Tropical Disease Outcomes part 1

Table 1: Study Characteristics and Main Outcomes regarding Tropical Diseases

Author, year (study dates)	Study Type, Country of Population	Ages Studied in years (# of participants)	Main Outcomes	Study Population	Comments
Smith, 2019 (2013-206)	Retrospective, Nepal	0-5 (10)	10 cases of malaria	Data collected from Nepal's National Surveillance system	Population mobility and imported malaria cases from India may help to drive local transmission in border areas of far and mid-western Nepal
Mornand, 2017 (01/01/96-12/31/05)	Retrospective, France	0-1 (79) 2-4 (108)	187 cases of malaria	Data from French National Reference Centre	Imported pediatric malaria in children younger than 2 years old deserve particular attention. <2 years of age was a predictor for severe falciparum malaria (OR = 3.2) <2 years of age predicted adverse outcome in severe malaria <2 years were more likely to require use of major therapeutic procedures (sedation, mechanical ventilation, oxygen therapy, transfusion, dialysis, or fluid resuscitation) but not admission to ICU
Wagner, 2015 (2011-2012)	Case-Control, United Kingdom	2-4 (72)	48 cases of typhoid fever (s. typhi)	Data from National Surveillance system in the United Kingdom	Few studies have assessed the effectiveness of this vaccine in children under 5 years of age, this study concludes that it the vaccine is effective for this age group
Cullen, 2014 (01/2012-12/2012)	Surveillance, United States of America	0-2 (8) 2-4 (17)	25 cases of malaria	Data were reported to the National Malaria Surveillance System and the National Notifiable Diseases Surveillance System	
Gharbi, 2013 (2000-2011)	Prospective, France	0-5 (730)	730 cases of malaria	Data from French National Reference Centre	Children travelled to the following areas: Senegal, Mali, Ivory Coast, Cameroon
Bühler, 2012 (07/2010-08/2012)	Retrospective, Switzerland	0-2 (103) 2-5 (113)	3 cases of salmonella typhii, 3 cases of malaria, 1 case of leishmaniasis, 2 cases of tuberculosis	Data from the Travel Clinic of the Institute of Social and Preventive Medicine, University of Zurich	Diagnosis varied between geographic regions visited, and children visiting friends and relatives (VFRs) constituted a large proportion of sick-returned children presenting for emergency care
Herbinger, 2012 (01/1999-12/2009)	Retrospective, Germany	0-4 (191)	5 amebiasis, 1 schistosomiasis, 8 superinfected insect bites, 10 salmonella enteritis, 4 malaria cases	Data from Department of Infectious Diseases and Tropical Medicine (DTM), University Hospital, Ludwig-Maximilians University of Munich	Children travelled to the following areas: Africa, Asia, Latin America and the Caribbean. Children less than 5 were more likely to travel for less than 28 days
Gunaratnam, 2013 (2005-2011)	Retrospective, Australia	0-4 (32)	32 cases of typhoid fever	Data from New South Wales National Reference Centre	VFRs visiting South Asia are at higher risk for typhoid fever

