



Portland Area Health Priorities


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Portland Area Budget Formulation Meeting

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Overview

- Brief History of Hepatitis C
 - Hepatitis C → Liver Disease → Leading Causes of Death (Mortality)
 - Hepatitis C → Liver Disease → Leading Causes of Hospitalization (Morbidity)
 - Hepatitis C → Liver Disease → Years of Potential Life Lost (YPLL)
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Brief History of Hepatitis C

Mortality, Morbidity and Years of Potential Life Lost

Brief History of Hepatitis C

- 1975: A virus capable of causing hepatitis that was not hepatitis A or hepatitis B was discovered (“non-A, non-B hepatitis”)
- 1989: The non-A, non-B hepatitis virus is isolated: hepatitis C virus
- 1990: Testing of US blood supply for Hepatitis C
- 1991: First treatment regimen developed, interferon alfa 2b
- 1992: Improved sensitivity test adopted for US blood supply
- 1998: Ribavirin plus interferon treatment
- 2001: Pegylated interferon

Brief History of Hepatitis C

- 2010: Rapid antibody test developed
- 2013: First direct-acting antiviral (DAA) medications allows treatment without interferon
- 2015-present: New DAAs with increased rates of cure for most genotypes, with fewer doses and shorter treatment durations for many patients

Time

Normal Liver



HCV Infection

Chronic Hepatitis



20-25 years

Cirrhosis



25-30 years

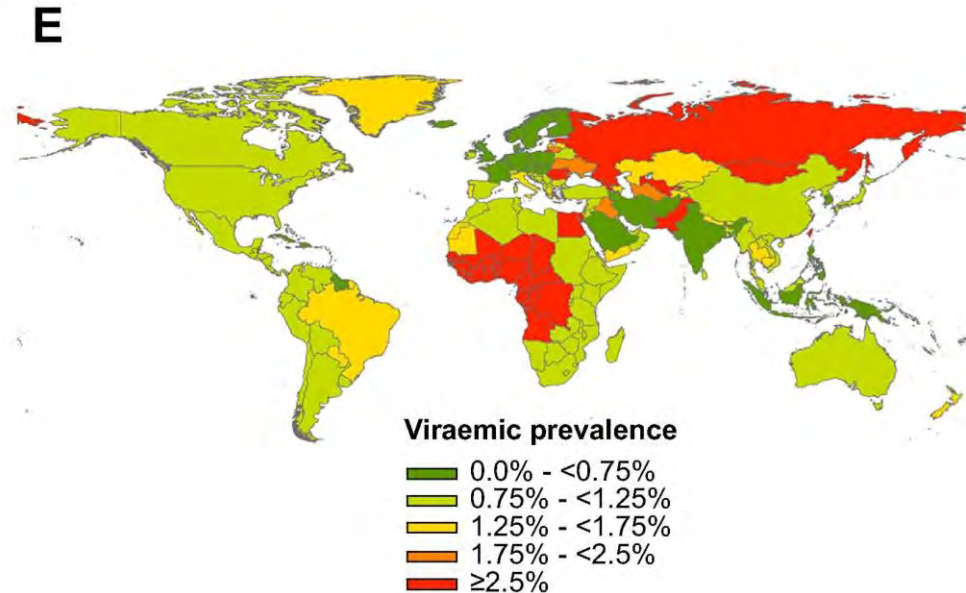
HCC
ESLD
Death



15%-25% of HCV infections will resolve without treatment depending on age, sex, race, severity of initial infection, immune status and host genotype

Global Distribution of HCV

- Estimated and reported HCV viremic disease
 - Highest in West Africa, Egypt, Russia, and parts of Central Asia and Eastern Europe
 - Data quality is poor in many of these areas
- Absolute numbers of people infected are highest in China, India, Nigeria, Egypt, US, Brazil, Russia

