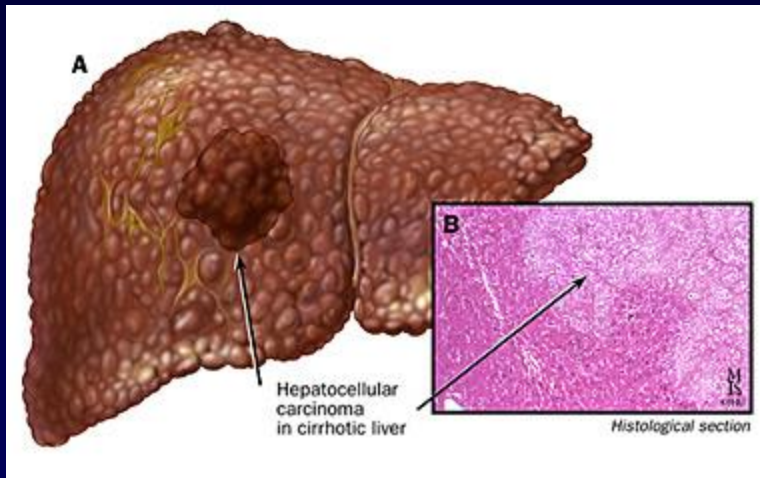


Hepatocellular Carcinoma: Screening and Diagnosis



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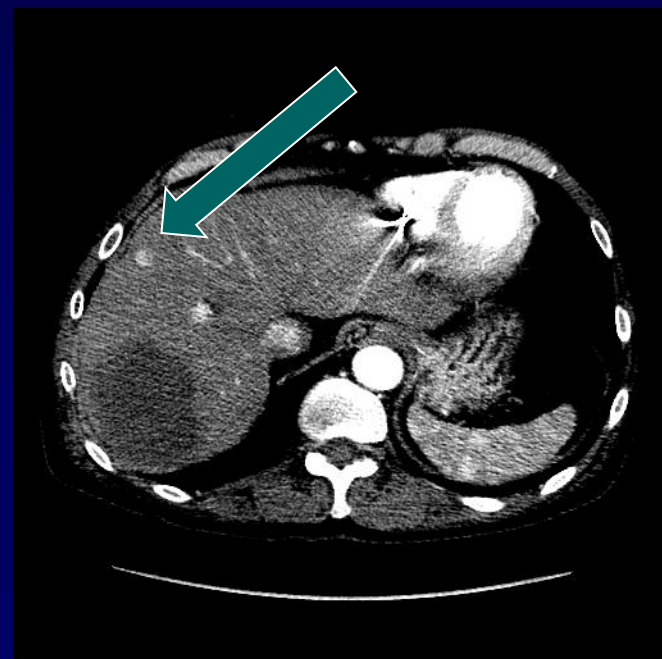
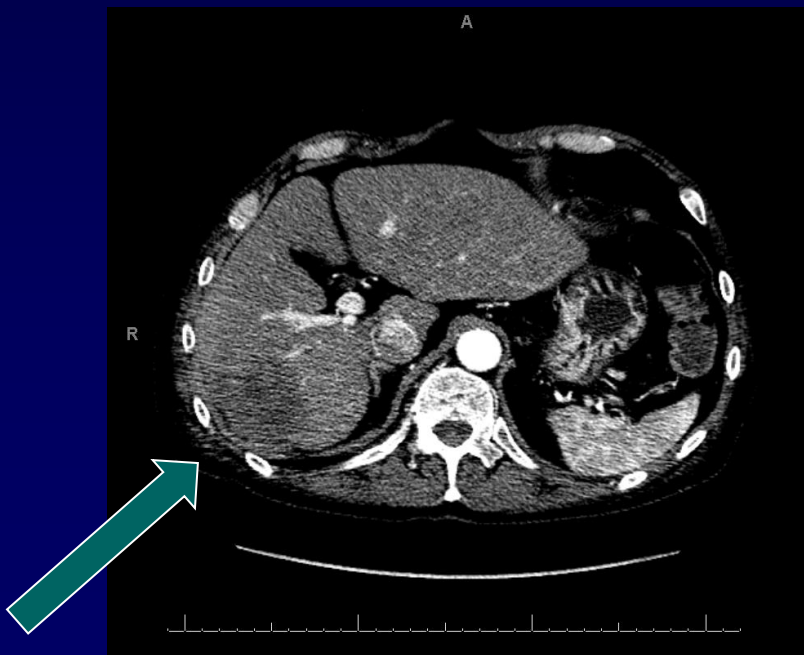


