

Oregon EIP Candidemia Surveillance

Center for Public Health Practice
Oregon Public Health Division

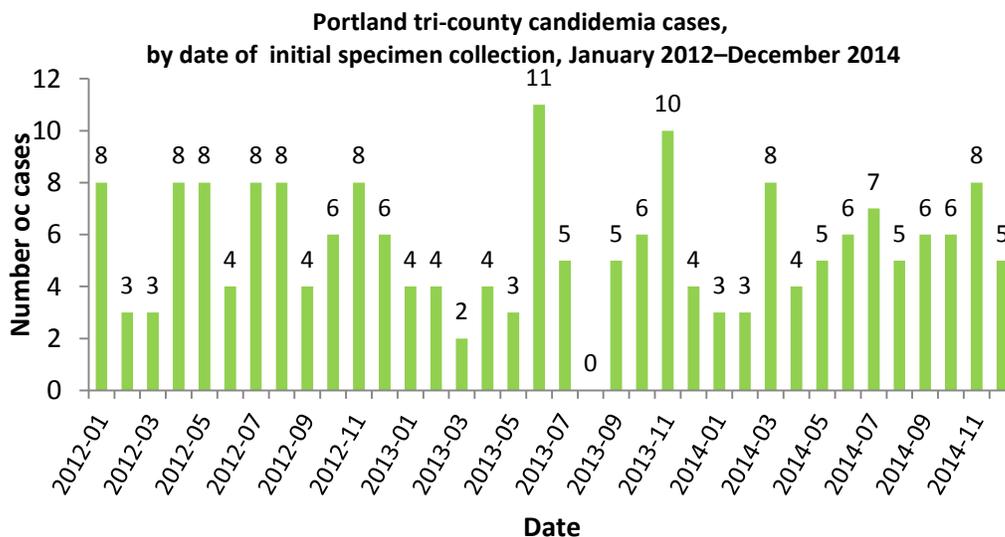


January 2015 Surveillance Summary

The Oregon Emerging Infections Program (EIP) conducts laboratory and population-based surveillance for *Candida* spp. bloodstream infections among residents of the tri-county (Clackamas, Multnomah, and Washington) Portland metropolitan area (2012 estimated population 1,672,970). Oregon is one of four EIP sites participating in this surveillance project, with these objectives:

- To determine how many *Candida* bloodstream infections occurred in the surveillance area
- To describe people at risk for *Candida* bloodstream infections
- To identify which types of *Candida* cause illness
- To reveal trends of drug resistance

For more information about the EIP Candidemia surveillance project, see <http://www.cdc.gov/hai/eip/candida.html> or <http://public.health.oregon.gov/DiseasesConditions/CommunicableDisease/EmergingInfections/Pages/Healthcare-AssociatedInfectionsSurveillance.aspx#candidemia>.



Since surveillance began in January 2011, 263 patients with *Candida* bloodstream infections have been reported in the Portland metropolitan area. Most infections (98%) occurred in people who were hospitalized. To date, EIP surveillance officers have reviewed the medical records of 226 cases. Of these cases:

- **67%** had a central venous catheter in the previous 2 days
- **66%** had received systemic antibiotics in the 2 weeks before their candidemia episode
- **46%** were admitted to an intensive care unit related to treatment of candidemia
- **25%** died while hospitalized or within 30 days of candidemia
- **22%** received TPN in the 14 days before illness onset
- **10%** had been neutropenic in the previous 2 days

Underlying medical conditions frequently reported among these cases include recent history of surgery (27%), diabetes (25%), liver diseases such as cirrhosis and hepatitis (18%), recent history of cancer (16%), injection drug-use (12%), and dialysis (9%).