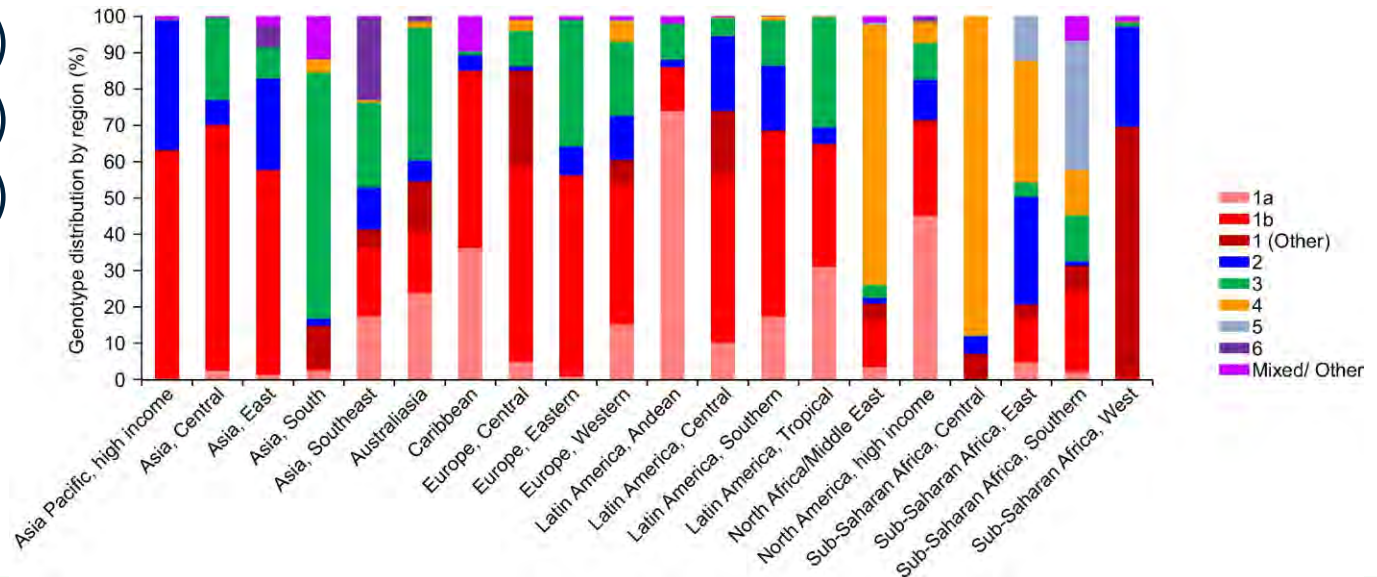


Total global viremic HCV infections

- Estimated at 80 (64–103) million infections.
- Genotype distribution:

- genotype 1 (G1) (46%)
- G3 (22%)
- G2 (13%)
- G4 (13%)

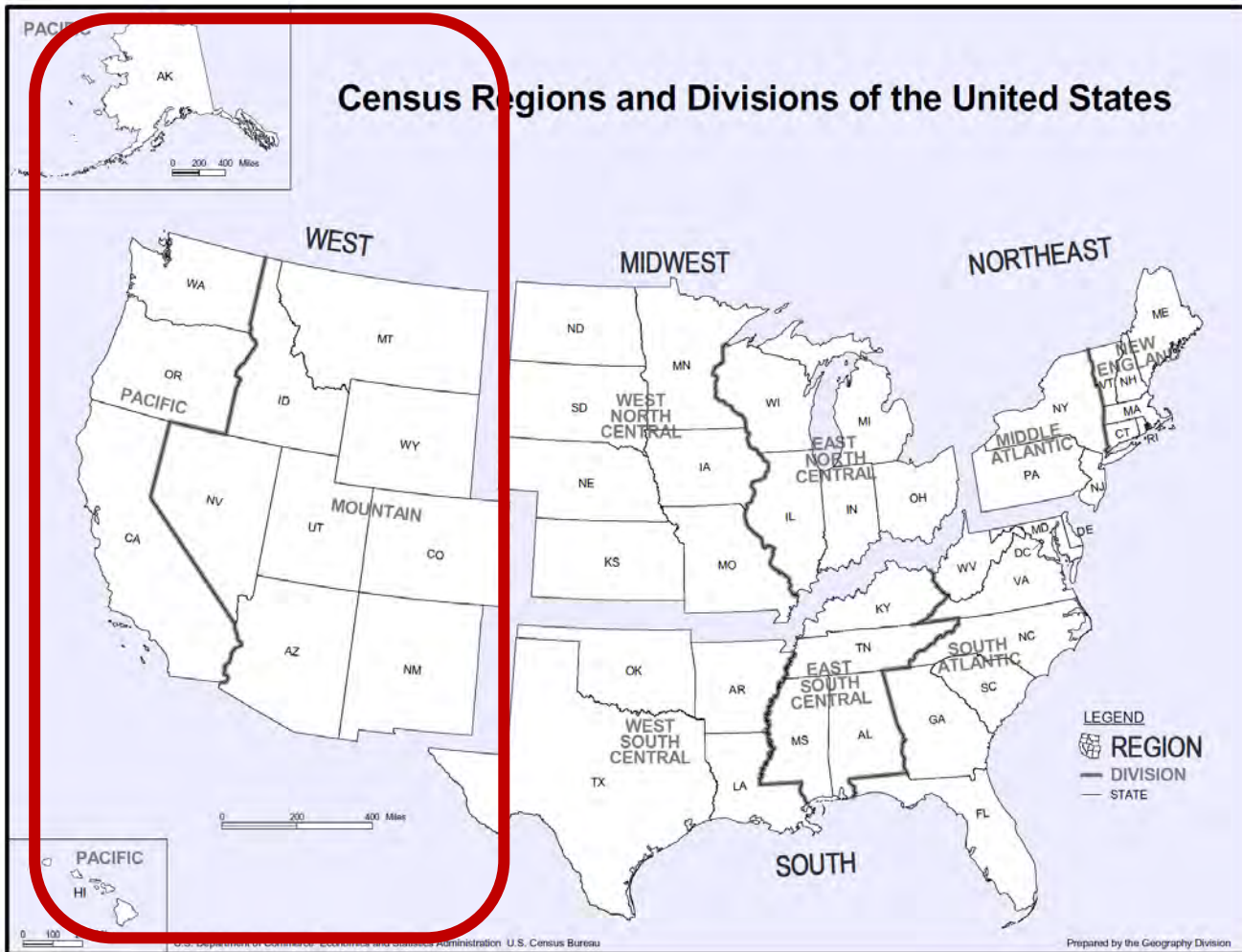
J Hepatology Volume 61(1), Supp, 2014 (Nov): S45-S57