April 26, 2017

Patient R.S.:

Large multifocal HCC

- Homeless; from Warm Springs
- Chronic hepatitis C, never treated
- Shortness of breath



Patient R.S.:

Large multifocal HCC

- Pacemaker 5/2012
- Chemoembolization 8/2012
- Portal vein embolization 9/2012
 - To make the left lobe bigger
- Radiofrequency Ablation 1/2013
- Resection 2/2013

June 2016: Disease free



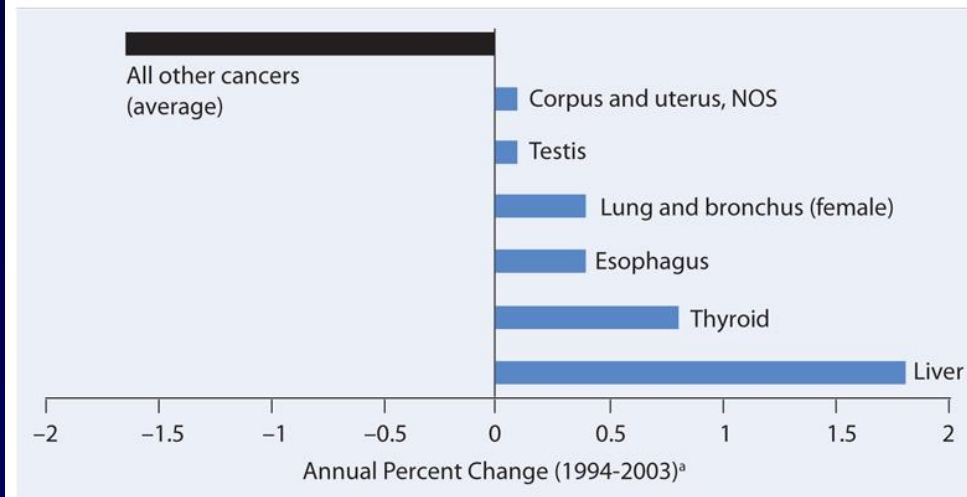
Discussion Points

- Screening
 - Who to screen
 - Why to screen
- Diagnosis

Incidence of Hepatocellular Carcinoma Increasing in U.S.

- Fastest rising cause of cancer-related death in the U.S.

Figure 1. Trends in US cancer mortality rates.



NOS, not otherwise specified.

