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Supplementary appendix

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Supplement to: Mak JWY, Chan FKL, Ng SC, et al. Probiotics and COVID-19: one size does not fit all. *Lancet Gastroenterol Hepatol* 2020; published online April 24.
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Publication	Disease	Study Design	No. of individuals	Intervention	Primary outcome	Main findings	Ref.
Hempel, S. <i>et al.</i>	Antibiotic-associated diarrhoea (AAD)	Systematic Review & Meta-analysis	11,811	Probiotics (<i>Lactobacillus</i> , <i>Bifidobacterium</i> , <i>Saccharomyces</i> , <i>Streptococcus</i> , <i>Enterococcus</i> , and/or <i>Bacillus</i>)	Prevention and treatment of (AAD)	Probiotics significantly reduced AAD (RR 0.58; 95% CI, 0.50 to 0.68; P < .001)	1
Blaabjerg, S. <i>et al.</i>	Antibiotic-associated diarrhoea (AAD)	Systematic Review & Meta-analysis	3,631	Probiotics (<i>Lactobacilli</i> spp., <i>Lactococcus</i> spp., <i>Bacillus</i> spp., <i>Bifidobacterium</i> spp., <i>Saccharomyces</i> spp., <i>Leuconostoc cremoris</i> , <i>Clostridium</i> spp., or <i>Streptococcus</i> spp.)	Incidence of (AAD)	Probiotics significantly reduced AAD (RR 0.49; 95% CI, 0.36 to 0.66)	2
Allen, S. J. <i>et al.</i>	Antibiotic-associated diarrhoea (AAD)	RCT	2,981	Inpatients ≥65 years and exposed to ≥ 1 antibiotics randomised to either multi-strain preparation of <i>Lactobacilli</i> & <i>bifidobacterial</i> or placebo for 21 days	Occurrence of AAD within 8 weeks and C difficile diarrhoea (CDD) within 12 weeks of recruitment	No significant difference in occurrence of AAD (including CDD) in probiotics (10.8%) and placebo group (10.4%). (RR 1.04; 95% CI 0.84-1.28; p=0.71).	3
King S, <i>et al.</i>	Acute respiratory infections	Systematic Review & Meta-analysis	8,761	Probiotics, specifically <i>Lactobacillus</i> and <i>Bifidobacterium</i> strains	Duration of acute respiratory infections in healthy children and adults	Significantly fewer numbers of days of illness per person, shorter illness episodes by almost a day	4

						and fewer numbers of days absent from day care/school/work in participants who received probiotics than placebo	
Hao Q, et al.	Acute upper respiratory infections	Systematic Review & Meta-analysis	3,451	Probiotics (<i>Lactobacillus plantarum</i> , <i>Lactobacillus paracasei</i> 8700:2, <i>Lactobacillus rhamnosus</i> (GG or HN001), <i>Lactobacillus casei</i> Shirota, <i>Lactobacillus bulgaricus</i> OLL 073R-1, <i>Lactobacillus acidophilus</i> , <i>Lactobacillus gasseri</i> , <i>Streptococcus thermophilus</i> OLS 3059, <i>Bifidobacterium lactis</i> BB-12, <i>Bifidobacterium bifidum</i> MF 20/5, <i>Bifidobacterium animalis</i> and <i>Bifidobacterium longum</i> SP 07/3)	Prevention of acute URTIs	Probiotics were better than placebo in number of participants experiencing episodes of acute URTI (Rate ratio 0.53; 95% CI 0.37 to 0.76) and reduced antibiotic prescription rates for acute URTIs (OR 0.65; 95% CI 0.45 to 0.94)	5
Lenoir-Wijnkoop, I. et al.	Flu-like respiratory tract infections(RTI)	Economic modelling study	-	Probiotics	RTI-related health and cost outcomes in the US primary care setting	Probiotics allowed cost savings for health care payer by USD4.6 million , decreased antibiotic prescription by 1.39–2.16 million courses, reduced absence from	6

						work by 3.58–4.2 million days	
Morrow, L. E., et al.	Ventilator-associated pneumonia (VAP)	RCT	148	Patients were randomised to enteral probiotics or inert inulin-based placebo twice/day in addition to routine care	Incidence of microbiologically confirmed VAP incidence	Patients treated with <i>Lactobacillus</i> were significantly less likely to develop VAP compared with patients treated with placebo (40.0% vs. 19.1%; <i>P</i> = 0.007)	7
Zeng, J. et al.	Ventilator-associated pneumonia (VAP)	RCT	235	Patients were randomized to probiotics capsule (live <i>Bacillus subtilis</i> & <i>Enterococcus faecalis</i> (Medilac-S) 0.5 g x3 times daily via nasogastric tube plus standard preventive strategies or standard preventive strategies alone, for a maximum of 14 days	Incidence of microbiologically confirmed VAP in patients intubated for ≥48 h	Patients treated with probiotics had significantly less VAP compared to placebo group (36.4% vs. 50.4%, <i>p</i> =0.031)	8
Bo, L. et al.	Ventilator-associated pneumonia (VAP)	Systematic Review & Meta-analysis	1083	Probiotics (<i>Lactobacillus casei rhamnosus</i> ; <i>Lactobacillus plantarum</i> ; Synbiotic 2000FORTE; Eryphilus; combination <i>Bifidobacterium longum</i> + <i>Lactobacillus bulgaricus</i> + <i>Streptococcus thermophilus</i>)	Effectiveness and safety of probiotics for preventing VAP	Probiotics decreased incidence of VAP (OR 0.70, 95% CI 0.52 to 0.95, low quality evidence)	9

OR = Odds ratio; RR = Relative risk; CI = confidence interval

Reference

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