

Purpose of Study

The purposes of the study were to describe (1) trends in drug use and morbidity related to injection drug use (IDU), especially HIV and hepatitis C (HCV), and (2) charges/costs associated with IDU care.

Background

It is unknown how many people inject drugs in Oregon, but national trends suggest there is an increasing impact on our health care system. Diagnostic information allows us to see patterns of morbidity consistent with injection drug use, and then describe trends in number of people who inject drugs (PWIDs) seen in an inpatient setting.

Methods

We used Hospital Discharge Data for Oregon to identify stays associated with injection drug use (2008–Sept 2016). The hospital stay was determined to be an IDU-stay if there was at least one diagnostic code associated with drug abuse (opioid, amphetamine, cocaine, sedative, or other drugs) and at least one diagnosis code for bacteremia/sepsis, endocarditis, osteomyelitis, or skin/soft tissue infection (abscesses). ICD-9/10 codes were vetted by local ED/wound care providers and a nosologist. We matched Oregon HIV and HCV surveillance data to persons in the discharge data to confirm their status. Cost was determined by adjusting the charged amount with Cost-to-Charge ratios by-hospital by year. This follow-up study was restricted to Clatsop county residents.

Results

IDU-hospital stays among Clatsop County residents increased from 4 to 53 stays, or 0.09% to 1.34% of all hospital stays, 2008–2015 (15-fold increase), Fig 1. The number of unique persons with an IDU-stay each year increased from 4 to 42, Fig 2. Most stays (85%) were at Columbia, Providence Seaside, OHSU, or St Vincents.

The proportion of hospital stays coded for opioid abuse increased 3-fold, from 0.81% to 2.86% (2008–2015), but IDU-stays associated with opioid abuse increased 19-fold, from 0.05% to 0.96% of all hospital stays, Fig 3. Amphetamine stays increased from 0.28% to 1.1% among all stays (4-fold increase), and from 0% to 0.48% among IDU-stays.

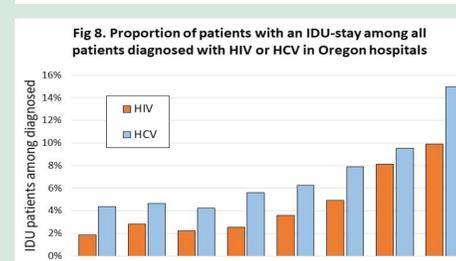
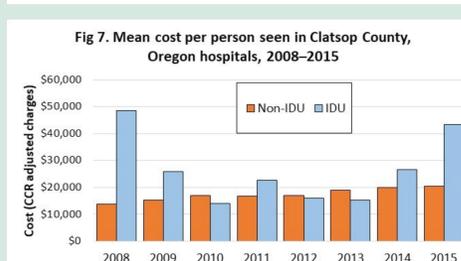
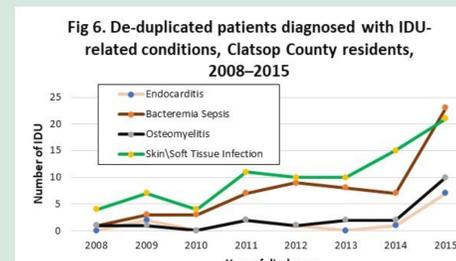
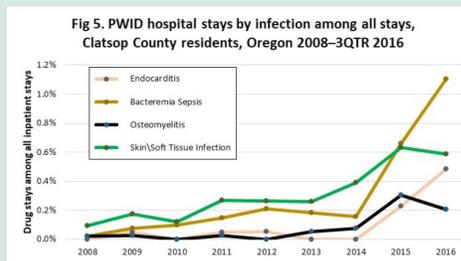
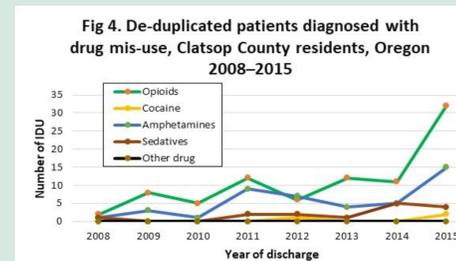
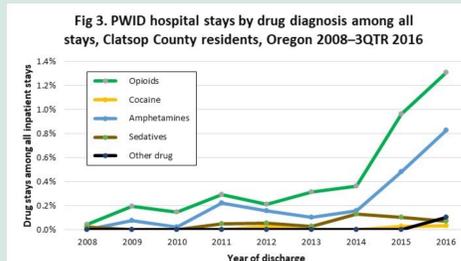
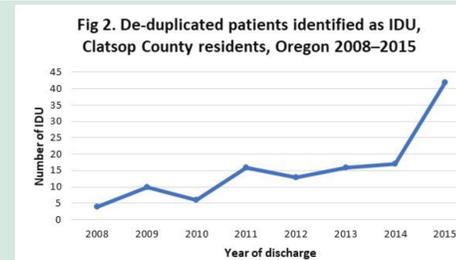
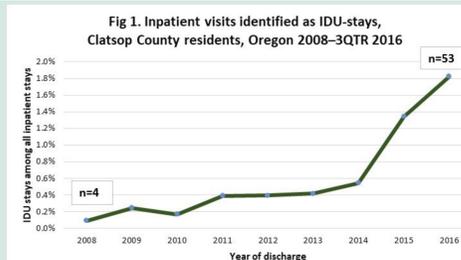
Bacteremia/sepsis IDU stays increased from 0.02% to 0.66% of all stays (33-fold increase), and skin/soft tissue IDU stays increased from 0.09% to 0.63% of all stays, Fig 5. There were 7 unique PWID diagnosed 2008–2014 with endocarditis but 9 in the following year, 2015.

The mean costs per person per year increased among non-PWID from \$13,855 to \$20,250 and among PWID from \$48,611 to \$50,628 (2008–2015), Fig 7. There was a longer length of stay (LOS) among PWID in 2015 (14.6 mean days compared to 5.5 days among non-PWIDs).

In Oregon as a whole, IDU-stays among HIV cases increased from 18 in 2008 to 108 in 2015, while the number of stays among non-IDU HIV cases did not change much during the period, averaging 1,039 stays, Fig 8. IDU-stays among chronic HCV cases increased from 105 to 748 (2008–2015).

Conclusions

PWID made up an increasing proportion of hospitalizations with longer LOS and higher mean costs than non-IDU. Increases in opioid and amphetamine stays for PWIDs were consistent with morbidities that resulted in longer LOS. Increases in HIV and HCV infection among PWIDs were consistent with the pattern of increased IDU hospital stays.



Discussion

Increasing rates of IDU-related hospital stays, LOS, and costs require Oregon’s health care system to adapt. Longer hospitalizations allow time to initiate substance use disorder treatment (e.g. MAT & buprenorphine), and for in-reach by social service, housing and harm reduction programs that together prepare for discharge, prevent re-admission, and decrease subsequent IDU-related infections. Best practice interventions documented to prevent IDU-related infections include: low-threshold substance use disorder treatment, peer-navigators, distribution of IDU equipment, and safe drug consumption spaces. Increased hospitalizations among PWID who are HCV or HIV-positive reflect an increase in IDU-risk behavior and may herald imminent or undetected HCV or HIV infection.