Risk factors for gastroenteritis due to Norwalk-like virus, Sapporo-like virus and rotavirus group A

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Data collection: Sensor study 1999

- **Community-based cohort** (4860 participants)
- **Nested case-control study** (772 cases, 765 controls)
  - Stool samples and risk factor questionnaire

***Risk in 7 days before onset of illness*:**
contact with symptomatic persons (within/outside household), contact with animals/manure, swimming, travel, food consumption (at home/out)

Long-term risk: demographics, size of household, child in day care center, child in diapers, chronic GI complaints, indicators kitchen/food hygiene (11 items used to score for less hygienic practices)

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Statistical analyses risk factors viral GE

- NLV: 152 case-control pairs
- SLV: 48 case-control pairs
- Rotavirus: 54 case-control pairs

- Univariate analyses (McNemar, Bowker's symmetry test, paired t-test, Wilcoxon signed rank): OR, 95% BI
- Multivariate analyses (conditional logistic regression): adjusted OR, 95% BI
- Population attributable risk fraction (PARF)
- Subanalysis estimate part foodborne proportion

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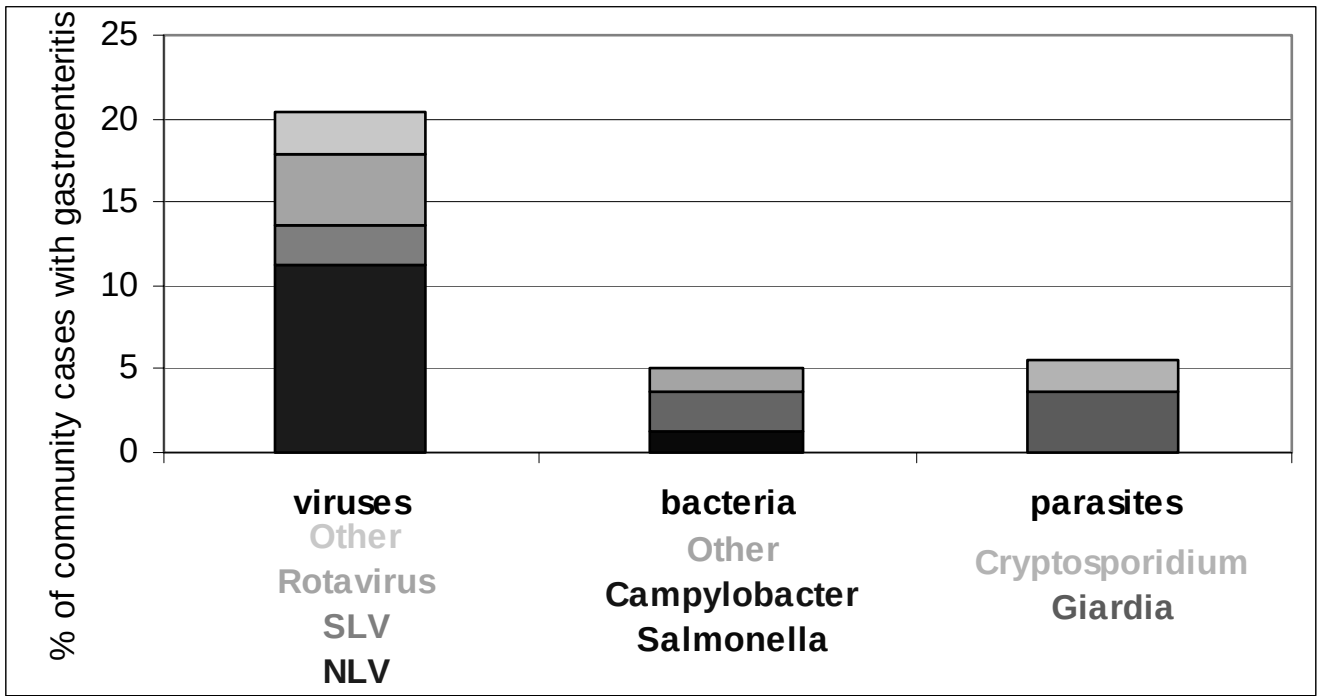
Incidence NLV, SLV and rotavirus (per 1000 person years)

Gastroenteritis overall: **283** (46% pathogen)

NLV: **31** (11%) **SLV**: **6** (2%) **rotavirus:11** (4%)



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Risk factors for NLV (multivariate)

1. Foodhandling hygiene (continuous scale)

1⇑ OR=1.3 (1.0-1.7) PARF 47%

2. Number symptomatic household members

0 OR=1.0 PARF 17%

1 OR=1.2 (0.3-4.2)

2 OR=10.9 (2.0-60.5)

3. Contact symptomatic cases outside househ.

No OR=1.0 PARF 56%

Yes OR=12.7 (3.6-51.8)

Risk 1,2,3 combined: PARF 80% (1+2=56%)

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Estimate part of foodborne proportion of NLV-gastroenteritis

- *What proportion is caused by contaminated food entering the household (so excl. food contaminated within household)?*

- 34 pairs in analysis, only cases without contact with symptomatic individuals
- Then OR for foodhandling hygiene = 1.4

PARF 12-16% (of all NLV gastroenteritis)

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Risk factors for SLV (multivariate)

1. Contact with symptomatic person outside household

No OR=1.0

Yes OR=4.4 (1.3-14.9) PARF 60%

Risk factors for rotavirus (multivariate)

1. Foodhandling hygiene (continuous scale)

1⇑ OR= 1.5 (1.1-2.1) PARF 46%

2. Contact symptomatic person outside househ.

No OR=1.0

Yes OR=12.9 (1.2-133.6) PARF 86%

Risk 1 and 2 combined: PARF 92%

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Estimate part of foodborne proportion of rotavirus-gastroenteritis

- *What proportion caused by contaminated food entering the household (so excl. food contaminated within household)?*

- 10 pairs in analysis, only cases without contact with symptomatic individuals
- OR for foodhandling hygiene = 1.8

PARF 4% (of all RV gastroenteritis)

Conclusions

- **Person to person** most important, followed by foodborne (NLV/RV): explains 60-90% of cases
- **For NLV**
  - part of infections probably person-*food*-person, mainly children >5, adults (contamination food in household)
  - about 12-16% of NLV-GE caused by contaminated food entering household
  - suggested that infections are often introduced through children attending day-care centers / primary school
  - professionals in food industry / catering might be made aware of their risk of being infectious if they have contact with a symptomatic person (to take extra precautions at work)