Important Risk Reduction in Nosocomial *Clostridium Difficile* with Insitution of Probiotic Prophylaxis

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Background

- Increase in rate of CDAD over last years in Quebec
- Control measures include:
  - contact precautions
  - handwashing
  - environmental cleaning
  - control of antibiotic use...
- Some suggestion in literature that use of probiotics can help in prevention of CDAD

Reference: D'Souza, A et al. BMJ 2002; 324;1361

Intervention

- Infection control interventions had not shown decrease in CDAD rates
- Institution of lactobacillus (Probaclac) in July 2004
- Use of *Saccaromyces boulardii* associated with fungemia

Reference: Cassone, M et al. J. Clin Micro. 2003; 41; 5340-5343

Intervention

- July 6, 2004 through February 7, 2005
- Probaclac (Lactobacillus) administered to all patients admitted to the hospital, receiving any form of antibiotic therapy
- Presence/absence of symptoms was not a factor
- 2 tablets Probaclac BID for patients ≥ 50 years
- tablet BID < 50 years

Intervention

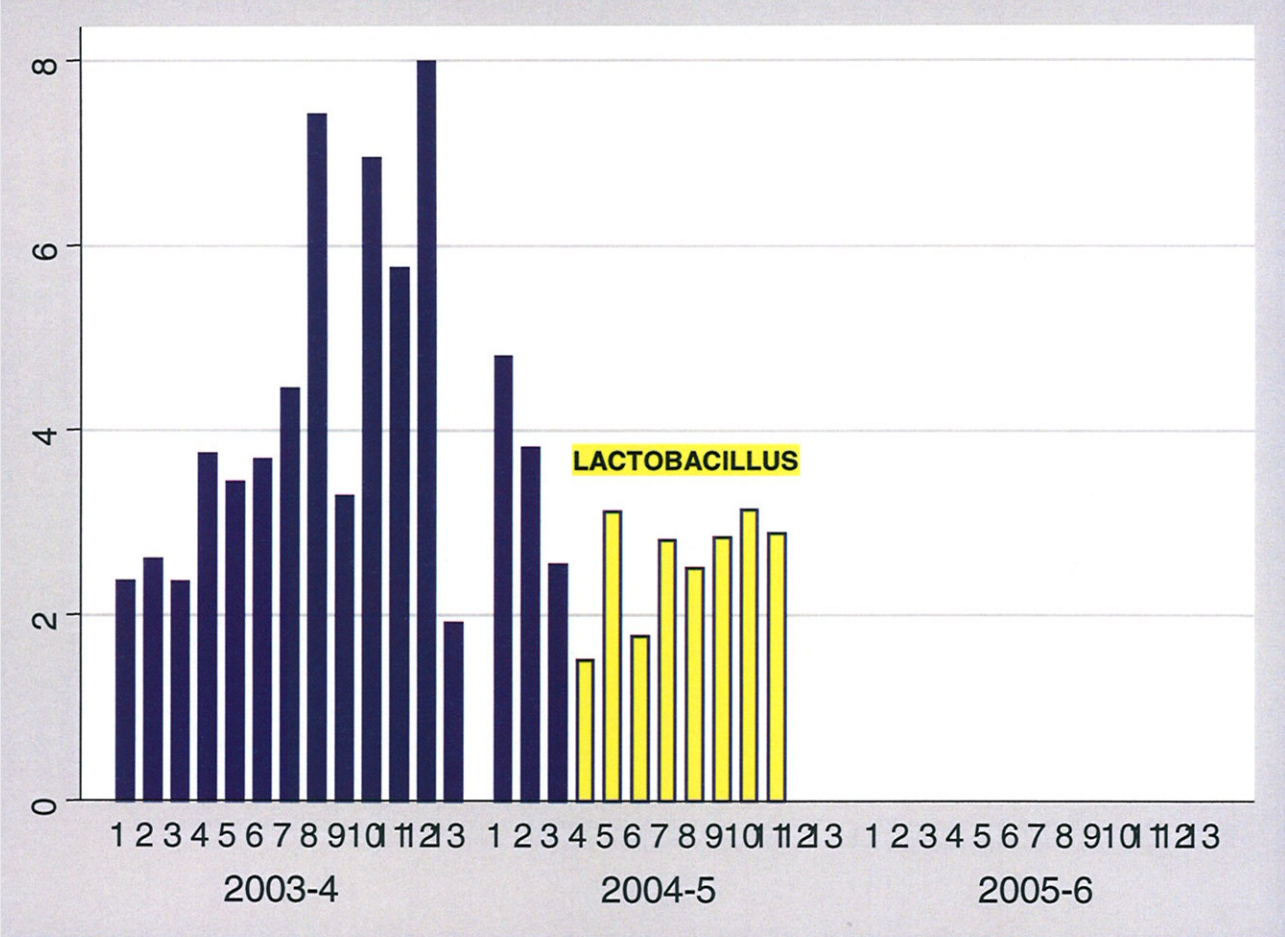
- Incidence of CDAD monitored daily through regular ward contacts and lab results
- Bowel Monitoring sheet placed in patient's chart if diarrhea developped
- EIA assay for detection of toxin A and B
- Surveillance data collected since April, 2003

