Microbiome approaches to treat colonization with antibiotic resistant bacteria

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Antibacterial resistance is a global threat, chiefly due to diminishing numbers of effective treatments

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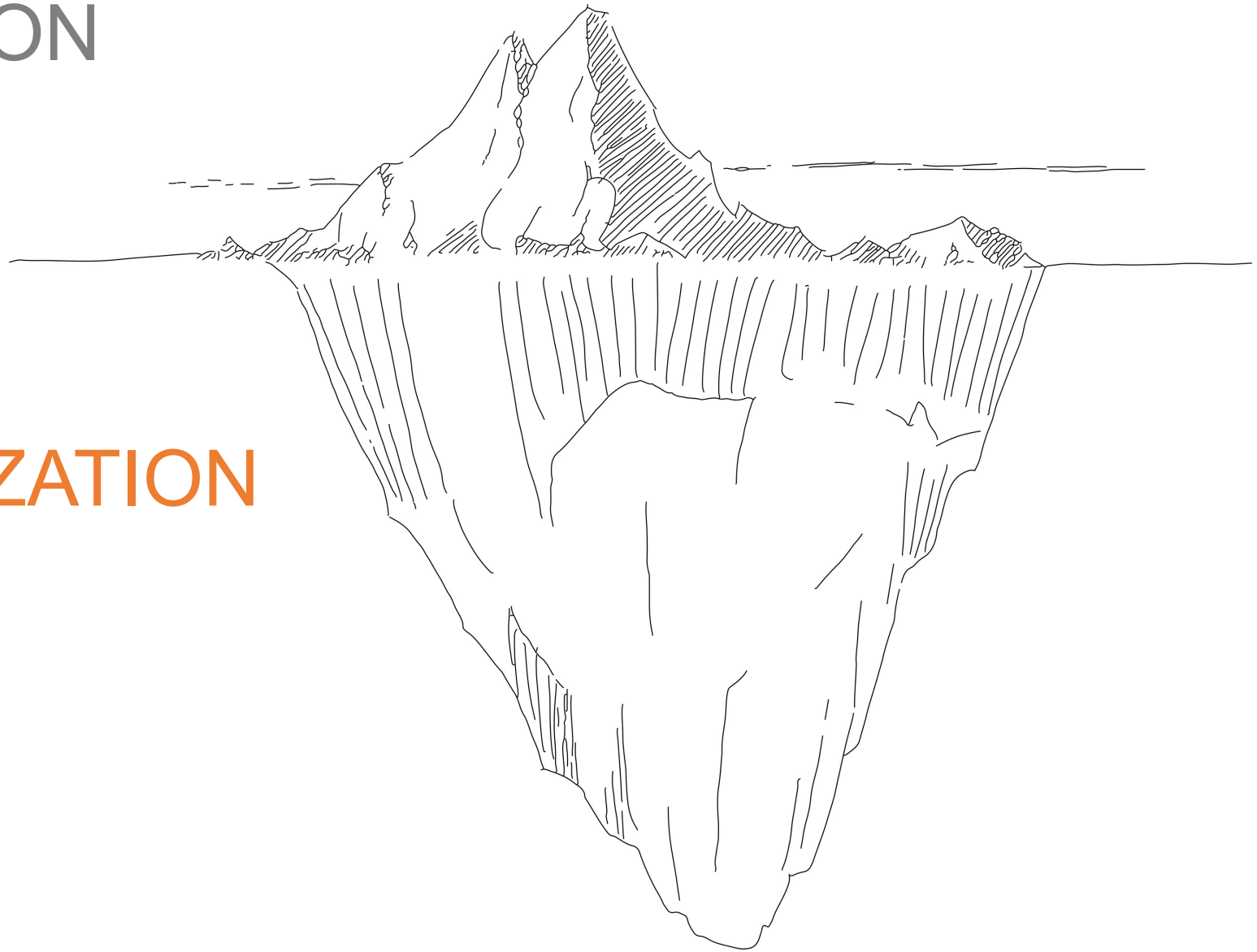
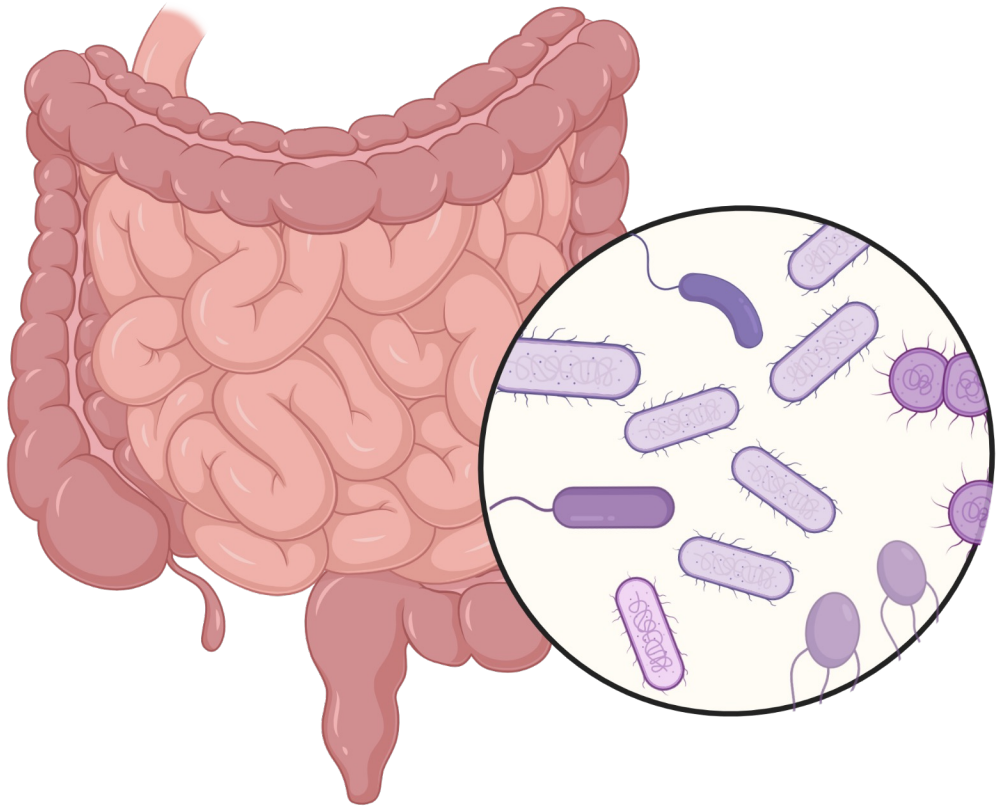
Colonization