Impact Measures

Mortality, Morbidity and Years of Potential Life Lost for AI/AN in the Western Region and NW States

Census Regions and Divisions of the United States



Top 10 Causes of Death, Men

Rank	Age Groups										All Ages
	<1	1-4	5-9	10-14	15-24	25-34	35-44	45-54	55-64	65+	
1	Congenital Anomalies 103	Unintentional Injury 62	Unintentional Injury 41	Unintentional Injury 41	Unintentional Injury 567	Unintentional Injury 843	Unintentional Injury 740	Unintentional Injury 810	Heart Disease 981	Heart Disease 2,615	Heart Disease 4,551
2	SIDS 60	Homicide 20	Malignant Neoplasms 7	Suicide 16	Suicide 396	Suicide 322	Liver Disease 346	Heart Disease 591	Malignant Neoplasms 975	Malignant Neoplasms 2,490	Unintentional Injury 4,160
3	Unintentional Injury 48	Congenital Anomalies 11	Congenital Anomalies 5	Congenital Anomalies 8	Homicide 13	Homicide 185	Suicide 229	Liver Disease 529	Unintentional Injury 521	Diabetes Mellitus 76	Malignant Neoplasms 4,112
4	Short Gestation 34	Malignant Neoplasms 11	Homicide 4	Malignant Neoplasms 8	Heart Disease 31	Liver Disease 161	Heart Disease 220	Malignant Neoplasms 428	Liver Disease 439	Chronic Low. Respiratory Disease 656	Liver Disease 1,733
5	Maternal Pregnancy Comp. 27	Heart Disease 5	Cerebrovascular 2	Homicide 3	Malignant Neoplasms 28	Heart Disease 101	Homicide 126	Diabetes Mellitus 223	Diabetes Mellitus 351	Cerebrovascular 508	Diabetes Mellitus 1,472
6	Placenta Cord Membranes 20	Chronic Low. Respiratory Disease 4	Chronic Low. Respiratory Disease 2	Benign Neoplasms 1	Liver Disease 15	Malignant Neoplasms 66	Diabetes Mellitus 99	Suicide 171	Chronic Low. Respiratory Disease 156	Unintentional Injury 478	Suicide 1,240
7	Bacterial Sepsis 13	Cerebrovascular 2	Influenza & Pneumonia 2	Chronic Low. Respiratory Disease 1	Influenza & Pneumonia 7	Diabetes Mellitus 18	Malignant Neoplasms 99	Homicide 102	Cerebrovascular 108	Influenza & Pneumonia 342	Chronic Low. Respiratory Disease 872
8	Circulatory System Disease 9	Influenza & Pneumonia 2	Pneumonitis 1	Heart Disease 1	Chronic Low. Respiratory Disease 5	HIV 17	Influenza & Pneumonia 37	Influenza & Pneumonia 74	Nephritis 79	Liver Disease 243	Cerebrovascular 725
9	Homicide 9	Perinatal Period 2			Congenital Anomalies 5	Influenza & Pneumonia 15	Cerebrovascular 29	Viral Hepatitis 68	Influenza & Pneumonia 78	Nephritis 227	Homicide 644
10	Two Tied 8	Five Tied 1			Diabetes Mellitus 5	Congenital Anomalies 14	HIV 25	Cerebrovascular 67	Viral Hepatitis 78	Alzheimer's Disease 226	Influenza & Pneumonia 565

