

**00164 The relationship between strain type and mortality in *Clostridioides difficile* infection: a meta-analysis**

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**Background:** Conflicting results are reported in studies evaluating the link between bacterial strain type (specifically NAP1/BI/027 or R027) and the risk of mortality associated with *Clostridium difficile* Infection (CDI). To reach a better understanding of this relationship, we performed a meta-analysis.

**Materials/methods:** A systematic review was conducted in PubMed/ MEDLINE, Cochrane Library, Embase and Web of Sciences up to March 2018. Studies reporting mortality according to the strain type were included without restriction. Random effect meta-analysis was conducted to assess frequency of mortality and risk ratio (RR) (*meta* package in R).

**Results:** Overall, 45 studies were included and 30-day all-cause mortality was the most frequent outcome. Frequencies of mortality by strain type are shown in the table. Both 30-day attributable and all-cause mortality were higher in patients infected by R027 strain (pooled RR= 2.1; 95%CI 1.3-3.4 and RR=1.6; 95%CI 1.1-2.3) but not 14-day all-cause mortality (RR=2.3; 95%CI 0.5-10.9). R078 was infrequent, 30-day mortality have not occurred in patients with this strain in three studies, and the association with this strain was not significant (RR=0.9; 95%CI 0.4-2.1). Risk of 30-day all-cause mortality was of 1.7 (95%CI 0.99-2.8) in patients infected by strains producing binary toxin.

Outcome	Strain type	Outcome % (95%CI)	Studies (n)	Sample size (range)	Heterogeneity I <sup>2</sup> (%)
14-day all-cause mortality	R027	11.6 (7.6-17.3)	3	319-2222	97
	Other	13.1 (6.9-19.3)			97
30-day attributable mortality	R027 or NAP1	8.1 (5.0-11.3)	4	57-17,202	58
	Other	1.7 (0.8-2.6)	7		85
30-day all-cause mortality	R027 or NAP1	22.9 (18.6-27.2)	20	57-17,202	82
	R001	21.8 (16.4-27.3)	5	114-1380	41
	R002	28.6 (11.7-45.5)	3	139-1426	61
	R014	8.6 (5.9-11.26)	6	50-1380	0-46
	R053	6.0 (0-13.1)	4	50-1114	76
	R078	3.3 (1.2-5.4)	9	50-2299	87
	R106	28.2 (18.4-37.9)	3	97-1426	56
	Binary toxin+	15.9 (8.0-23.8)	7	66-2299	87
	Binary toxin-	9.7 (5.4-14.0)	6		83

**Conclusions:** Some strains are likely associated with mortality in CDI, mainly NAP1/BI/R027. Attributable mortality is however low (8%). The association between strains producing binary toxin and all-cause mortality was almost statistically significant. Sensitivity analysis and meta-regression are needed to adjust these results on other factors mainly patients' characteristics and underlying comorbidities.