Tropical Disease Outcomes part 2

Garcia-Villarrubia, 2011 (1990-2008)	Retrospective, Spain	0-5 (53)	53 cases of malaria, 1 participant death who travelled to Sub-Saharan Africa, this participant did not take prophylaxis	Data from malaria registry of the Public Health Agency of Barcelona	Majority of the cases were VFRs travelling to Africa and Plasmodium falciparum was most frequently detected
Johnson, 2011 (2004-2008)	Retrospective, United States of America	0-1 (91) 1-4 (191)	282 cases of travel-related salmonella infection	Centre for Disease Prevention and Control & FoodNet Surveillance System	
Stäger, 2009 (01/1992-12/2002)	Surveillance, Australia, Denmark, France, Germany, Italy, Japan, the Netherlands, Sweden, Switzerland, the United Kingdom, and the United States	Australia: 0-2 (131), 3-5 (143) Denmark: 0-2 (26), 3-5 (44) France: 0-2 years (1,149), 3-5(1,247) Germany:0-2 (132), 3-5 (123) Italy: 0-2 (80), 3-5 (107) Japan:0-2 (1), 3-5 (8) Netherlands: 0-2 (47), 3-5(67) Sweden: 0-2 (12), 3-5 (20) Switzerland: 0-2 (60), 3-5 (81) UK:0-2 (351), 3-5 (619) US: 0-2 (333), 3-5 (463)	Disease information not stratified by age	Data from respective national surveillance programs	The risk of developing malaria is very high in young VFR children travelling to endemic areas. Young children are more likely to require major therapeutic treatments. Postration – inability to walk, stand, sit or feed – is useful clinical indicator for severe malaria in very young children visiting endemic regions
D'Ortenzio, 2009 (01/012003-12/31/2008)	Retrospective, France	0-2 (25)	25 cases of malaria	Data collected from local public health authorities	
Ruuel-Belliard, 2009 (06/2006-12/2007)	Prospective, France	0-2 (10)	Malaria chemoprophylaxis prescribed = 9 Malaria = 1 Salmonella typhii septicemia = 1	Data collected from Sickle Cell and Travel Consultation Unit, Armand Trousseau Hospital in Paris	When possible, parents were encouraged to postpone their travel, especially when it concerned children <2 years old or children having lots of sickling manifestations. Also, 75% children requiring consultation for fever while overseas were <2.
Hau, 2004 (08/1999-12/2000)	Prospective, France	0-3 (19) 0-4 (12)	8 cases of relapse in the 0-2 years old group 6 cases of relapse in the 0-4 years old group	Data from Centre Hospitalier Intercommunal de Creteil	Children who are younger have a higher risk of relapsing during malaria treatment

Conclusion: In spite of unique biologic and behavioral traits that may affect risk, outcomes in children under the age of 5 years are rarely presented in the literature distinctly from the overall pediatric population. Future pediatric travel-health research should make efforts to report and analyze data by age in order to better understand the risk for tropical diseases infants face while travelling internationally.

Disclosures: **All Authors**: No reported disclosures

779. *Clostridiodes difficile*: Is it time for surveillance! Cost-benefit analysis

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Session: P-32. HAI: C. difficile

Background: *Clostridiodes difficile* infection (CDI) has substantial morbidity, mortality and expense. Hospital surveillance to detect CD carriers could affect antibiotic use and determination of community-associated vs hospital-associated CDI.

Methods: A decision tree examined the cost-effectiveness of hospital CD surveillance compared to current practice (testing as indicated). Costs for CD testing, community-associated CDI and hospital-associated CDI came from US databases. CD carrier and infection probabilities came from literature and local data. Analyses examined potential benefits from 1) knowledge of CD carrier status affecting antibiotic use (healthcare perspective) and 2) avoiding penalties for hospital-acquired CDI (hospital perspective).

Results: From the healthcare perspective, if antibiotic use is unchanged by CD status, surveillance costs $39/patient than current practice with unchanged CDI risk. However, if knowing CD status changed antibiotic prescribing such that CDI risk decreased by 10% or 20%, then cost/CDI avoided becomes $15,519 and $3,822 respectively, with CD surveillance becoming cheaper and more effective current practice if CDI risk decreased ≥30%. From the hospital perspective, using published CDI incidence (2.7%) and a hospital-associated CDI penalty of $30,000, surveillance cost $336/patient less than current practice if patients colonized on admission were not considered hospital-associated CDI and $476/patient less with local data (incidence 4.2%).

Conclusion: Hospital CD surveillance is potentially a cost-effective or cost-saving strategy depending on perspective taken and clinical usage of these data. This strategy could be implemented hospital-wide or in high-risk populations. CD surveillance could be both cost-saving and decrease CDI risk if more appropriate antibiotic use results from its use.