INFECTION



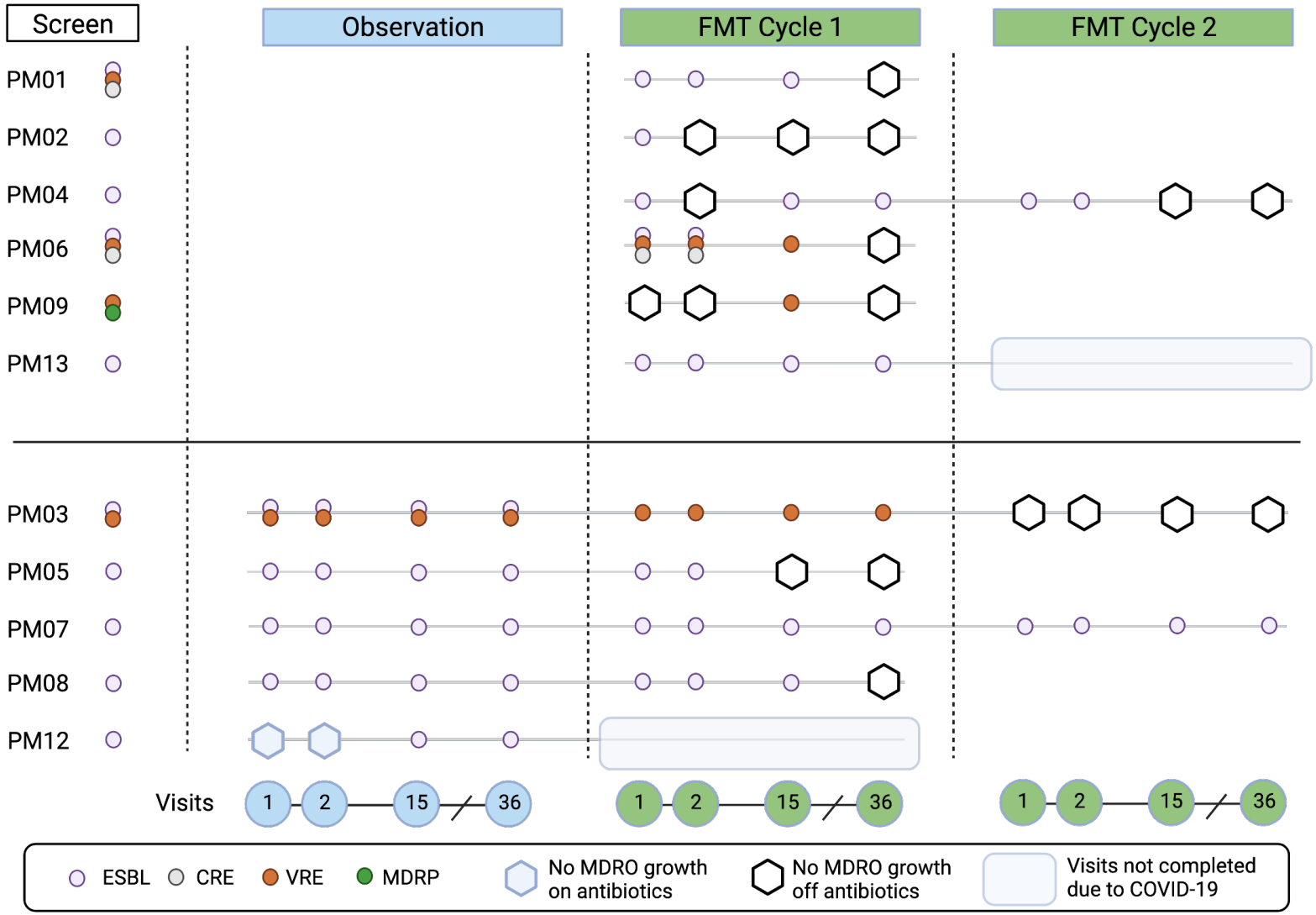
COLONIZATION

What can be done for patients and colonized with multi-drug (pan) resistant organisms?