Study

- **Goal:**
  Determine the impact of the administration of Probaclac on the rate of nosocomial CDAD
- **Design:**
  Observational
- **Data:**
  Prospective surveillance data
- **Analysis:**
  Rates of nosocomial CDAD counts per patient days and per year

Results

Nosocomial CDAD rate per 1000 patient days at risk
per financial period and year



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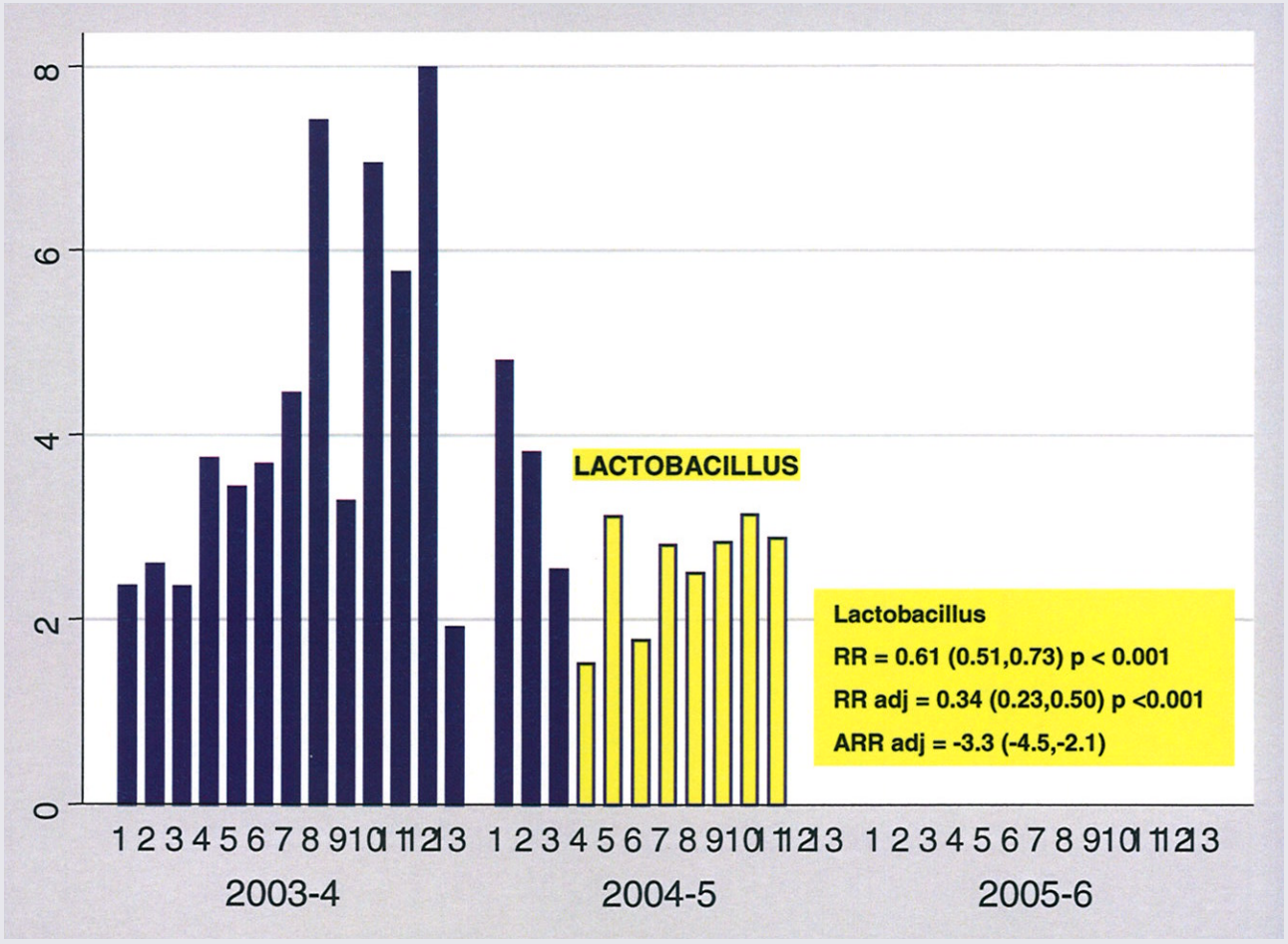

