

Genotyping of *Clostridium difficile* in Finland 2007-2008

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- October 2007: the first case of *Clostridium difficile*-associated disease (CDAD) caused by the hypervirulent PCRribotype 027 detected in Finland
- All clinical microbiology laboratories were requested to send *C. difficile* isolates from
 - severe clinical cases (ICU treatment, colon resection, re-admittance to hospital, death)
 - OR
 - suspected outbreaks (≥ 3 *C. difficile* cases/ 4 wks/ same unit)to the National Public Health Institute (KTL)
- *C. difficile* infection became a notifiable disease in January 2008

- During October 2007-August 2008, 12 out of the 20 health care districts in Finland sent a total of 343 *C. difficile* isolates to the Respiratory and Anaerobic Bacteria Laboratory, KTL, to be typed
- PCRribotyping was performed according to the protocol of the Anaerobe Reference Unit (ARU) in Cardiff, UK (Stubbs *et alii*, 1999)
- PFGE was performed as previously described for *C. difficile* (Sawabe *et alii*, 2007)
- PCR ribotypes 001 and 027 (received from ARU) and the Cardiff-ECDC collection (provided by Ed Kuijper) were used as the reference strains
- PCRribotype and PFGE patterns were analyzed by the BioNumerics software (Applied Maths NV, Belgium)

- Of the 343 isolates
 - 48% (n=163) PCRribotype 027
 - 17% (n=57) PCRribotype 001
 - 36% (n=123) other PCRribotypes
- Among other ribotypes, >40 distinct patterns were identified, including potentially hypervirulent ribotypes 023, 045, 058, and 078
- PCRribotype 027 came from 5/12 health care districts, originating from >30 different health care facilities, most of them providing primary or long-term care
- 150/163 subjects positive for PCRribotype 027 were ≥ 60 years of age

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Dice (Qtr:1.00%) (Tot: 1.0%-10%) (H:0.0% S:0.0%) [0.0%:5.89%] [30.4%:100.0%]
PCR O'Neill **PCR O'Neill**

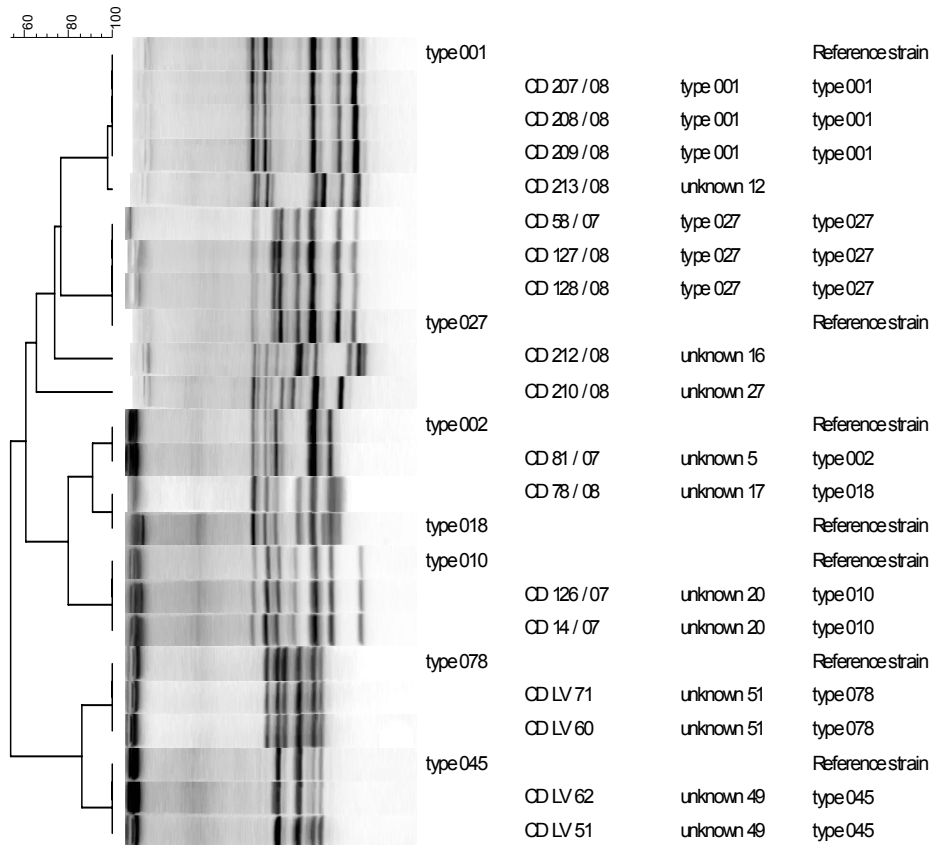


Figure 2. Finnish health care districts.

