administering a probiotic comprised of Lactobacillus acidophilus CL1285, L. casei LBC608R and L. rhamnosus CLR2 since 2004 with documented results through March 31, 2014. Here we present an update for the past 5 years.

Methods. Several nosocomial infection prevention practices were running concurrently at the hospital. Adult inpatients treated with antibiotics from April 1, 2014 to March 31, 2019 were eligible to receive the probiotic. The hospital pharmacy ensured that each patient took the probiotic capsules (Bio-K+® 50 Billion) daily from the initiation of antibiotic use. Confirmed nosocomial cases of C. difficile infection were recorded and reported to the provincial public health agency. The rate of nosocomial CDI for this hospital was compared with other non-University affiliated hospitals in the health region with more than 110 beds and fewer than 45% of patients age 65 and older, and, to all other hospitals in the health system.

Results. Cumulatively over the past 15 years, more than sixty thousand antibiotic-treated adult inpatients took the probiotic daily during antibiotic use. Among 13 comparable hospitals, Pierre-Le Gardeur Hospital had the lowest rate of nosocomial CDI in 2014–2015, 2015–2016, 2016–2017, 2017–2018 and on average had the lowest rate for 2013–2018 (1.1 CDI cases per 10,000 patient-days). Compared with all hospitals in the Province of Quebec health system, N = 95, the hospital had the lowest nosocomial CDI rate on average for 2013–2018. No cases of Lactobacillus bacteremia were detected.

Conclusion. The overall infection prevention strategy has been highly effective, resulting in a consistently low rate of nosocomial CDI. We found that it is feasible to administer this probiotic to antibiotic-treated inpatients with few restrictions. No Lactobacillus infections were observed from any of the three strains of bacteria for this probiotic when given to more than sixty thousand adult inpatients.

Background. Visitor contact precautions (VCP) have previously been suggested to reduce the transmission of Clostridioides difficile at healthcare institutions. However, there are no data describing the impact of VCP on hospital-acquired C. difficile infection (HO-CDI) rates. Enforcing VCP for CDI control is also controversial, as VCP are poorly implemented and highly variable.

Methods. We developed an agent-based simulation model of C. difficile transmission at a model 200-bed acute-care adult hospital. Our agent-based simulation model represented interactions among the physicians, nurses, patients, visitors, and physical environment. We used the agent-based simulation model to evaluate the impact of VCP on reducing HO-CDI considering different hospital settings and various assumptions on patient susceptibility, adherence rates to other infection control practices, interactions between healthcare workers and patients.

Results. VCP did not reduce the CDC-defined HO-CDI rates by more than 1% in any of the tested scenarios and hospital settings. Increasing the adherence of hand hygiene of healthcare workers to 56% from a baseline estimate of 55%, or compliance to room cleaning to 50% from a baseline estimate of 47% have led to higher rates of reduction in CDI compared with VCP.

Conclusion. This is the first mathematical model to quantify the reduction in HO-CDI with VCP. The agent-based simulation model suggests that the impact of VCP on hospital-onset CDI is minimal and hospitals can achieve a higher rate of reduction for HO-CDI by implementing other interventions such as healthcare worker contact precautions.

Further studies are needed to evaluate the impact of VCP on C. difficile colonization in community.

Disclosures. All authors: No reported disclosures.

2419. Timing of Secondary Prophylaxis Against Clostridium difficile Infection After Antibiotic Exposure

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Background. Clostridium difficile infection (CDI) is the most common nosocomial infection, and increasing. The major risk for CDI is antibiotic (abx) use. We have previously shown that secondary prophylaxis with vancomycin decreases CDI relapse in patients with recent CDI given abx to treat another infection. The median time to relapse after use of abx was 3 days. In an effort to further elucidate the best way to employ secondary prophylaxis against CDI, we examined all patients with CDI in our institution in 2016 and timing of relapse as related to other exposures to abx and the success of prophylaxis relative to the timing and duration of prophylaxis.

Methods. All patients positive by PCR for C. difficile at our institution in 2016 were examined for receipt of abx within 3 months of a positive PCR. The relapse rates for all patients, patients who received abx with or without secondary prophylaxis, and patients who did not receive abx were calculated. Timing of the relapse from a prior CDI and from receipt of abx were determined as was impact of prophylaxis, particularly in patients who relapsed despite prophylaxis.

Results. 1748 patients were identified, representing 2181 episodes of CDI. The relapse rates and timing based on prior CDI, receipt of additional abx prior to relapse, and use of prophylaxis are shown in Table 1.

Prophylaxis decreased the overall relapse rate from 19.2% to 11.6%. Time to relapse in patients who relapsed despite prophylaxis was significantly longer indicating prophylaxis was having an effect. The failure appears on when prophylaxis was started relative to abx and how long prophylaxis was given relative to abx.

Conclusion. Prophylaxis is effective in preventing relapses in patients given abx after CDI however the timing and duration of prophylaxis significantly impacts the effectiveness. The majority of CDI relapses after abx occur within 3 days and can be prevented by prophylaxis. Relapses that occur after 3 weeks appear unrelated to the use of abx and are not preventable through prophylaxis. Failures of prophylaxis within the first 1 week are likely related to starting prophylaxis too late after abx and failures that occur beyond 3 weeks are likely related to ending prophylaxis too early.

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2420. Reduced hospital-onset Clostridium difficile infection incidence following Saccharomyces boulardii co-administration with broad-spectrum antibiotics during hospitalization.