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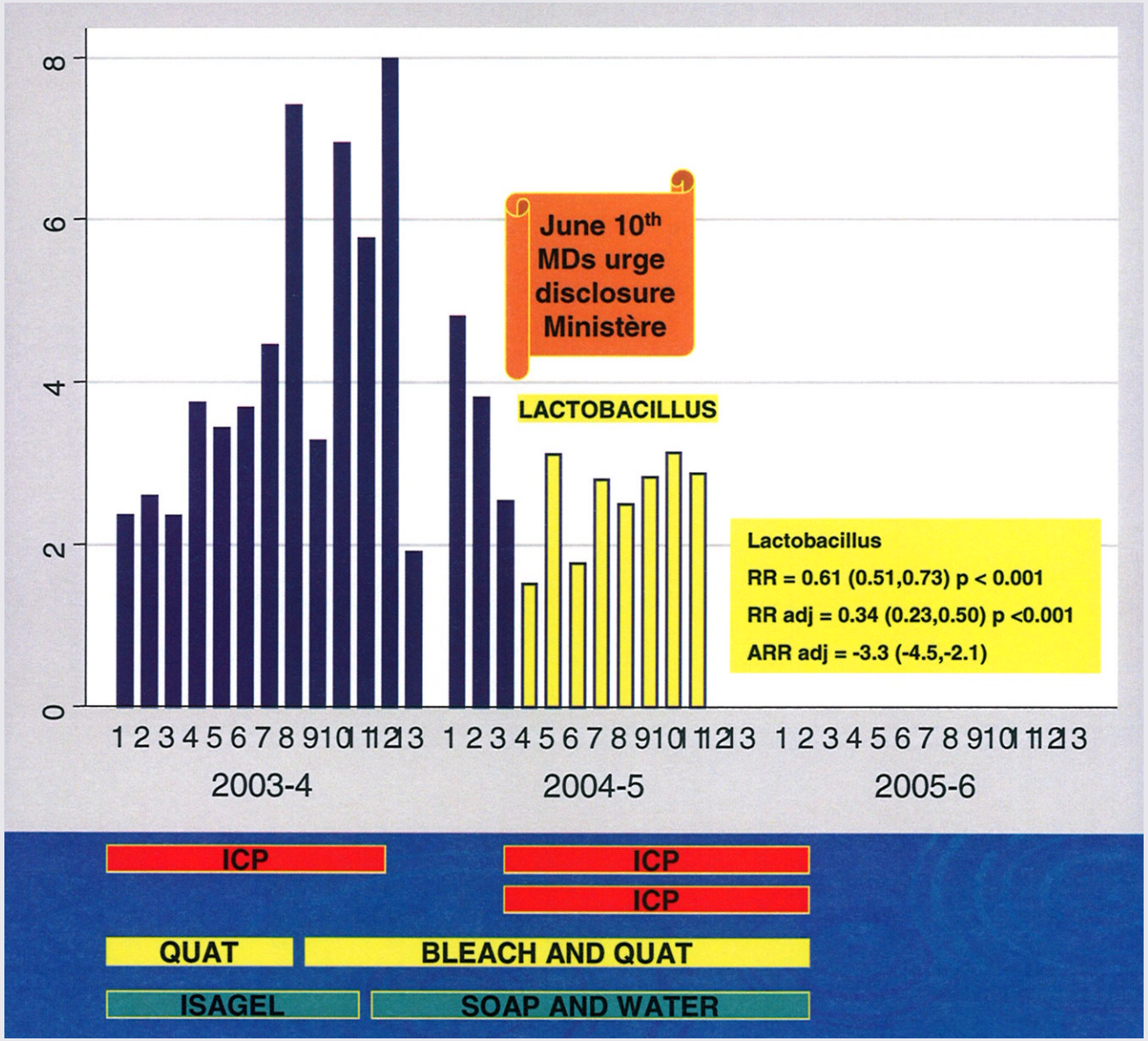