American
Indian/Alaska
Native Western
Region, 2010-
2015

Data
Source:

National Center for Health
Statistics (NCHS) Vital
Statistics System.

Top 10 Causes of Death, Women

	Age Groups										
Rank	<1	1-4	5-9	10-14	15-24	25-34	35-44	45-54	55-64	65+	All Ages
1	Congenital Anomalies 85	Unintentional Injury 40	Unintentional Injury 21	Unintentional Injury 22	Unintentional Injury 261	Unintentional Injury 374	Unintentional Injury 336	Liver Disease 512	Malignant Neoplasms 823	Heart Disease 233	Malignant Neoplasms 3,679
2	SIDS 38	Homicide 9	Congenital Anomalies 8	Suicide 17	Suicide 29	Liver Disease 131	Liver Disease 293	Malignant Neoplasms 455	Heart Disease 418	Malignant Neoplasms 2,193	Heart Disease 3,062
3	Short Gestation 33	Congenital Anomalies 8	Homicide 2	Homicide 7	Homicide 2	Suicide 90	Malignant Neoplasms 118	Unintentional Injury 360	Liver Disease 324	Diabetes Mellitus 263	Unintentional Injury 2,009
4	Unintentional Injury 33	Influenza & Pneumonia 6	Malignant Neoplasms 2	Malignant Neoplasms 7	Malignant Neoplasms 21	Malignant Neoplasms 56	Heart Disease 114	Heart Disease 235	Diabetes Mellitus 275	Cerebrovascular 723	Liver Disease 1,512
5	Placenta Cord Membranes 12	Malignant Neoplasms 3	Perinatal Period 2	Heart Disease 3	Heart Disease 16	Homicide 42	Diabetes Mellitus 57	Diabetes Mellitus 141	Unintentional Injury 225	Chronic Low. Respiratory Disease 664	Diabetes Mellitus 1,355
6	Maternal Pregnancy Comp. 11	Septicemia 3	Anemias 1	Congenital Anomalies 2	Complicated Pregnancy 11	Heart Disease 36	Suicide 55	Cerebrovascular 77	Chronic Low. Respiratory Disease 165	Alzheimer's Disease 444	Cerebrovascular 940
7	Circulatory System Disease 8	Cerebrovascular 2	Benign Neoplasms 1	Benign Neoplasms 1	Congenital Anomalies 8	Complicated Pregnancy 22	Influenza & Pneumonia 29	Septicemia 60	Cerebrovascular 96	Influenza & Pneumonia 376	Chronic Low. Respiratory Disease 888
8	Homicide 8	Heart Disease 2	Cerebrovascular 1	Cerebrovascular 1	Cerebrovascular 5	Diabetes Mellitus 18	Homicide 27	Suicide 60	Influenza & Pneumonia 74	Unintentional Injury 337	Influenza & Pneumonia 547
9	Necrotizing Enterocolitis 7	Meningitis 2	Heart Disease 1		Liver Disease 5	Septicemia 13	Cerebrovascular 23	Influenza & Pneumonia 45	Septicemia 72	Nephritis 303	Alzheimer's Disease 452
10	Influenza & Pneumonia 6	Perinatal Period 1	Viral Hepatitis 1		Two Tied 2	Two Tied 9	Septicemia 23	Nephritis 45	Nephritis 60	Liver Disease 247	Nephritis 420

American Indian/Alaska Native Western Region, 2010-2015

Data Source:

National Center for Health Statistics (NCHS) Vital Statistics System.