Age group	Female		Male		Deaths	Total
	n	%	n	%		
<5	3	2.5	10	7.0	0	13
5–17	5	4.1	5	3.5	2	10
18–34	24	19.8	19	13.4	1	43
35–49	19	15.7	18	12.7	6	37
50–64	38	31.4	54	38.0	29	92
65–79	22	18.2	19	13.4	9	41
≥80	10	8.3	17	12.0	9	27
Total	121		142		56	263

Underlying conditions in past 90 days associated with candidemia cases, January 2011–December 2014, Portland tri-county area (n=226 with chart review completed)		
Cancer-related diagnoses	43	19%
Leukemia or lymphoma	14	6%
Solid organ malignancy	29	13%
Other	8	4%
Diabetes	57	25%
HIV-related diagnoses	4	2%
AIDS (CD4 count<200)	2	1%
HIV infection without AIDS	2	1%
Liver diagnoses	41	18%
Alcohol-related liver disease	11	5%
Cirrhosis	11	5%
Hepatitis B	4	2%
Hepatitis C	22	10%
Non-alcoholic fatty liver disease	1	0.5%
Other liver disease	6	3%
Organ transplant	4	2%
Stem cell transplant	0	0%
Solid organ transplant	4	2%
Pancreatitis	8	4%
Dialysis/hemofiltration	21	9%
Continuous venous hemofiltration	3	2%
Hemodialysis	18	8%
Peritoneal dialysis	0	0%
Surgeries	61	27%
Biliary/pancreatic surgery	5	2%
Any emergency surgery	7	3%
Gynecological surgery	2	1%
Urological surgery	15	7%
Gastrointestinal surgery	17	8%
Other abdominal surgery	11	5%
Non-abdominal surgery	16	7%
Other	76	34%
IV drug use	27	12%
COPD	6	3%
Congestive heart failure	5	3%
Morbid obesity	5	3%
Stroke	4	2%
Preterm birth	2	1%
Cystic fibrosis	3	2%
<i>C. difficile</i> infection within 90 days (n=30)*	2	7%

*CDI data collection began 1/2014

Species and antifungal susceptibilities of *Candida* isolates submitted

The chart to the right displays the distribution of *Candida* species found in blood isolates from candidemia cases.

In December 2012, the Clinical and Laboratory Standards Institute (CLSI) instituted new minimal inhibitory concentration (MIC) breakpoint interpretations for susceptibility testing of *Candida* species to antifungal agents. For more information about interpreting antifungal susceptibility test results, see:

CLSI M27-S4. Reference method for broth dilution antifungal susceptibility testing of yeasts; Fourth informational supplement. December 2012.

Antifungal susceptibilities in Oregon, *Candida* spp. blood isolates, January 2011–August 2013

(n=120 isolates with testing performed)

	Anidulafungin ¹	Caspofungin ¹	Fluconazole ²	Voriconazole ³	Micafungin ¹
Susceptible	117/120 (97.5%)	120/120 (100%)	77/115 (67%)	84/85 (99%)	120/120 (100%)
Intermediate	3/120 (2.5%)	0	0	0	0
Susceptible dose-dependent	0	0	34/115 (29.5%)	1/85 (1%)	0
Resistant	0	0	4/115 (3.5%)	0	0

¹ Anidulafungin, Caspofungin, and Micafungin: all tested isolates included in susceptibility table

² Fluconazole: Isolates of *C. krusei* are assumed to be intrinsically resistant to fluconazole independent of the MIC value

³ Voriconazole: susceptibility table includes all tested isolates except *C. glabrata*, *C. guilliermondii*, *C. lusitaniae*, *C. pelliculosa*

C. albicans blood isolates, January 2011–August 2013 (n=49)

	Anidulafungin	Caspofungin	Fluconazole	Voriconazole	Micafungin
Susceptible	49/49 (100%)	49/49 (100%)	46/47 (98%)	45/46 (98%)	49/49 (100%)
Intermediate	0	0	0	0	0
Susceptible dose-dependent	0	0	1/47 (2%)	1/46 (2%)	0
Resistant	0	0	0	0	0