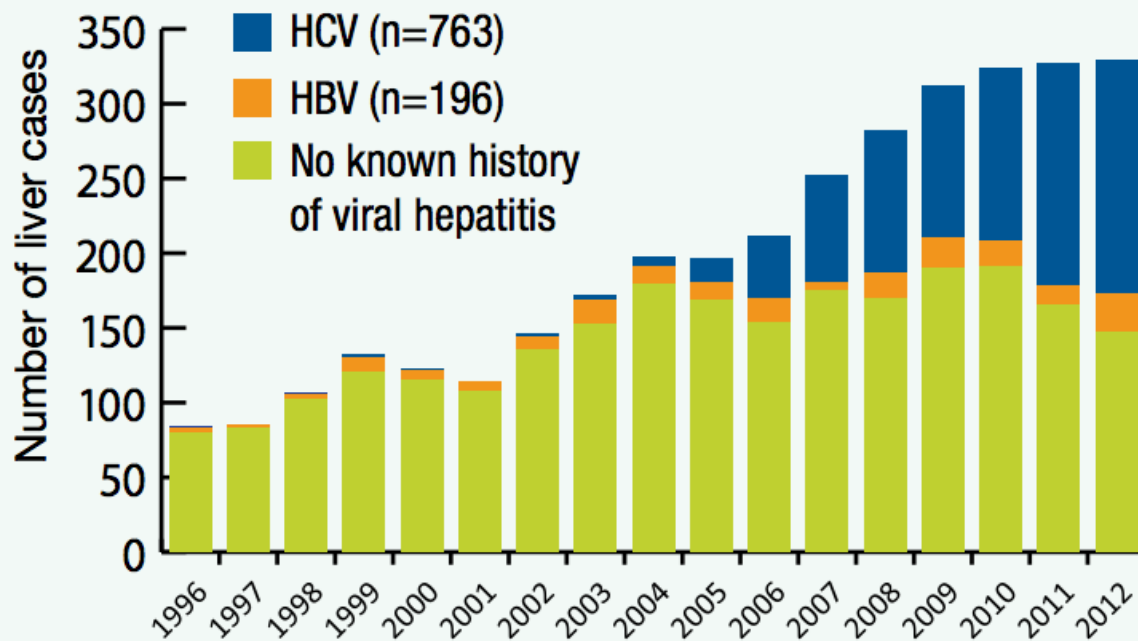
^a Represents the annual percent change over the time interval.

Source: El-Serag HB, Rudolph KL. Hepatocellular carcinoma: epidemiology and molecular carcinogenesis. *Gastroenterology*. 2007;132:2557-2576. Reprinted with permission from Elsevier.

Morb Mortal Wkly Rep CDC May 2010
El Serag, NEJM, 2011

HCC Cases in Oregon

Cases of liver cancer by year, with and without chronic viral hepatitis, Oregon, 1996–2012 (n=3,395)



HCC Cases among AI/AN in ID, OR, WA

Table 6.1: Leading cancer incidence sites for AI/AN by sex, Oregon, 2006-2010.

Rank	Males	N (%)	Females	N (%)
1	Lung & Bronchus	90 (17.3%)	Breast*	159 (26.0%)
2	Prostate	87 (16.7%)	Lung & Bronchus	99 (16.2%)
3	Blood Cancers†	57 (11.0%)	Blood Cancers†	41 (6.7%)
4	Colorectal*	55 (10.6%)	Colorectal*	55 (9.0%)
5	Liver & Intrahepatic Bile Duct	30 (5.8%)	Uterine	36 (5.9%)
6	Kidney & Renal Pelvis	27 (5.2%)	Kidney & Renal Pelvis	29 (4.7%)
7	Bladder	22 (4.2%)	Liver & Intrahepatic Bile Duct Pancreas	18 (2.9%)
8	Pancreas	20 (3.8%)	Cervix* Melanoma Thyroid	17 (2.8%)
Total	All Invasive Cancers	520 (100.0%)	All Invasive Cancers	612 (100.0%)

* Screenable cancers

HCC Cases among AI/AN in ID, OR, WA

- Age adjusted mortality rates for liver and intrahepatic bile duct cancer:
 - 14.7 per 100,000 (compared to 4.9 in NHW)
- 5th leading cause of cancer mortality for AI/AN in this area

*Eric Vinson, Northwest Tribal Comprehensive Cancer Program;
2008-2014 data*
<http://www.npaihb.org/home/idea-nw/#1450680778115-32a4bc94-cd3d>

HCC Screening recommended for:

Screening Recommended

Population Group	Incidence of HCC
Hepatitis C Cirrhosis	3-8% / year
Stage 4 Primary Biliary Cirrhosis	3-8% / year
Genetic Hemochromatosis and Cirrhosis	3-8% / year
Alpha-1-antitrypsin deficiency and Cirrhosis	3-8% / year
Other Cirrhosis	Unknown, but likely > 1.5%/year