Disclosures: **All Authors**: No reported disclosures

780. How Much Does Prior Hospitalization Contribute to Readmission with Community-onset Clostridioides difficile Infection?

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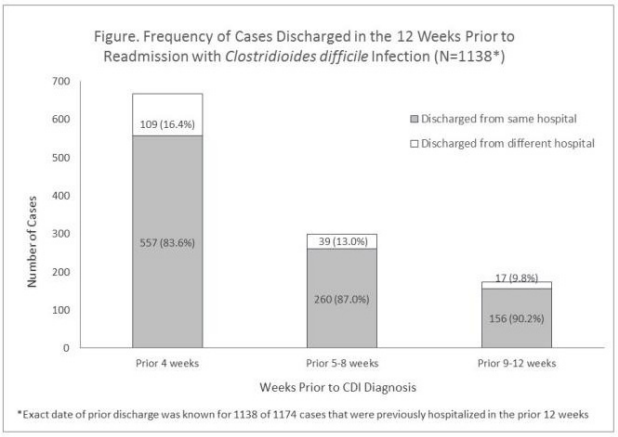
Session: P-32. HAI: C. difficile

Background: Interventions to reduce community-onset (CO) *Clostridioides difficile* Infection (CDI) are not usually hospital-based due to the perception that they are often acquired outside the hospital. We determined the proportion of admitted CO CDI that might be associated with previous hospitalization.

Methods: The CDC's Emerging Infections Program conducts population-based CDI surveillance in 10 US sites. We defined an incident case as a C. difficile-positive stool collected in 2017 from a person aged ≥ 1 year admitted to a hospital with no positive tests in the prior 8 weeks. Cases were defined as CO if stool was collected within 3 days of hospitalization. CO cases were classified into four categories: long-term care facility (LTCF)-onset if patient was admitted from an LTCF; long-term acute care hospital (LTACH)-onset if patient was admitted from an LTACH; CO-healthcare-facility associated (CO-HCFA) if patient was admitted from a private residence but had a prior healthcare-facility admission in the past 12 weeks; or community-associated (CA) if there was no admission to a healthcare facility in the prior 12 weeks. We excluded hospitals with < 10 cases among admitted catchment-area residents.

Results: Of 4724 cases in 86 hospitals, 2984 (63.2%) were CO (median per hospital: 65.8%; interquartile range [IQR]: 58.3%-70.7%). Among the CO cases, 1424 (47.7%) were CA (median per hospital: 48.1%; IQR: 40.3%-57.7%), 1201 (40.3%) were CO-HCFA (median per hospital: 41.0%; IQR: 32.9%-47.8%), 350 (11.7%) were LTCF-onset (median per hospital: 10.0%; IQR: 0.6%-14.4%), and 9 (0.3%) were LTACH-onset. Of 1201 CO-HCFA cases, 1174 (97.8%) had a prior hospitalization; among these, 978 (83.3%) (median per hospital: 83.3%; IQR: 69.2%-90.6%), which consists of 32.8% of all hospitalized CO cases, had been discharged from the same hospital (Figure), and 84.4% of the 978 cases (median per hospital: 88.2%: IQR: 76.5%-100.0%) had received antibiotics sometime in the prior 12 weeks.

Figure. Frequency of Cases Discharged in the 12 Weeks Prior to Readmission with Clostridioides difficile Infection (N=1138*)



Conclusion: A third of hospitalized CO CDI had been recently discharged from the same hospital, and most had received antibiotics during or soon after the last admission. Hospital-based and post-discharge antibiotic stewardship interventions could help reduce subsequent CDI hospitalizations.

