MLST types and antibiotic resistance of Swiss *Campylobacter*

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Havelaar et al. (2013) estimated the true incidence to be 350 with up to 27’000 cases per year in 2009
MLST studies in Switzerland: general


> Results:
  — Extended MLST with flaB
  — Antibiotic resistance towards quinolones and macrolides included
  — Reduction of primers to the minimum
  — Multiplex amplification and sequencing of target genes
MLST studies in Switzerland: chicken


> Results:

— Similar proportions and resistance rates
  
  – 70% *C. jejuni* (28% quinoloneR, 0% macrolideR)
  
  – 30% *C. coli* (45% quinoloneR, 6% macrolideR)

— Contamination of carcasses mainly during slaughter by the flock or individual animal (what comes in comes out)

— Genotypes on retail meat are more or less the same as on carcasses showing little selection along the production chain
MLST studies in Switzerland: pig


Results:

— Only *C. coli* (33.6% quinoloneR, 10.6% macrolideR)
— 256 isolates, 67 STs with 37 being new
— Otherwise rarely reported STs often found (ST-1049, ST-3345)
— Reflecting partitioned pig production in CH
— Shift of *C. coli* population observed from 2001-2009 as well as a significant drop in antibiotic resistance (50.3%, 29.3%)
MLST studies in Switzerland: human


> Results:

— 91% C. jejuni, 9% C. coli
— 18% travel associated
— 57.2% men (38% quinoloneR), 32.8% women (49% quinoloneR)
— Foreign isolates showed higher quinolone resistance rates and resistant isolates had STs different from domestic isolates
MLST studies in Switzerland

> Dog

> Population genetics
Summary

- Similar situation in Switzerland as in other countries, yet some differences in STs (pig, foreign-domestic isolates)
- ST-45 often found in chicken but rarely in Swiss human isolates
- ST are associated with antibiotic resistance towards quinolones independent of origin:
  - susceptible: ST-45
  - resistant: ST-464
- Little change in quinolone resistance of human, increase of quinolone resistance in dog and chicken isolates over recent years
- Source attribution using MLST or _flaB_ data reveal similar results: up to 80% of human isolates attributed to chicken, less than 20% to dog and less than 2% to pig
Conclusions

> Campylobacteriosis in Switzerland is predominantly a «home made» problem
> Chicken is by far the main source for human cases
> Contamination of broiler carcasses occurs at the slaughterhouse, by the flock or individual animal
> Contamination is maintained throughout the production chain and reaches the consumer
> A reduction of human campylobacteriosis can be achieved most efficiently in optimizing processes of chicken slaughter
> Raise awareness and responsibility
  — consumer
  — producer
  — authorities