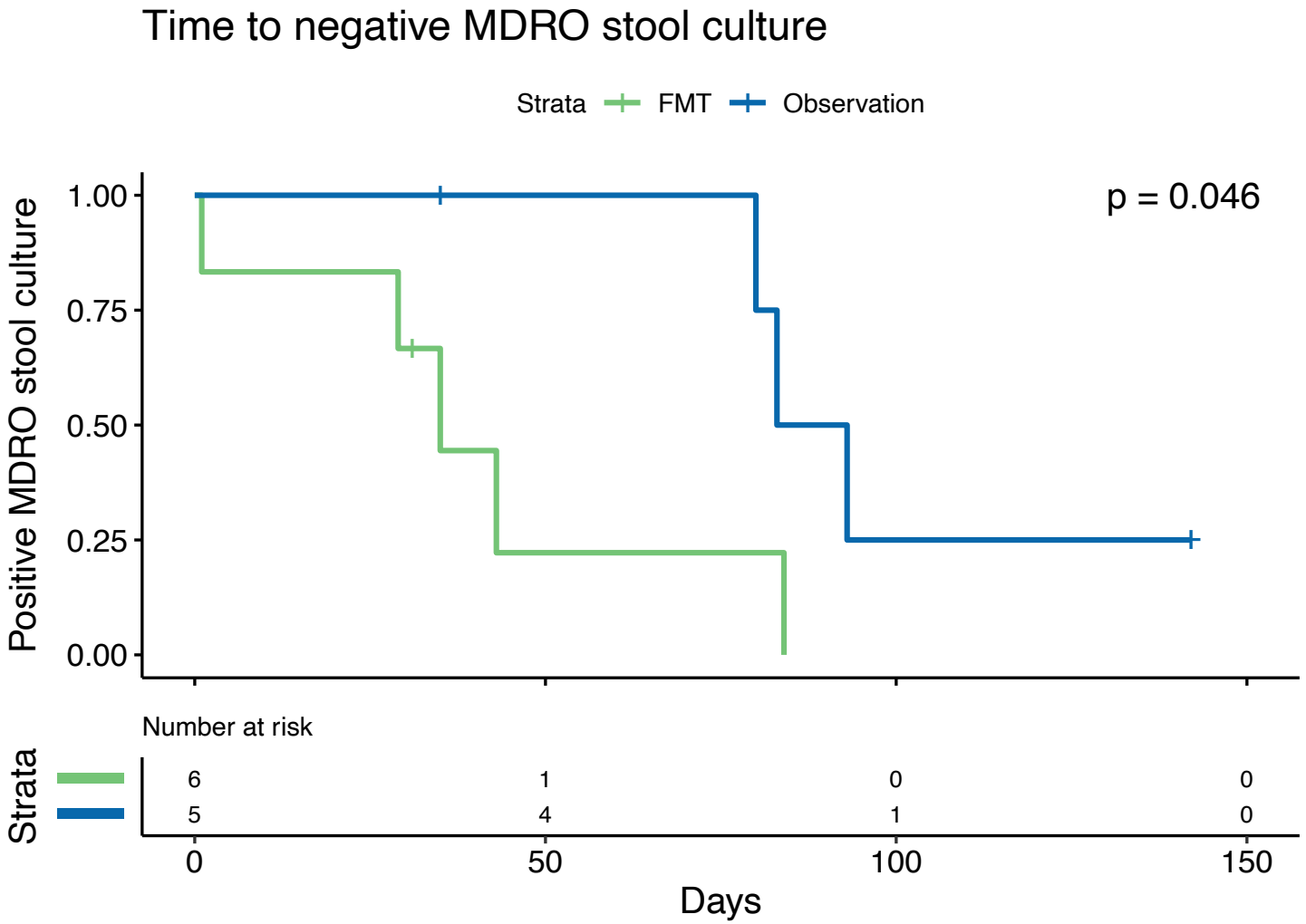


Intestinal microbial communities are well-established as critical to MDRO colonization resistance.

