.001
Fever (°C)	38 ^e	38	38 ^f	37.8	37 ^{e,f}	38	< 0.001
Days of disease duration	1	1	2	2	2	2	0.052

Kruskal Wallis and Dunn test for assess equality of the medians between different groups

^a5-14y vs 15-64y (p 0.014)

^b5-14y vs 65-74y (p 0.022)

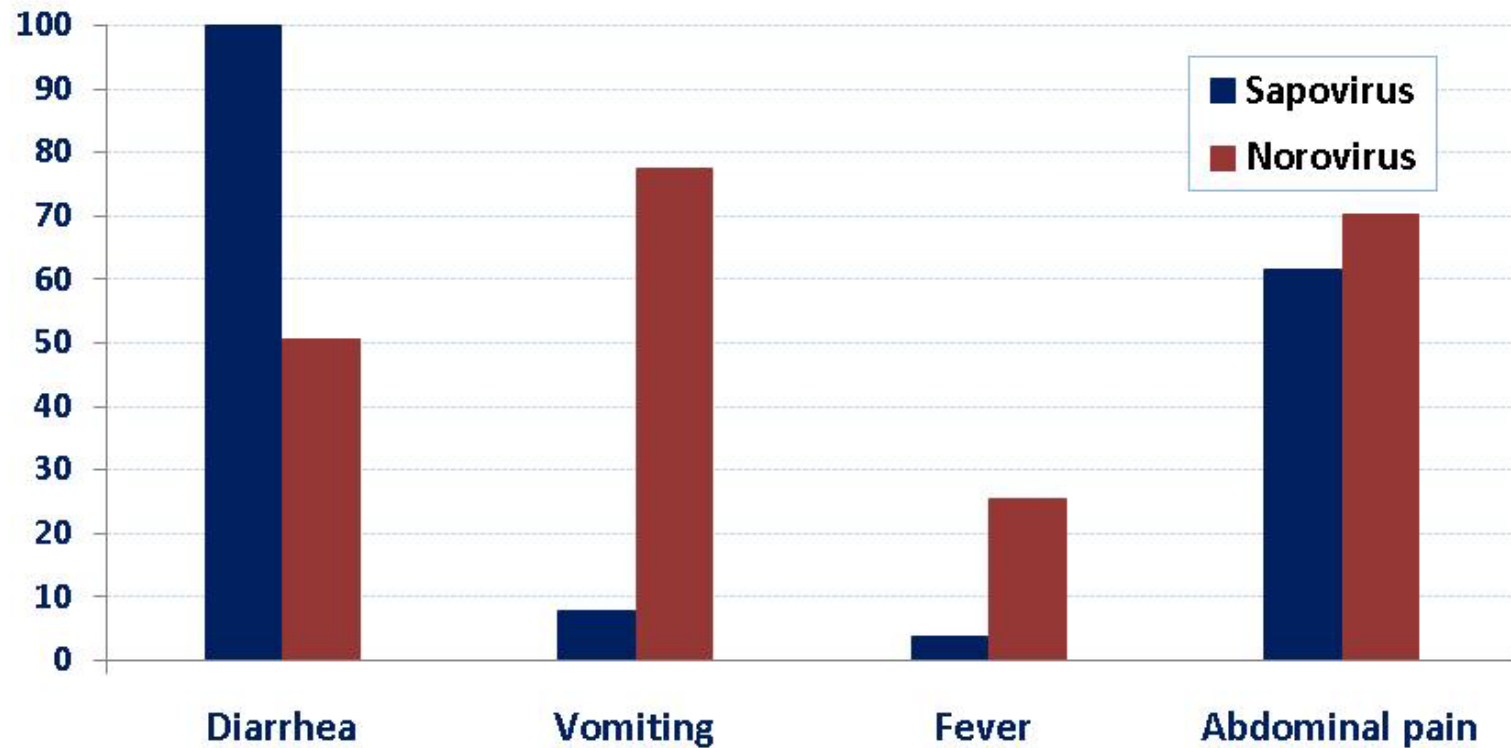
^c<5y vs 15-64y (p 0.032)

^d<5y vs 75y (p 0.01)

^e≥75y vs <5y (p 0.002)

^f≥75y vs 15-64y (p< 0.001)

Symptoms (%) in cases <15 years by agent



Clinical differences between Sapovirus and Norovirus, in cases <15 years

Symptoms	Sapovirus N=26	Norovirus N=337	OR (IC 95%)	p
Diarrhea	26	171	NC	< 0.001
Vomiting	2	261	41,21 (9.52-178.33)	< 0.001
Fever	1	86	8,57 (1.14-64.17)	0.013
Abdominal pain	16	237	1,48 (0.65-3.38)	0.347

Study limitations

- Outbreaks detected may depend on severity
- After the detection the first step is to control and prevention
- Some outbreaks are easier to detect
- Validity on information
- Period of study

Conclusions

- Diarrhea was the most frequent symptom in Sapovirus outbreaks,
- In children the most frequent symptom in Norovirus was vomiting
- ◆ In children vomiting often was the only symptom.
- ◆ Children had a higher vomiting per day
- In adult patients diarrhea is most frequent.
- Vomiting, fever, nausea and abdominal pain were less frequent than in children.
- ◆ To know clinical symptoms of cases before the laboratory results may be useful for decision-making regarding :
 - therapy
 - investigation of the factors contributing to an outbreak
 - the adoption of preventive measures as rapidly as possible

Acknowledgments:

- Physicians reporting outbreaks
- Epidemiological Surveillance Units of the Public Health Agency of Catalonia
- Members of the Working Group for the Study of Outbreaks of Acute Gastroenteritis in Catalonia

Reference

Sala MR, Broner S, Moreno A, Arias C, Godoy P, Minguell S, Martínez A, Torner N, Bartolomé R, de Simón M, Guix S, Domínguez A.

Cases of acute gastroenteritis due to calicivirus in outbreaks: clinical differences by age and aetiological agent.

Clin Microbiol Infect. 2014 :793-8. doi: 10.1111/1469-0691.12522.