Results
Post-Probaclac

Nosocomial CDAD rate per 1000 patient days at risk
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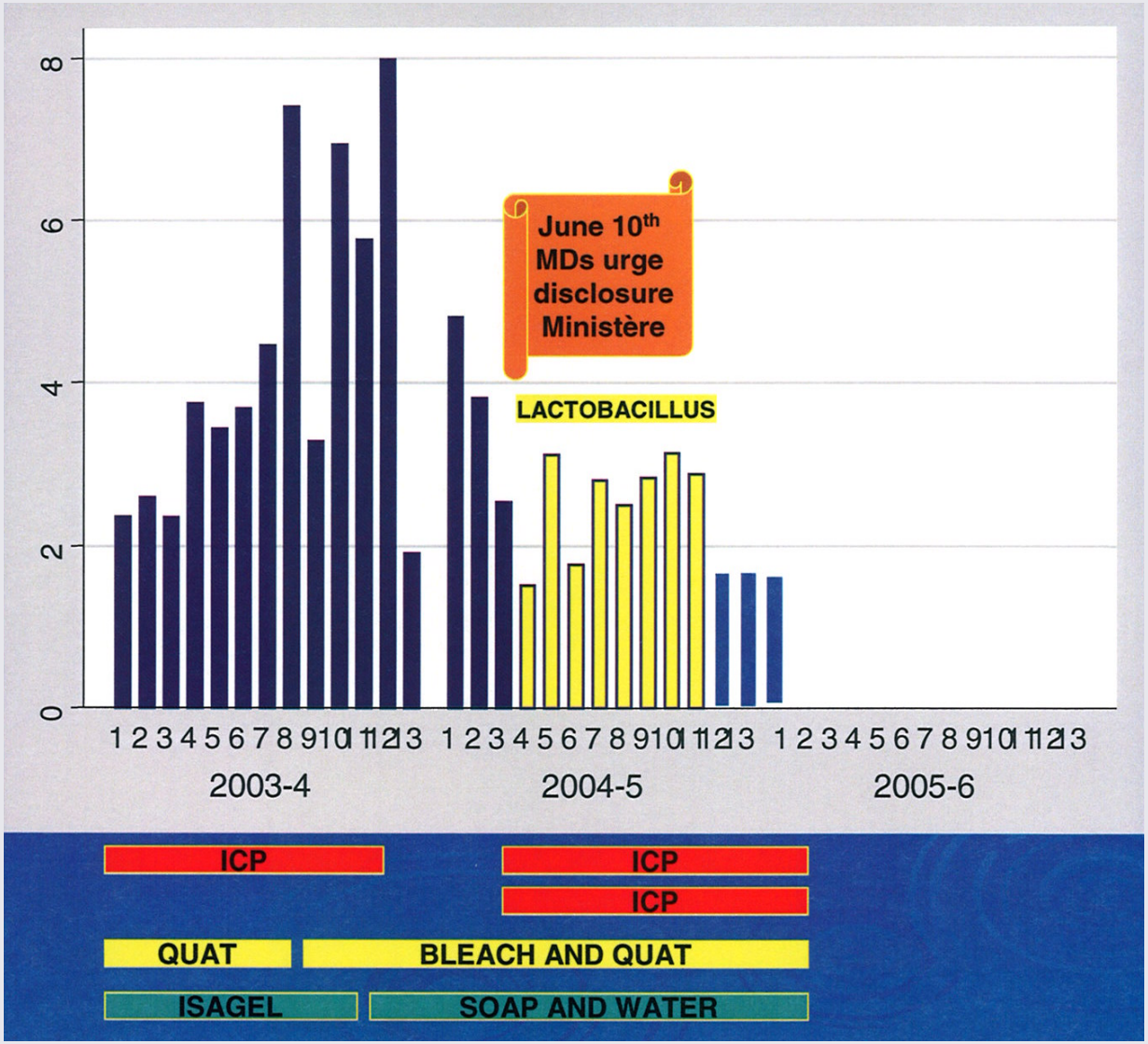