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We developed an agent-based simulation model of C. difficile transmission at a model 200-bed acute-care adult hospital. Our agent-based simulation model represented interactions among the physicians, nurses, patients, visitors, and physical environment. We used the agent-based simulation model to evaluate the impact of VCP on reducing HO-CDI considering different hospital settings and various assumptions on patient susceptibility, adherence rates to other infection control practices, interactions between healthcare workers and patients.

Background. Visitor contact precautions (VCP) have previously been suggested to reduce the transmission of Clostridioides difficile at healthcare institutions. However, there are no data describing the impact of VCP on hospital-acquired C. difficile infection (HO-CDI) rates. Enforcing VCP for CDI control is also controversial, as VCP are poorly implemented and highly variable.

Methods. We developed an agent-based simulation model of C. difficile transmission at a model 200-bed acute-care adult hospital. Our agent-based simulation model represented interactions among the physicians, nurses, patients, visitors, and physical environment. We used the agent-based simulation model to evaluate the impact of VCP on reducing HO-CDI considering different hospital settings and various assumptions on patient susceptibility, adherence rates to other infection control practices, interactions between healthcare workers and patients.

Results. VCP did not reduce the CDC-defined HO-CDI rates by more than 1% in any of the tested scenarios and hospital settings. Increasing the adherence of hand hygiene of healthcare workers to 56% from a baseline estimate of 55%, or compliance to room cleaning to 50% from a baseline estimate of 47% have led to higher rates of reduction in CDI compared with VCP.

Conclusion. This is the first mathematical model to quantify the reduction in HO-CDI with VCP. The agent-based simulation model suggests that the impact of VCP on hospital-onset CDI is minimal and hospitals can achieve a higher rate of reduction for HO-CDI by implementing other interventions such as healthcare worker contact precautions.

Further studies are needed to evaluate the impact of VCP on C. difficile colonization in community.

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2421. Efficacy of Secondary Prophylaxis with Oral Vancomycin in Preventing Recurrent Clostridiodieae difficile Infections in Patients Receiving Systemic Antibiotics
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Background. One of the major challenges in preventing C. difficile infection (CDI) is preventing recurrence, particularly in the setting of risk factors, such as systemic antibiotics that trigger CDI. This work presents the impact of secondary prophylaxis with oral vancomycin and due to the lack of evidence, the IDSA guidelines do not make a recommendation.

Methods. This was a multi-site, retrospective cohort study of adult inpatients within the University of Rochester Medical Center who received either a high- or medium-risk systemic antibiotic between July 1, 2013 and September 30, 2018 and had a positive C. difficile test within one year prior to admission. The primary endpoint was incidence of recurrent CDI within 90 days from the start of antibiotics in patients who received oral vancomycin prophylaxis (OVP) vs. those who did not receive prophylaxis (control).

Results. Of 425 patients screened, 153 patients were included in the control and 78 patients in the OVP group. The OVP group was more likely to be immunosuppressed (P < 0.001), have increased hospital length of stay (P = 0.001), receive a proton pump inhibitor (P < 0.004), have a prior episode of CDI within the previous 90 days (P < 0.001), and have >1 prior episode of CDI (P = 0.038). The control group was more likely to have received metronidazole for the most recent CDI episode (P < 0.001), likely reflecting mild-moderate severity. Recurrent CDI within 90 days was 10.3% in the OVP group compared within 2.6% in the control (P = 0.072). A subgroup analysis of the patients with recurrent CDI found the time to recurrence from initiation of systemic antibiotics was similar in the OVP group compared with control (43 vs 30 days, P = 0.223).

Conclusion. While there was not a statistically significant difference in recurrent CDI within 90 days, the OVP group had numerous risk factors that made these patients at higher risk for recurrence compared with the control group. This may be clinically important and certain risk factors, such as timing of previous CDI episode, could be used to guide which patients should receive OVP. Prospective studies are needed to better elucidate the role of OVP and better define the patients that may benefit the most.

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2422. Effectiveness of a Probiotic for Primary Prevention of Clostridiodieae difficile Infection and Antibiotic-Associated Diarrhea among Hospitalized Patients Receiving Broad-Spectrum Antibiotics
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Background. Prior to 2016, Denver Health Medical Center had a higher-than-expected rate of hospital onset C. difficile infection (HO-CDI). A multifaceted CDI prevention plan was implemented, including the use of a probiotic as primary prevention for HO-CDI and antibiotic-associated diarrhea (AAD) in inpatients receiving broad-spectrum antibiotics. We aimed to study the effectiveness of probiotic use in this clinical context.

Methods. During the intervention, inpatient orders for a broad-spectrum antibiotic triggered a best practice advisory recommending once daily co-administration of a probiotic containing 2 billion colony-forming units daily (intervention). Associations between antibiotic administration within or after 24-hours of antibiotic start changed the effect. Propensity score incorporated to account for selection bias.

Results. Hospitalizations where S. boulardii was co-administered with antibiotics had a reduced likelihood of HO-CDI (OR = 0.40, 95% CI 0.21 – 0.75). No effect was observed if S. boulardii administered after 24-hours (OR = 0.86, 95% CI 0.45 – 1.64). Post-hoc analysis for disease latency, the average number of days to HO-CDI onset was 5.6, 6.4, and 8.0 days for antibiotic only, antibiotics before antibiotic start had a reduced likelihood of HO-CDI (OR = 0.56, 95% CI 0.32 – 0.93) compared to antibiotics after 24-hours, and S. boulardii within 24-hours of antibiotic, respectively (P < 0.04).

Conclusion. Co-administering S. boulardii with broad-spectrum antibiotics is associated with a reduced risk of C. difficile in hospitalized patients, especially if started within 24 hours of antibiotic initiation. S. boulardii should be considered as a preventative intervention to reduce the risk of HO-CDI.

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