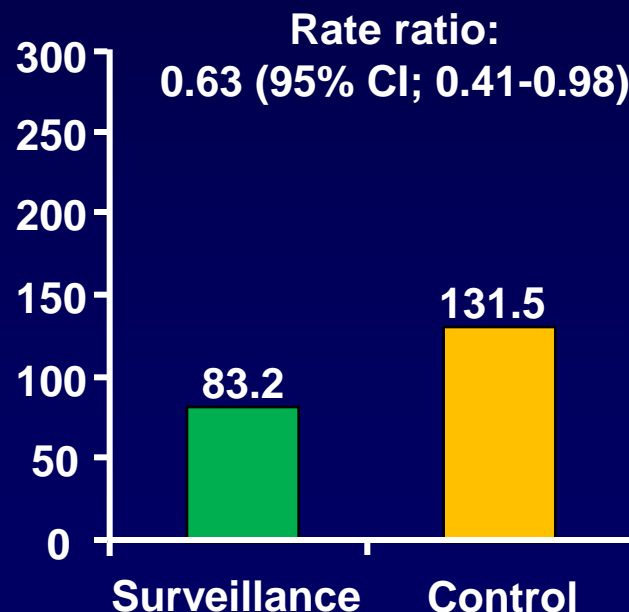
HCC Screening: Does it improve survival?

N= 18,816 people with HBV infection or history of chronic hepatitis in China

Surveillance: US and AFP q 6 months (n = 9373)

Control group: no surveillance (n = 9443)

Results: 37% reduction in mortality

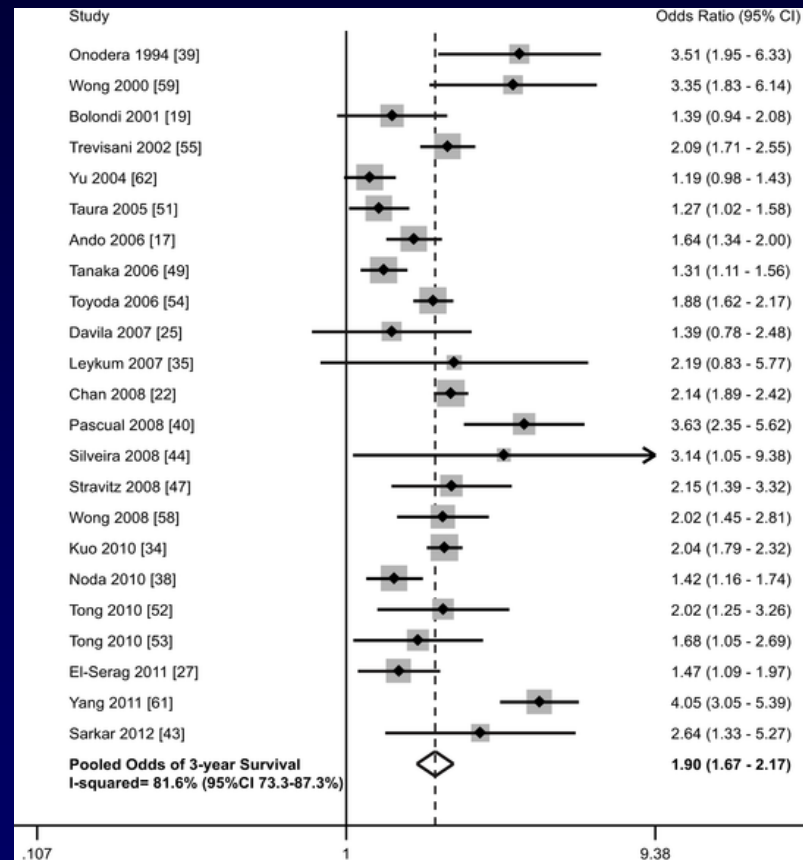


HCC Screening: Does it improve survival?