Leading Causes of AI/AN Hospitalization, Washington, 2011

Males						
< 1 Year	1 - 14	15 - 24	25 - 39	40 - 64	65 +	Overall
Perinatal	Respiratory	Injury & Poisoning	Injury & Poisoning	Circulatory	Circulatory	Perinatal
Respiratory	Injury & Poisoning	Digestive	Digestive	Digestive	Respiratory	Digestive
Congenital Anomalies	Digestive	Endocrine/Immun.	Skin & Soft Tissue	Injury & Poisoning	Digestive	Injury & Poisoning
Females						
Perinatal	Respiratory	Pregnancy & Childbirth	Pregnancy & Childbirth	Digestive	Circulatory	Pregnancy & Childbirth
Respiratory	Injury & Poisoning	Digestive	Digestive	Respiratory	Respiratory	Digestive
Congenital Anomalies	Digestive	Injury & Poisoning	Injury & Poisoning	Circulatory	Digestive	Perinatal

Produced by: Northwest Portland Area Indian Health Board Improving Data & Enhancing Access - Northwest (IDEA-NW) Project

Data Source: Washington Comprehensive Hospital Abstract Reporting System (CHARS) 2011

Leading Causes of AI/AN Hospitalization, Oregon, 2011

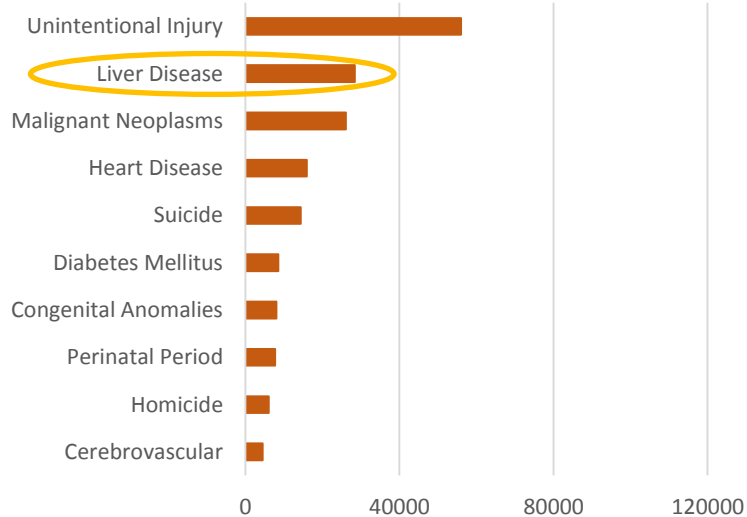
Males						
< 1 Year	1 - 14	15 - 24	25 - 39	40 - 64	65 +	Overall
Perinatal	Respiratory	Injury & Poisoning	Digestive	Circulatory	Circulatory	Perinatal
Respiratory	Digestive	Mental Illness	Mental Illness	Digestive	Respiratory	Circulatory
Congenital Anomalies	Injury & Poisoning	Digestive	Injury & Poisoning	Injury & Poisoning	Musculoskeletal	Digestive
Females						
Perinatal	Respiratory	Pregnancy & Childbirth	Pregnancy & Childbirth	Digestive	Circulatory	Pregnancy & Childbirth
Respiratory	Digestive	Digestive	Genitourinary	Musculoskeletal	Respiratory	Perinatal
Congenital Anomalies	Injury & Poisoning	Mental Illness	Digestive	Circulatory	Digestive	Digestive

Produced by: Northwest Portland Area Indian Health Board Improving Data & Enhancing Access - Northwest (IDEA-NW) Project

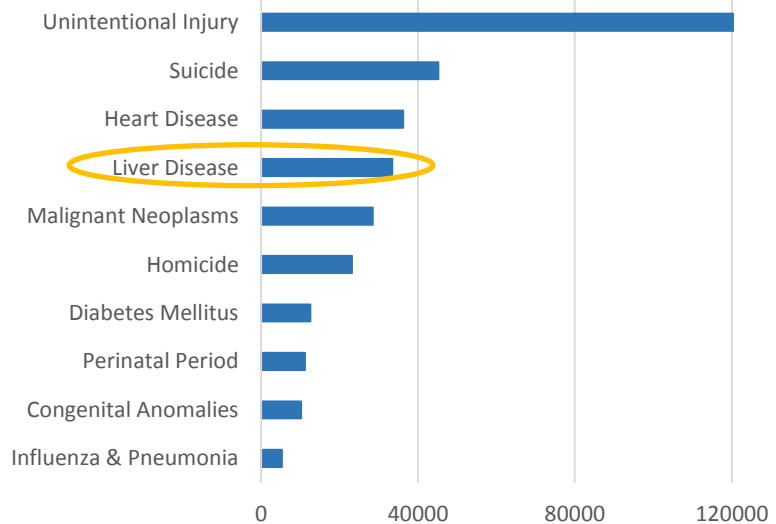
Data Source: Oregon Association of Hospitals & Health Systems, 2010-2011

