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LETTER TO THE EDITOR

**Commentary to the paper entitled
“Increased incidence of *Campylobacter*
enteritis and their quinolone resistance
between 2010 and 2015: Results of a
French national observatory conducted
in 21 general hospitals (CHG)”**

**KEYWORDS**

Campylobacter;
Antimicrobial use;
Food-producing;
Animals

Dear Editors-in-Chief

We considered the paper entitled “Increased incidence of *Campylobacter* enteritis and their quinolone resistance between 2010 and 2015: Results of a French national observatory conducted in 21 general hospitals (CHG) by Marie Trompette et al recently published in *Clinics and Research in Hepatology and Gastroenterology* (*Clin Res Hepatol Gastroenterol.* 2018 Dec 7. pii: S2210-7401(18)30231-6. doi: 10.1016/j.clinre.2018.10.015. [Epub ahead of print]). This article, which provides a wide overview of the various traits of *Campylobacter* among human infections is undoubtedly of great value to clinicians, since it addresses several thousand *Campylobacter* enteritis cases observed in a high number of hospitals in France. We believe however, that a few points addressed in the discussion of the article, particularly those relating to antimicrobial use in food-producing animals and to quinolone resistance in *Campylobacter*, require clarifications and could benefit from animal data.

First, regarding the mention in the discussion of “the use of antibiotics as a food additive and growth factor”, we would like to emphasise that such use has been banned in the European Union since the 1st of January 2006 and that quinolones have never been authorized for such use. Use of antibiotics as food additives and growth promoters nevertheless remain possible elsewhere in the world [1].

Trompette et al also suggest in discussion that “the increased resistance of *Campylobacter* to quinolones has been observed in countries where the frequency of use of these antibiotics in animals is much higher (Spain, China, United States)” and report that “countries that have banned the use of these antibiotics in farm animals, such as Australia”, have very low levels of resistance to quinolones. It is worth mentioning that fluoroquinolone-resistant *Campylobacter* rapidly emerged in many countries after the licensing of enrofloxacin for food-producing animals, whereas in Australia, where fluoroquinolones have always been prohibited in all food-producing animals, corresponding resistance has remained low [2]. Conversely in the USA, the FDA withdrew the approval of fluoroquinolones in poultry production in 2005, but this measure has not resulted in a decrease in fluoroquinolones-resistance [3]. One of the reasons for this persistence may be the high fitness of fluoroquinolone-resistant *Campylobacter* strains [4]. In France, the National Action Plan named Ecoantibio, a public policy set up by the Ministry of Agriculture and Food to reduce the contribution of antibiotics used in veterinary medicine to antibiotic resistance and its consequences for public health, has resulted in a noteworthy decrease of the animal exposure to fluoroquinolones from 2013 to 2017 (87.8% for all animals, 50.3% for poultry) [5]. But up to now, as observed in the USA, this decrease in use of fluoroquinolones has not conducted to a decrease in fluoroquinolone-resistance in *Campylobacter*.

In accordance with Directive 2003/99/EC on the monitoring of zoonoses and zoonotic agents in food-producing animals and food, the antimicrobial susceptibility of *Campylobacter* obtained from poultry is regularly monitored in a harmonized way in the European Union Member States (EFSA-ECDC, 2017). Although the susceptibility testing methods and interpretive criteria are not described by Trompette et al., it is tempting to compare the percentages of resistance of clinical isolates to the ones of isolates from poultry. The ECOFF-based category of non-wild-type *Campylobacter* from food-producing animals corresponds to the ciprofloxacin non-susceptible category (>0.5 mg/L), thus enabling comparison between animal non-wild-type and human non-susceptible (resistant) isolates percentages. In France, the occurrence of ciprofloxacin resistance in *Campy-*

lobacter jejuni isolates from broilers increased significantly from 51% in 2010 to 65.4% in 2016, while that in *C. jejuni* isolates from turkeys reached 57.9% in 2016 [6]. Interestingly the 57% resistance in clinical isolates of *Campylobacter* spp. in 2014-2015 reported by Trompette et al parallels the 61.1% and 55.7% percentages recorded in *C. jejuni* isolates from broilers and turkeys respectively in 2014, even though ruminants are also an important source of campylobacteriosis in France [7]. Indeed, the joint analysis of the data on antimicrobial use and antimicrobial resistance in humans and in food-producing animals from 2013 to 2015 in the European Union found out that resistance to fluoroquinolones in *C. jejuni* from humans was significantly related to use of quinolones in food-producing animals [8], supporting conclusions in a 'One Health' perspective [9].

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Disclosure of interest

The authors declare that they have no competing interest.

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References

- [1] OIE.;1; Survey on monitoring the quantities of antimicrobial agents used rapport annuel sur les agents antimicrobiens destinés à être utilisés chez les animaux (deuxième rapport) (http://www.oie.int/fileadmin/Home/fr/Our_scientific_expertise/docs/pdf/AMR/F_Annual_Report_AMR_2.pdf). 2017 [accessed 28 January 2019].
- [2] Cheng AC, Turnidge J, Collignon P, Looke D, Barton M, Gottlieb T. Control of fluoroquinolone resistance through successful regulation. *Australia Emerg Infect Dis* 2012;18:1453–60.
- [3] Zawack K, Li M, Booth JG, Love W, Lanzas C, Grohn YT. Monitoring antimicrobial resistance in the food supply chain and its implications for FDA policy initiatives. *Antimicrobial Agents Chemotherapy* 2016;60:5302–11.
- [4] Luo N, Pereira S, Sahin O, Lin J, Huang S, Michel L, et al. Enhanced in vivo fitness of fluoroquinolone-resistant *Campylobacter jejuni* in the absence of antibiotic selection pressure. *Proc Natl Acad Sci U S A* 2005;102:541–6.
- [5] Anses ANMV, Suivi des ventes de médicaments vétérinaires contenant des antibiotiques en France en 2017 (<https://www.anses.fr/fr/system/files/ANMV-Ra-Antibiotiques2017.pdf>). 2018 [accessed 28 January 2019].
- [6] Mourand G, Perrin-Guyomard A, Kempf I. Antibiorésistance de *Campylobacter jejuni* isolés de poulets et dindes de chair en France. *Bull Epid Sante Animal* 2018.
- [7] Thepault A, Rose V, Quesne S, Poezevara T, Beven V, Hirschaud E, et al. Ruminant and chicken: important sources of campylobacteriosis in France despite a variation of source attribution in 2009 and 2015. *Sci Rep* 2018;8:9305.
- [8] ECDC/EFSA/EMA. ECDC/EFSA/EMA second joint report on the integrated analysis of the consumption of antimicrobial agents and occurrence of antimicrobial resistance in bacteria from humans and food-producing animals (JIACRA II). *EFSA J* 2017;15:4872.
- [9] WHO. Global action plan on antimicrobial resistance (<https://www.who.int/antimicrobial-resistance/global-action-plan>). 2015 [accessed 28 January 2019].

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