- Modeling Study by Mourad A et al
 - 11 month survival benefit

Hepatology 2014; 59: 1471-1479
- Meta-analysis by Singal A et al
 - 15,158 pts, 41% of whom had HCC detected by screening
 - Improved early stage detection (OR 2.08)
 - Higher curative treatment rate (OR 2.24)

Meta-analysis: HCC Screening does improve overall survival



Singal AG, Pillai A, Tiro J (2014) Early Detection, Curative Treatment, and Survival Rates for Hepatocellular Carcinoma Surveillance in Patients with Cirrhosis: A Meta-analysis. PLoS Med 11(4): e1001624.

Screening Tests: Ultrasound with or without AFP

- Ultrasound performance characteristics superior to all serologic tests
 - Sensitivity 60-70%
 - Specificity >90%

HCC Screening Failures

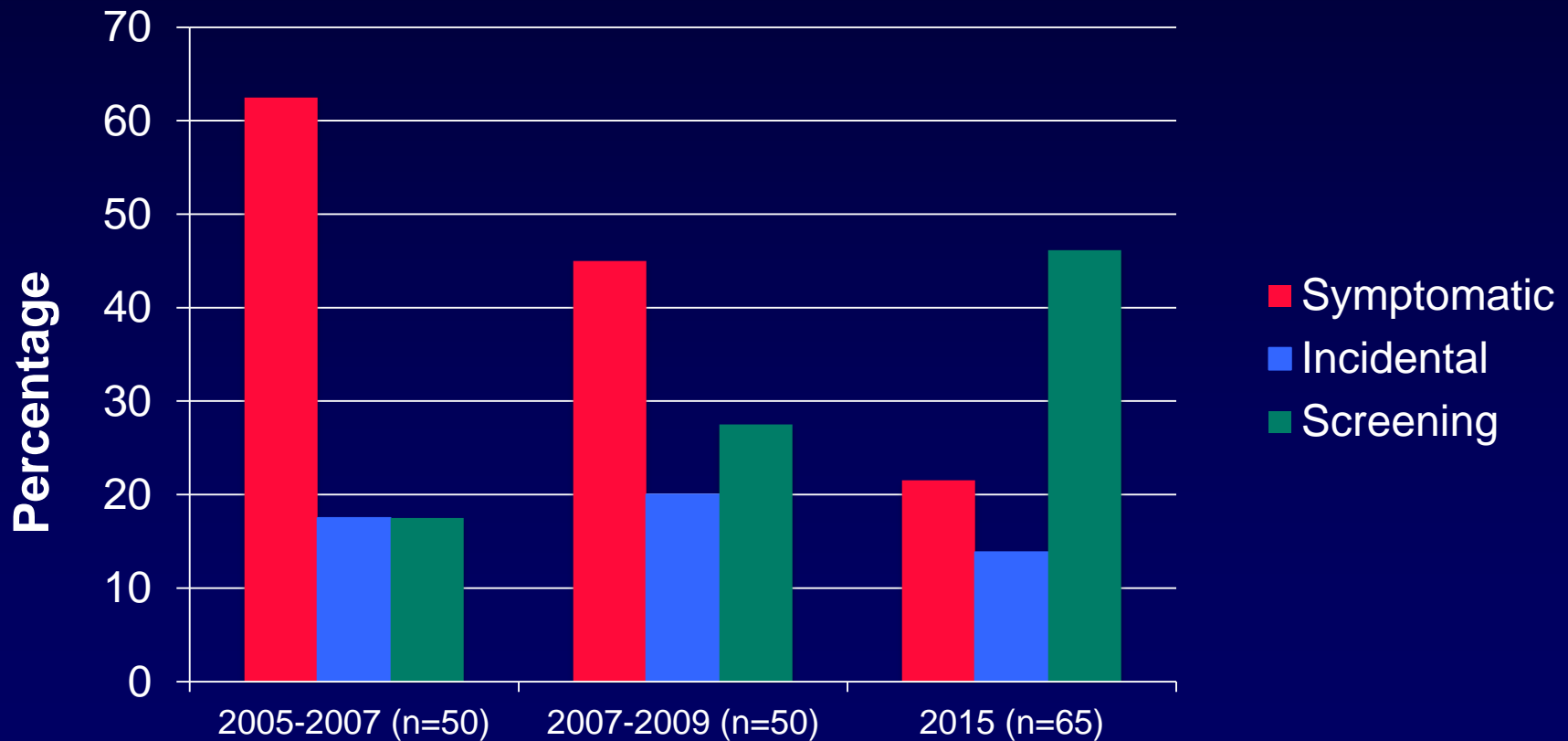
- Study conducted by researchers at the Baylor College in Texas
- Cohort >65 years old on Medicare
- 1,873 patients with HCC with a prior diagnosis of cirrhosis
- Study finds poor compliance with cirrhosis surveillance recommendations