Years of Potential Life Lost, American Indian/Alaska Native, West Region 2010-2015

Years of Potential Life Lost, Women

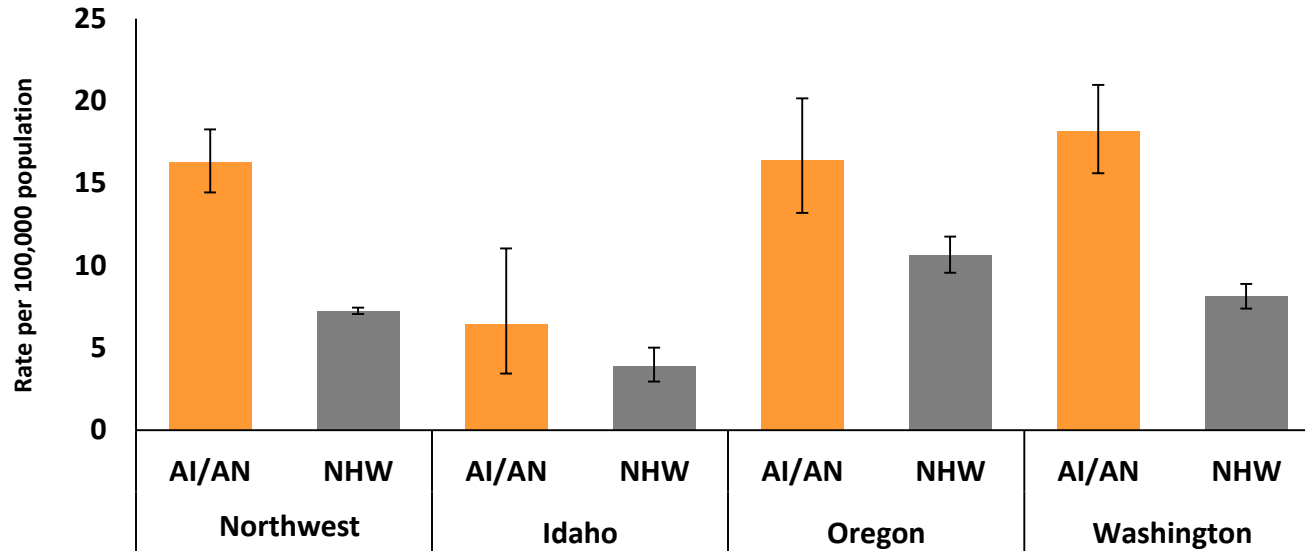


Years of Potential Life Lost, Men



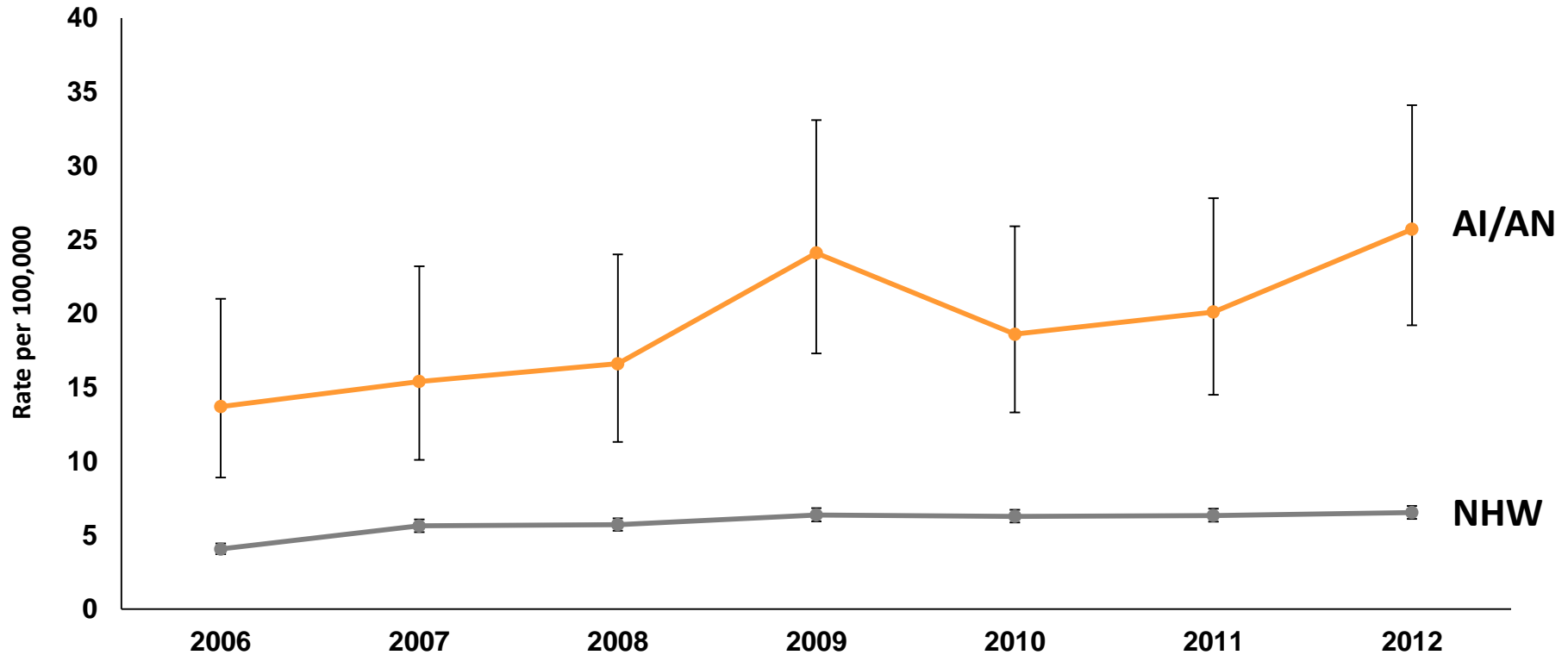
HCV-Specific Data

Age-adjusted Hepatitis C-related Mortality – Northwest, 2006–2012



Rate Ratio (95% Confidence Interval) AI/AN : NHW	3.33 (2.96, 3.75)	3.22 (1.85, 5.62)	2.52 (2.04, 3.11)	3.88 (3.34, 4.50)
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Age-Adjusted HCV-Related Mortality, 2006–2012



Analysis of IHS HCV Diagnoses, 2005-2015

	No. (rate/100,000)	Rate ratio (95% CI) ^a	P-value
Sex			
Male	15,362 (193)	Reference	Reference
Female	14,441 (166)	0.86 (0.84–0.88)	<.0001
Age (years)			
<15	150 (3.3)	0.01 (0.01–0.01)	<.0001
15–24	2085 (67)	0.13 (0.13–0.14)	<.0001
25–39	8302 (235)	0.47 (0.46–0.49)	<.0001
40–54	14,234 (496)	Reference	Reference
55+	5032 (199)	0.40 (0.39–0.41)	<.0001

Analysis of IHS HCV Diagnoses, 2005-2015

	No. (rate/100,000)	Rate ratio (95% CI) ^a	P-value
Born 1945–1965 (baby boomers)	15,900 (478)	Reference	Reference
Born after 1965	12,785 (105)	0.22 (0.21–0.22)	<.0001
Region ^b			
Alaska	2743 (179)	0.81 (0.77–0.84)	<.0001
East	1051 (197)	0.89 (0.84–0.95)	.0005
Northern Plains East	1875 (166)	0.75 (0.71–0.79)	<.0001
Northern Plains West	4801 (224)	1.01 (0.98–1.05)	.4462
Southern Plains	7986 (221)	Reference	Reference
Southwest	5538 (98)	0.44 (0.43–0.46)	<.0001
West	5809 (286)	1.29 (1.25–1.34)	<.0001
Total	29,803 (179)		

Conclusion

- Hepatitis C has a large impact on AI/AN populations as a cause of mortality and as an important contributor to high rates of hospitalization and years of potential life lost from liver disease.
- The mortality disparity, approximately 3.3 times that of non-Hispanic whites likely reflects a number of disparities such as higher risks of exposure, earlier age of exposure, less access to testing and less access to treatment.
- The ongoing epidemic of injection opioid and meth use is an important contributor to increased risk of acute hepatitis C infection.

Thank You