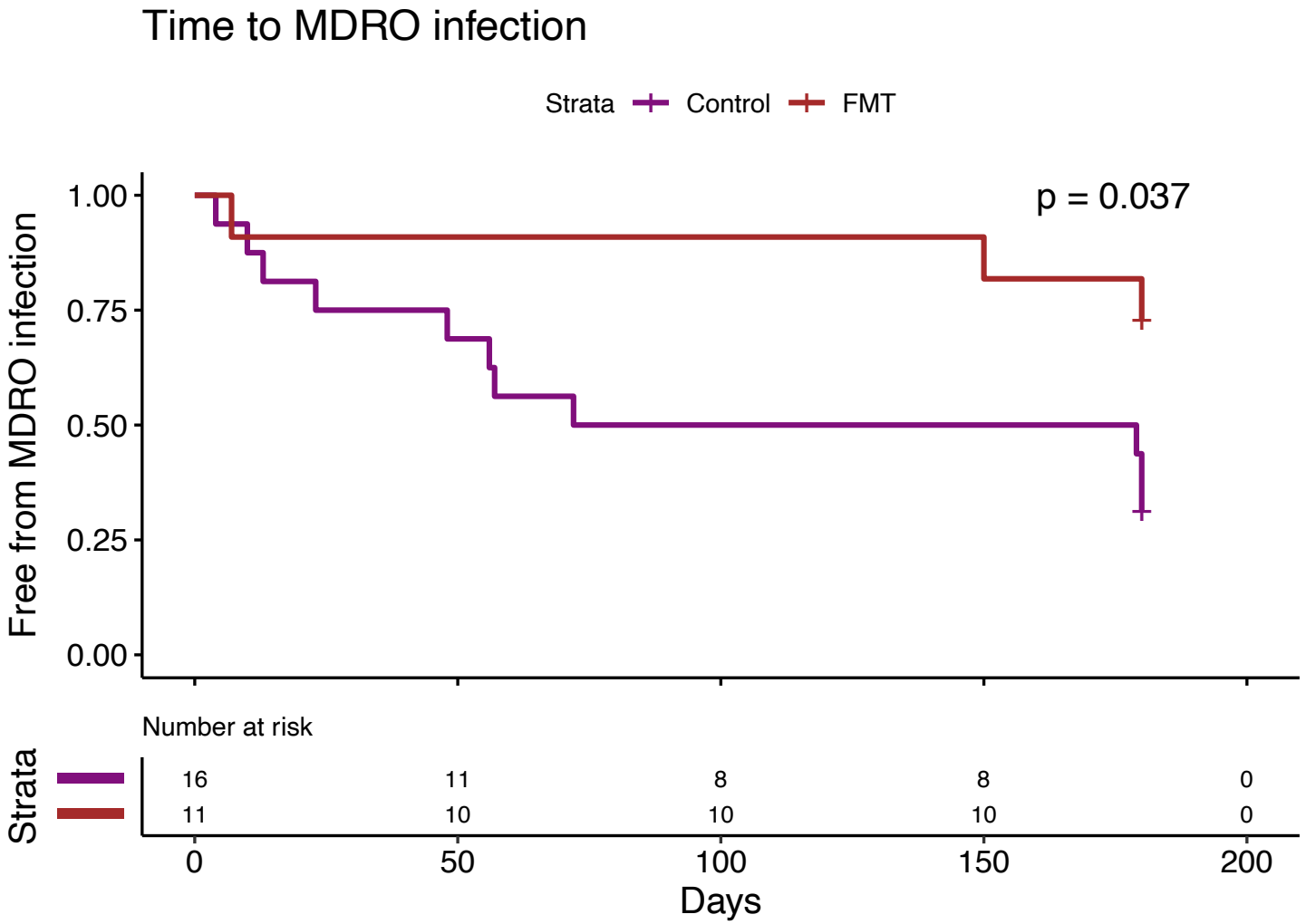
FMT-treated participants were more frequently MDRO negative at day 36