Less than 20 percent of qualified patients were regularly monitored

HCC Screening Failures

- N=155 pts diagnosed 2005-2012
- 51% diagnosed in intermediate/late stage
- No surveillance year prior to dx: 75%
- Failure of detection: 11%

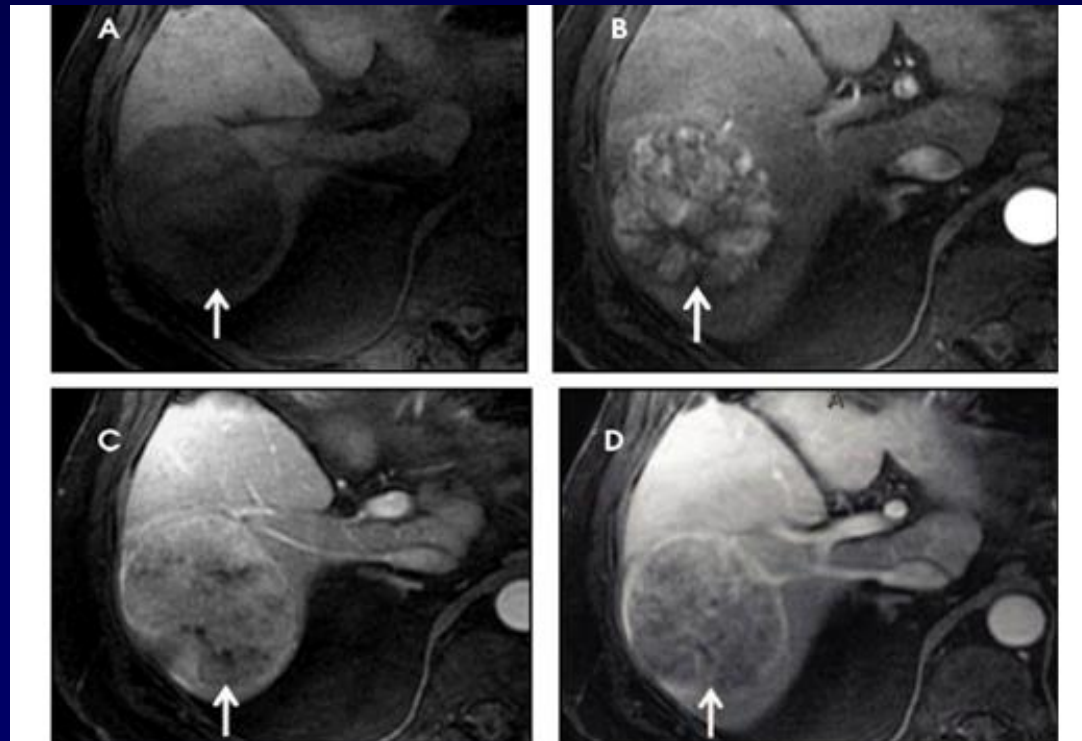
HCC Screening: How are we doing in Oregon?



Based on patients discussed at Providence HPB Tumor Board

If a lesion is found: MRI or CT

- If the patient has a history of hepatitis B or cirrhosis, usually HCC can be diagnosed by MRI or dual phase CT



Thank you!

**Maybelle Clark Macdonald Foundation
Providence Cancer Center**