Use of Lactobacillus acidophilus/rhamnosus complex for the prevention of antibiotic-associated diarrhea in elderly hospitalized patients

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Background

- Antibiotic-associated diarrhea (AAD) is a common adverse drug reaction, occurring in 5-35% of patients.1
- AAD rates depend on the type of antibiotic used, length of antibiotic treatment, pathogen exposure, and host factors such as age and health status.2,3
- Potentially serious/significant consequences include longer hospital stay, higher medical costs, and other co-morbidities.4
- Seventy can range from uncomplicated diarrhea to life-threatening pseudomembranous colitis (PMC).1
- Nearly all cases of PMC are due to Clostridium difficile infection (CDI), which accounts for approximately 15-25% of AAD cases.2,6
- AAD, in particular CDI, is a significant cause of morbidity and mortality in hospitalized geriatric patients.7
- Probiotics have been suggested as a preventative measure for AAD and CDI.

Objective and Study Endpoints

To determine whether a probiotic combination of Lactobacillus species is safe and effective for preventing antibiotic-associated diarrhea in elderly hospitalized patients.

Primary Outcome

- Incidence of AAD (defined as 3 or more loose stools in a 24 hour period)

Secondary Outcomes

- Incidence of CDI as detected by a stool assay (detection of toxins A or B)
- Duration of hospital stay
- Incidence of adverse effects

Methods

Design

Prospective, randomized, double-blind, placebo-controlled clinical trial

Intervention/Comparator

Lactobacillus acidophilus/rhamnosus 3 caplets (1 x 10⁹ cells/caplet) po BID vs matching placebo

Inclusion Criteria

Inpatient on general medicine ward at Victoria General Hospital
Over the age of 60
Antibiotic(s) anticipated for more than 72 hours
Informed consent obtained

Exclusion Criteria

- Active diarrhea at enrollment
- CDI diagnosis within the previous 3 months
- Underlying chronic GI tract disease (IBD, IBS)
- Ileostomy or colostomy
- Regularly take probiotics
- Severely immunocompromised
- Severe life-threatening illness
- Lactose intolerant
- NPO or have a tubefeed

Sample Size

Estimated AAD incidence = 30% in placebo group vs 12% in probiotic group
Calculated sample size = 80 participants per group (α = 0.05, 80% power)
Allowing for dropout rate of 20%, plan to enroll 100 patients per group

Projected Patient Flow

Figure. Sequence of Events from Recruitment to Study Completion

At time of antibiotic prescription, physician obtains verbal consent from potential study subject to be contacted by representative of study team.

Physician writes order, allowing clinical pharmacist or investigator to screen and enroll subject into study as per inclusion/exclusion criteria.

Ward unit clerk contacts an investigator or clinical pharmacist.

Within 72 hours of first antibiotic dose, investigator or clinical pharmacist reviews the subject's medical record and Pharmanet profile for eligibility.

If subject is discharged home, study agent will be provided and follow-up is conducted over the telephone.

If subject does not develop diarrhea while on antibiotic in hospital, follow-up with subject once weekly x 3 weeks after last dose.

Possible expansion to Royal Jubilee Hospital

References available on request