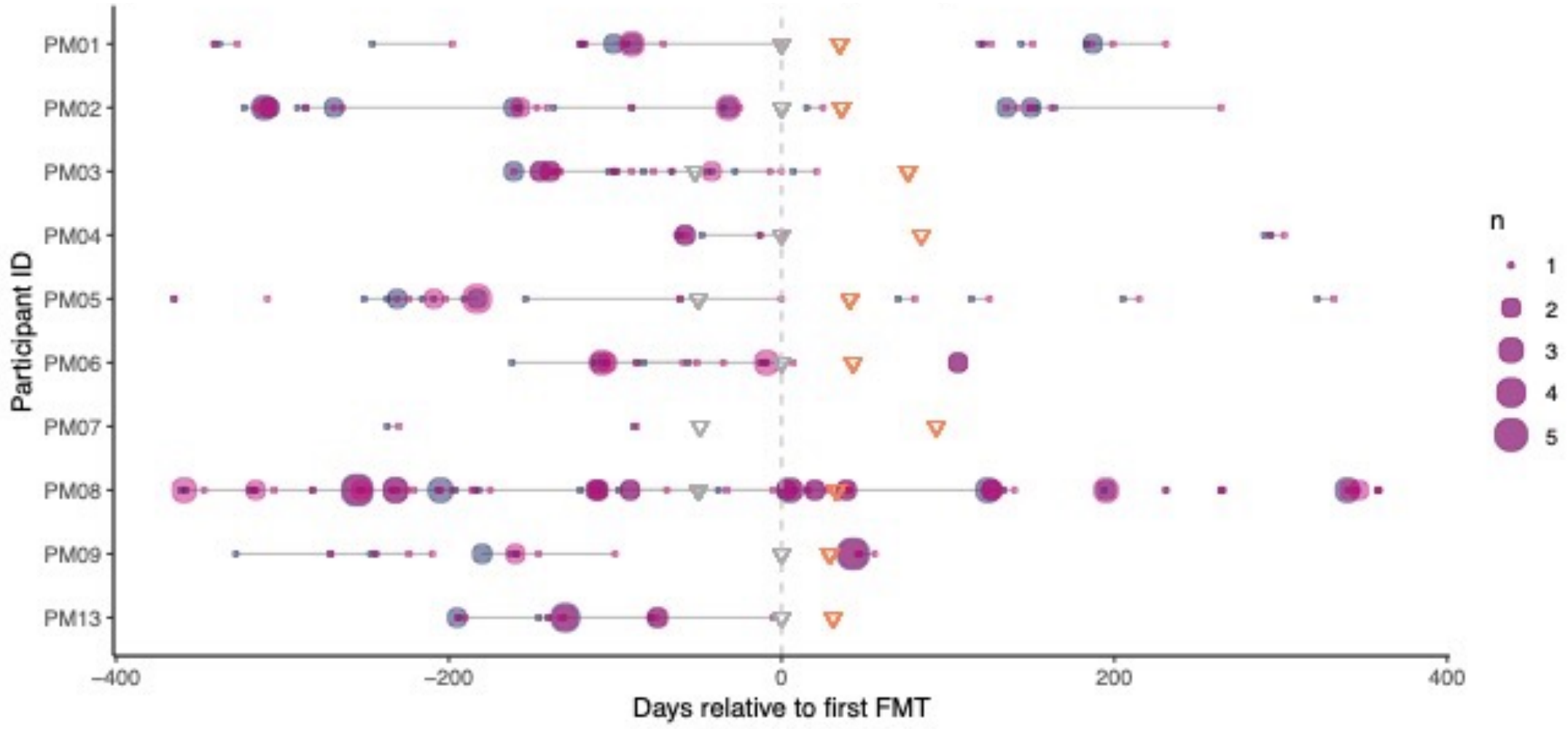
FMT-treated patients had shorter time to negative stool culture vs Observation