Results
Post-Probaclac

Nosocomial CDAD rate per 1000 patient days at risk
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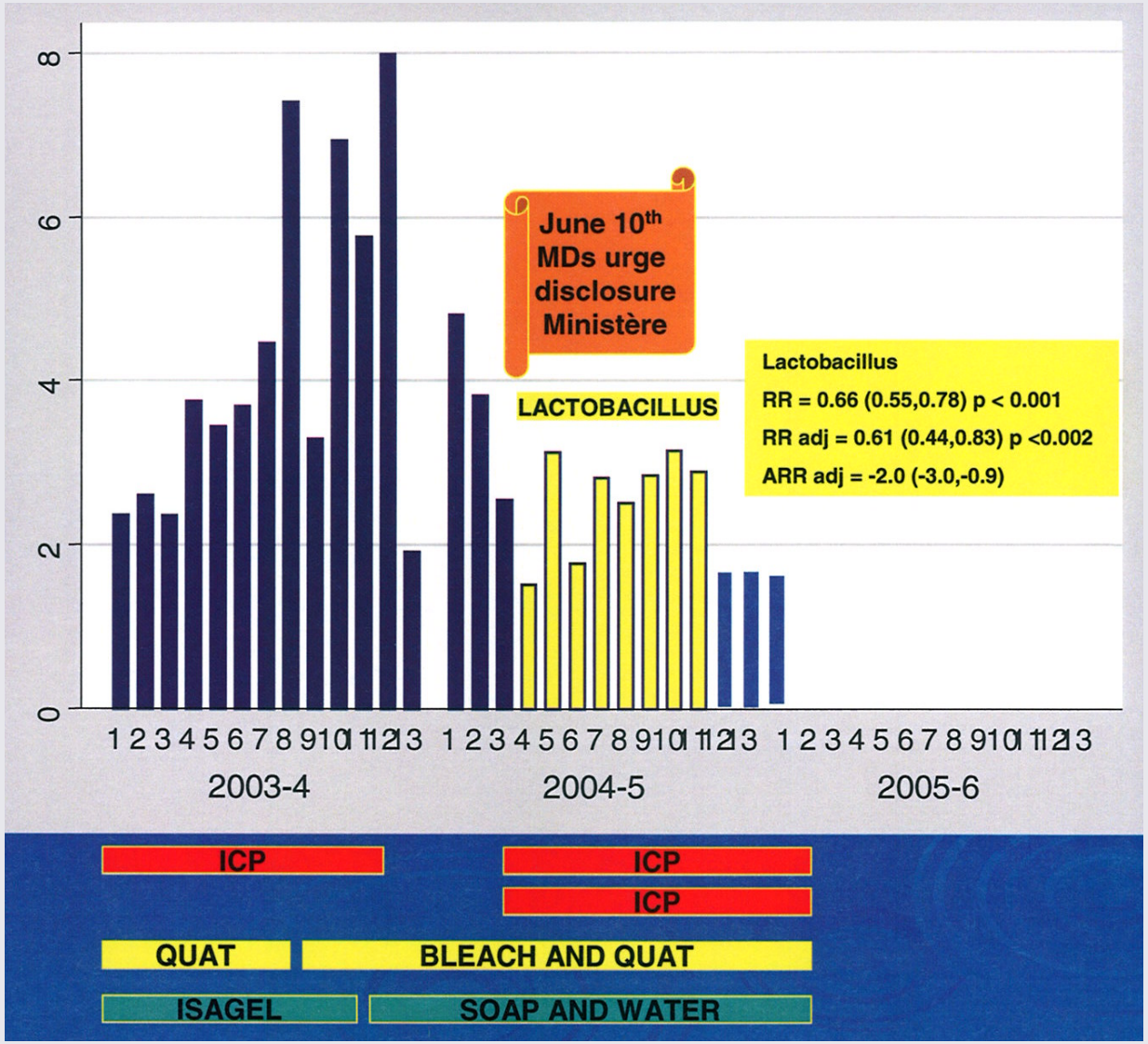

