

# Quinolone Resistance in Non-typhoidal *Salmonella*

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## Abstract

Non-typhoidal *Salmonella* is the primary foodborne zoonotic agent of salmonellosis in many countries. Non-typhoidal *Salmonella* infections are transmitted to humans primarily through consumption of contaminated foods from animal origin, whereas *S. Typhi* and Paratyphi infections are spread directly or indirectly by contact with an infected person. Quinolones exhibit potent antibacterial activity against *Salmonella* and are usually the first choice of treatment for life-threatening salmonellosis due to multidrug-resistant strains. However, by the early 1990s, quinolones have been approved for use in food-producing animals. The increased use of this group of antimicrobials in animal has led to the concomitant emergence of quinolone-resistant non-typhoidal *Salmonella* strains. However, in some countries, there are no legal provisions, which apply to veterinary drugs. This situation provides favorable conditions for spread and persistence of quinolone-resistant bacteria in food-producing animals. The objective of this chapter is to review the current regulatory controls for the use of quinolones in food-producing animals, its effect on development of quinolone resistance, and the potential impact on human and animal health. Moreover, this chapter reviews the current knowledge of quinolone resistance mechanisms and the future directions of research with particular attention to the strategies to control the emergence of quinolone-resistant *Salmonella*.

**Keywords:** non-typhoidal *Salmonella*, quinolones, resistance

## 1. Introduction

Non-typhoidal *Salmonella* refers to a group of bacteria that cause diarrheal illness in humans and domestic animals. More than 2500 different serovars of non-typhoidal *Salmonella* have been described: all serovars of *Salmonella* except for Typhi, Paratyphi A, Paratyphi B (tartrate negative), and Paratyphi C. Non-typhoidal *Salmonella* are important causes of foodborne infection because *Salmonella* have a broad host range and are strongly associated with animal