City of Chicago | Communicable Disease Information | Department of Public Health

CDInfo

Richard M. Daley, Mayor | August 2009 | Terry Mason, MD, FACS, Commissioner

www.cityofchicago.org/health/

West Side Center
For Disease Control
2160 West Ogden Avenue
Chicago, IL 60612

Communicable
Disease Program
312-746-5387
312-743-1059 FAX

Immunization Program
312-746-5380
312-746-6144 FAX

Tuberculosis Program
312-746-5983
312-746-5134 FAX

CDInfo ***is a surveillance newsletter intended to promote prevention of morbidity and mortality by providing useful data and practical recommendations for clinicians, laboratorians and infection control personnel who diagnose, treat and/or report infectious diseases in Chicago.***

Join the Chicago Health Alert Network (HAN)

Healthcare providers who are interested in receiving up-to-date information from the Chicago Department of Public Health on emerging public health events such as ***H1N1 Influenza*** *are invited join the HAN.*

Go to ***www.chicagohan.org*** *and register today!*

Clostridium difficile infection in the Chicago area:

Classification, epidemiology, and healthcare facility rates, February 2009

Clostridium difficile, an anaerobic spore-forming bacillus, is the cause of a diarrheal syndrome termed *Clostridium difficile* infection (CDI), which may result in dehydration and severe complications, including bowel wall inflammation requiring bowel resection, and death. Rates of incidence and severity of CDI have been increasing over the past decade.[1] During 1999-2005 the number of cases of CDI per 1000 discharges in Illinois increased from 4.5 to 9.0. From 2005-2007 rates remained elevated at 9.0 CDIs per 1000 discharges.[2] However, discharge data interpretation has several limitations. To better define the burden of CDI in the Chicago area, the Chicago and Cook County Departments of Public Health conducted a prospective clinical and microbiologic investigation among area hospitals during February 2009.

The investigation included 3 components: individual case reporting for 1 month, a prevention and control practices survey, and a laboratory practices survey. Fifty-six healthcare facilities were invited to participate. Twenty seven (48%) acute and long-term acute care facilities collected clinical data on case-patients. Twenty six (46%) facilities completed the prevention and control practices questionnaire, and 23 (41%) facilities completed the laboratory survey.

A case of CDI was defined as a patient with ≥3 watery, unformed stools per day for at least one day and either laboratory or pathologic evidence of CDI.[3] An incident (new) case of CDI was the initial positive *C. difficile* assay or the first positive assay in more than 8 weeks. CDI was classified into healthcare facility onset-healthcare facility associated (HO-HCFA), community onset-healthcare facility associated (CO-HCFA), and community associated (CA) cases, according to the time of diarrhea onset relative to admission date and the time since the patient was last in a healthcare facility (including an acute or long-term care facility or a skilled nursing home).[3] Three calendar days were used to distinguish community onset from healthcare facility onset.

Class definitions of CDI cases and case counts are provided in Table 1. Two-hundred sixty-seven incident case-patients were reported by infection preventionists. One-hundred fifty-one (57%) patients had HO-HCFA infection, including 69 patients admitted to a hospital from a nursing home or another hospital. Forty-three (16%) patients had CO-HCFA infection. Thirty-seven (14%) had CA infection. The remaining 13% had indeterminate or unknown classification due to insufficient history regarding recent exposure to the healthcare setting.

Table 1: Classification definitions and results

Classification	Timing of onset relative to admission date	Last visit to healthcare faclity	N	%
HO-HCFA	After 3 calendar days	present	151	57
CO-HCFA	Before 3 calendar days	<4 weeks	43	16
CA	Before 3 calendar days	>12 weeks	37	14
CO-Indeterminate	Before 3 calendar days	4-12 weeks	14	5
CO-Unknown	Before 3 calendar days	Not available	22	8
Total			267	100

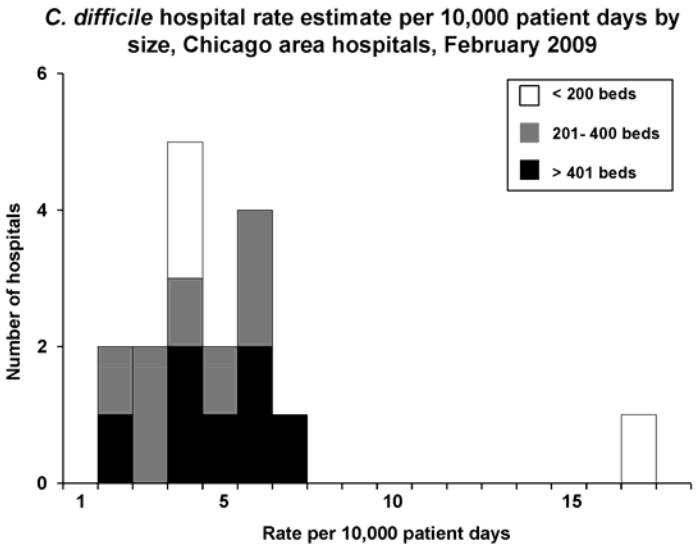
Table 2: Demographics, morbidity, and mortality of case patients (n=267)

Characteristic	N	%
Female	146	55
Median age	66.5 years	0-103 range
Race		
White	136	51
Black	87	33
Hispanic	19	7
Asian/Pacific Island	7	3
Unknown	18	7
Admission source		
Home	155	58
Facility	102	38
Unknown	10	4
Complications		
Colonoscopy	14	5
Radiographic changes	36	13
Bowel surgery	7	3
PMC on endoscopy	10	4
PMC on path	7	3
Mortality	20	7

A summary of incident case-patient demographics, morbidity and mortality is reported in Table 2. Fifty-five percent were female and the median age was 66.5 years. Most patients were white (51%) or black (33%), which differs from the racial/ethnic distribution of race in the city of Chicago. Fifty-eight percent of patients were admitted from home and 38% were admitted from a facility.

Thirty-eight patients had severe disease defined as those patients who required bowel surgery due to CDI or ICU admission within 30 days of CDI symptom onset, or those patients who died.[3] Three percent of patients required bowel surgery due to CDI. CDI may have contributed to the death of 7% of patients.

Individual facility rates were defined as the number of incident cases of CDI with symptom onset after 3 days in the hospital per 10, 000 patient days during February 2009. These results are shown in the Figure with shading indicating hospital size. For those participating hospitals with CDI incident case-patients during the investigation period, rates ranged from 2 to 7 CDI case-patients per 10,000 patient-days. One outlier was a long term acute care facility with 69 beds and 2 patients with CDI, resulting in an exaggerated rate for this institution.



The second component of the investigation, the prevention and control practices survey, showed that of those hospitals with a hand hygiene policy when caring for patients with CDI, 65% required use of soap and water while 35% allowed alcohol hand gel or soap and water. Regarding cleaning procedures for rooms housing patients with CDI, 35% performed terminal cleaning with bleach and 23% performed daily cleaning with a bleach-containing product. Twelve percent of hospitals notify housekeeping of patients with CDI by verbal report.

Future ***CDInfo*** newsletters will contain results of molecular testing of stool specimens from case-patients linked with epidemiologic findings.

References:

1. McDonald LC, Killgore GE, Thompson A, et al. An epidemic, toxin gene-variant strain of Clostridium difficile. *N Engl J Med* 2005; 353:2433-2441.
2. http://www.idph.state.il.us/patientsafety/c-diff_rpt.pdf, Accessed August 10, 2009
3. McDonald LC, Coignard B, Dubberke E et al. Recommendations for surveillance of *Clostridium difficile*-associated disease. *Infect Control Hosp Epidmiol* 2007;28:140-145.