Weaknesses of the study

- **Observational design:**
  Confounding with time and multiple interventions
- Randomized control trial is still warranted
- Is there an interaction between efficacy and baseline rates?

Summary

- Important risk reduction in the incidence of nosocomial CDAD with the institution of lactobacillus (Probaclac) consistent with the literature
- Complimentary interventions included increased ICP interventions, increased awareness of handwashing, media awareness, change in house-keeping procedures

Fiche standard d'abrégé de communication

Titre :

IMPORTANT RISK REDUCTION IN NOSOCOMIAL CLOSTRIDIUM DIFFICILE WITH INSTITUTION OF PROBIOTIC PROPHYLAXIS

Nom et Institution :

Silvana Perna MSc(A), Peter Barriga M.D., Helena Sirvent B.Sc., Kathleen Knowles M.D., Silvana Trifiro M.D., Pierre Lessard M.Sc., Marc Laroche M.D., Hôpital Santa Cabrini.

Abrégé de communication :

Over the last few years there has been an increase in the rate of *Clostridium difficile* associated diarrhea (CDAD) and in the associated mortality and morbidity rate in several acute care hospitals in Quebec. The literature describes several control measures for preventing and controlling the spread of this disease which include application of contact precautions, vigorous cleaning and disinfection of the environment, control of antibiotic use and proper hand washing with soap and water. There has also been some suggestion that the use of probiotics can help in the prevention of hospital acquired diarrhea. Our hospital, a busy 350 bed community hospital providing trauma services and haematology-oncology services, also witnessed an increase in cases. In the spring of 2004 the use of probiotics (lactobacillus, Probaclac) was instituted based on a literature review which suggested a risk reduction of 50%. Therefore the purpose of this study was to determine the impact of the administration of Probaclac on the rate of CDAD.

Methods: All patients admitted to the hospital and receiving any form of antibiotic therapy also received Probaclac as prophylaxis regardless of the presence or absence of symptoms. Patients 50 years and older received 2 tablets of Probaclac BID and patients under 50 years received 1 tablet BID. This was done during a period of 7 months beginning July 6, 2004 through February 7, 2005. The incidence of CDAD was monitored on a daily basis through regular ward contacts and laboratory results. *C. difficile* toxins were investigated using an EIA assay for toxin A and B. A bowel monitoring sheet was placed in the patient's chart if diarrhea developed. The surveillance data was collected beginning April 1, 2003.

Data analysis: Rates of CDAD were compared using STATA8 glm function. Crude rates, and rates with adjustment for period and year, and risk difference were estimated.

Results: The baseline CDAD rate in our institution was mean 3.6 cases per 1000 patient days (min 2.2, max 6.0), the rate on Probaclac was mean 2.2 (min 1.4, max 3.0). The crude relative risk was 0.61, 95%CI (0.41,0.80) $p < 0.0012$. After adjustment for year and period the relative risk was 0.38, 95%CI (0.24, 0.60) $p < 0.0001$ with a risk difference of 2.7 cases per 1000 patient days, 95%CI (1.4, 4.0).

Conclusion: This study demonstrates a beneficial effect of probiotics on the incidence of CDAD with a relative risk of 0.38 in keeping with the systematic review. The main limitation of this study is confounding due to the before and after design and the multiple infection control methods that are involved; however rates of nosocomial CDAD were the lowest recorded rates in the presence of probiotics.

Devra être reçu au Secrétariat de l'AMMIQ avant le 15 avril 2005, accompagné du «Formulaire de divulgation de conflits d'intérêt potentiels»

Format : Présentation orale OUI

Présentateur :

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