PREMIX participants had longer time to recurrent MDRO infection vs matched RTRs



FMT for MDRO Colonization Can Decrease Antibiotic Exposures and Hospitalization



Author, Year	Design	Number of Subjects	Primary Endpoint	Outcome
Bilinski, 2017	Open-label, prospective study	**20** (Duodenal FMT)	Decolonization at one month	FMT: 15/20 (75%)
Dinh, 2018	Open-label, multi-center prospective study	**16** (CRE colonized: 8 VRE colonized: 8)	Two or more consecutive rectal swabs at Days 7, 14, 21, 28, and monthly for three months	FMT for CRE: 4/8 (50%) FMT for VRE: 7/8 (87.5%)
Singh, 2018	Open-label, prospective study	**15** (Duodenal FMT)	Decolonization at weeks 1, 2, and 4	FMT: 6/15 (40%)
Battipaglia, 2019	Open-label, retrospective study	**10**	Three or more consecutive negative MDRO rectal swab cultures	FMT: 7/10 (70%)
Huttner, 2019	Open-label, multi-center, randomized, controlled trial	**16** (Oral Capsule) **6** (Nasogastric FMT) Control: 17	Negative MDRO stool culture at visit 4 (35-48 days after randomization)	FMT: 8/16 (50%) by per-protocol analysis Control: 3/13 (23%) by per-protocol analysis
Bar-Yoseph, 2020	Open-label, prospective study	**15** (Oral Capsule FMT)	Negative perirectal MDRO culture x3	FMT: 9/15 (60%) negative at 1 month, 8/12 (67%) negative at 6 months
Seong, 2020	Open-label case series	**35** (pooled colonoscopy, duodenoscopy, jejunostomy, or capsule)	Decolonization at one year	FMT: 24/35 (68.6%)

Edward Jenner vaccinating a boy. Oil painting by E.-E. Hillemacher, 1884.

How can we accelerate the development of microbiome therapies for MDRO colonization?

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Oil painting by E.-E. Hillemacher, 1884.
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Angeline Mitchell, RN…, prepares shots of the Moderna COVID-19 vaccine. 2021.
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Prospective clinical studies of decolonization as an indication and primary endpoint

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Require data sharing and open science for microbiome trials