C. glabrata blood isolates, January 2011–August 2013 (n=32)

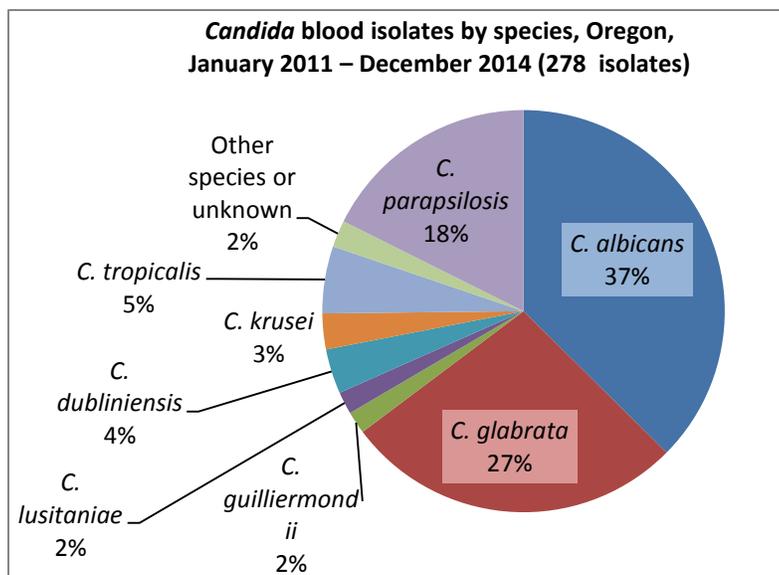
	Anidulafungin	Caspofungin	Fluconazole ^a	Voriconazole ^b	Micafungin
Susceptible	32/32 (100%)	32/32 (100%)	0	--	32/32 (100%)
Intermediate	0	0	0	--	0
Susceptible dose-dependent	0	0	30/32 (94%)	--	0
Resistant	0	0	2/32 (6%)	--	0

C. parapsilosis blood isolates, January 2011–June 2013 (n=28)

	Anidulafungin	Caspofungin	Fluconazole	Voriconazole	Micafungin
Susceptible	26/28 (93%)	28/28 (100%)	25/28 (89%)	28/28 (100%)	28/28 (100%)
Intermediate	2/28 (7%)	0	0	0	0
Susceptible dose-dependent	0	0	3/28 (11%)	0	0
Resistant	0	0	0	0	0

^a For infections due to *C. glabrata*, maximum dosing of fluconazole should be used for isolates with an MIC ≤32.

^b The current data are insufficient to demonstrate a correlation between *in vitro* susceptibility testing and clinical outcome for *C. glabrata* and voriconazole



Candidemia cases by age, sex, comorbidity and HAI risk factor, Oregon, January 2011–October 2014 (n=226)

Age (years)	Comorbidity										HAI Risk Factor							
	Cancer		Diabetes		Liver diagnoses		Dialysis and renal disease		Abdominal surgery		Other surgery		CVC*		Systemic Antibiotics		Total Parenteral Nutrition	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
<5	1	8%	0	.	0	.	0	.	4	31%	2	15%	10	77%	8	62%	8	62%
5–17	5	56%	0	.	0	.	1	11%	0	.	1	11%	9	100%	8	89%	4	44%
18–34	1	3%	5	14%	4	11%	0	.	3	8%	4	11%	22	59%	21	57%	5	14%
35–49	4	13%	5	16%	10	31%	3	9%	2	6%	6	19%	23	72%	23	72%	3	9%
50–64	19	23%	25	31%	23	28%	12	15%	16	20%	10	12%	59	73%	57	70%	21	26%
65–79	9	27%	15	45%	3	9%	4	12%	3	9%	9	27%	20	61%	21	64%	6	18%
≥80	4	19%	7	33%	1	5%	1	5%	4	19%	6	29%	9	43%	12	57%	3	14%
Total	43	19%	57	25%	41	18%	21	9%	32	14%	38	17%	152	67%	150	66%	50	22%
Female	19	18%	27	25%	13	12%	12	11%	18	17%	19	18%	69	64%	70	65%	25	23%
Male	24	20%	30	25%	28	24%	9	8%	14	12%	19	16%	83	70%	80	68%	25	21%