At least one *C. difficile* isolate sent to KTL, no PCR ribotype 027 identified.

At least one *C. difficile* isolate sent to KTL, of which at least one identified as PCR ribotype 027.

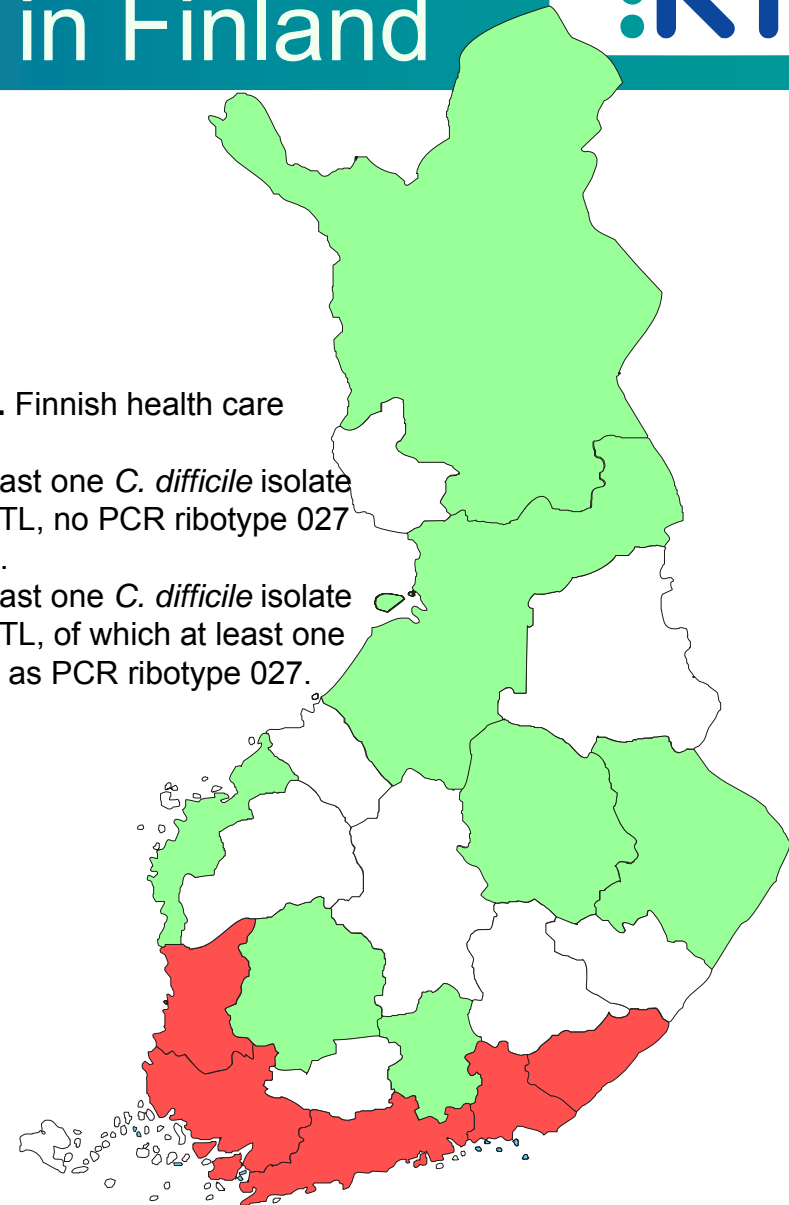


Figure 1. Examples of PCR ribotype patterns of Finnish *C. difficile* isolates.

- → hypervirulent *C. difficile* PCRribotype 027 has spread at least in southern and south-western parts of Finland
 - eagerness of sending isolates to be typed varies between districts
- The impact of other ribotypes needs to be elucidated
 - comparison of "unknown" ribotypes to the European control strains under way
 - validation of PCRribotyping method vs. virulence gene detection under way
- So far, PFGE and PCRribotyping have been equally discriminatory
 - ongoing implementation of MLVA

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