Disclosures: Ghinwa Dumyati, MD, Roche Diagnostics (Consultant)

781. *C.difficile* PCR+/ Toxin EIA- treat or not treat? A clinician survey

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Session: P-32. HAI: C. difficile

Background: *C.difficile* Toxin Polymerase Chain Reaction (*C.diff* PCR) and *C.difficile* Toxin Enzyme Immunoassays (toxin EIA) are commonly used tests to diagnose *Clostridoides difficile* infection (CDI). *C.diff* PCR cannot differentiate between colonization and infection, leading to a higher false-positive diagnosis of CDI. Toxin EIA has low sensitivity leading to a missed diagnosis of CDI. In patients with *C.diff* PCR positive(+) and Toxin EIA negative(-), clinical judgment is often needed regarding the decision to treat or not to treat. C.diff cytotoxic assay (CCA), is a more sensitive method to detect the toxin but is time-consuming and not readily available.

Methods: Between 6/2019 and 12/2019, 83 patients who were admitted to the hospital, met our inclusion criteria (*C.diff* PCR+/EIA-). Clinicians who cared for these patients were contacted and surveyed with a predesigned questionnaire evaluating the rationale of treatment. Also, a simultaneous medical records review was done to ensure consistency. Along with this *C.diff* PCR+/EIA- stool samples were sent to ARUP laboratories for CCA. The CCA results were not available for clinicians and did not impact clinical care. Average cost for a CCA assay was $29

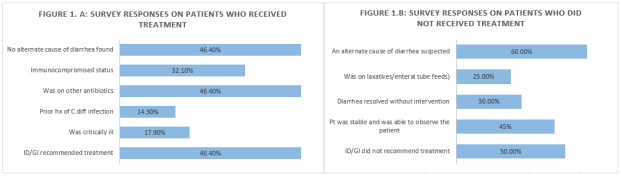
Results: Demographics of the clinicians were variable (Table 1). Several parameters were considered when making decisions regarding treatment and GI/ID were frequently involved (figure 1). Among the 83 patients, 41(49%) were CCA (+) and 42(51%) were CCA (-). 48 of 83 (58%) patients received treatment for CDI. 25 of 48 (52%) patients who were treated were CCA positive while 23 of 48 (48%) patients were CCA negative. Among the untreated patients, 16/35 (46%) were CCA+ while 19/35(54%) were CCA-. There was no statistically significant correlation between clinical judgment and CCA assay results (p: 0.56 on the Chi test).

Demographics of the clinicians

Table 1: Demographics of the clinicians

Variables		Total participants (n=55)
Gender	Male	29 (52%)
	Female	26 (48%)
Age (years)	<35	35 (63%)
	35-45	7 (12%)
	45-55	9 (16%)
	55>	4 (7%)
Specialty	Internal Medicine	44 (80%)
	Surgery	5 (9%)
	Intensive care	3 (6%)
	Neurology	2 (2%)
	PMR	1 (2%)
Provider Ethnicity	African American	6 (11%)
	Asian	18 (32%)
	Caucasian	23 (42%)
	Hispanic	7 (12%)
	Other	1 (2%)
Title	Resident/Fellow	27 (49%)
	Physician Assistant/Nurse practitioner	9 (16%)
	Attending	19 (35%)

Clinician survey responses



CDI Treatment and by CCA positivity

Table 2: CDI Treatment and by CCA positivity.

	CCA+	CCA-	Total	p value (Chi test)
CDI treatment	25	23	48	0.56
No CDI treatment	16	19	35	
Total	41	42	83	

CDI, Clostridium Difficile Infection; CCA, Cell Cytotoxic Assay;

Conclusion: Clinicians regardless of their background and training face challenges with the treatment of *C.diff* PCR+/EIA- patients. Patient outcomes based on the incorporation of CCA assay into an algorithm for C.diff PCR+/EIA- patients, need to be evaluated. But it has a potential role in stopping unnecessary CDI treatment as well as avoidance of missed treatment opportunities while possibly also being cost-effective.

Disclosures: **Ank E. Nijhawan, MD, MPH, Gilead** (Grant/Research Support, Scientific Research Study Investigator, Research Grant or Support)