

# Mildly Elevated Transaminases and Evaluation for Hepatitis B and Hepatitis C in a Family Medicine Center

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# DISCLOSURES

- ▶ We have no disclosures

# INTRODUCTION

- ▶ Routine laboratory evaluation often leads to detection of mild elevations in liver transaminases
  - ▶ Mild transaminase elevation: **AST or ALT less than 5 times the upper limit of normal or about 250 U/L<sup>1</sup>**
- ▶ United States population prevalence: 7.9% to 9.8% in asymptomatic patients<sup>2,3</sup>

# INTRODUCTION

<b>Most Common Causes</b>	<b>Estimate of Prevalence</b>
Non-alcoholic fatty liver disease	25-30% overall (up to 60% in this population) <sup>4</sup>
Alcoholic fatty liver disease	10% in this population <sup>5</sup>
Hepatitis C	1.8% overall <sup>4,6</sup>
Hepatitis B	0.2% - 0.9% overall <sup>4</sup>
Hemochromatosis	0.25% - 0.5% overall <sup>4</sup>
Medications (e.g. acetaminophen, statins)	Prevalence uncertain <sup>6</sup>

<b>Less Common Causes</b>	
Other viral hepatitis (CMV, EBV, HIV)	Muscle Disorders
$\alpha_1$ -antitrypsin deficiency	Wilson's disease
Autoimmune hepatitis	Thyroid disease

# METHODS

- ▶ Specific Aims

1. Examine prevalence of mild transaminase elevations for our patient population (Family Medicine Center at Main Street)
2. Evaluate compliance with recommendations for initial workup of these patients
3. Examine patient demographics for relevant factors that could be affecting further testing

# METHODS

- ▶ Retrospective analysis of patient data
- ▶ Study period Jan 1, 2014 to Mar 6, 2016
- ▶ Patients were initially selected who had a new abnormal AST or ALT value
- ▶ Patients with pre-existing conditions or who failed to meet the definition of mild elevation (<250 U/L) were excluded

# METHODS

- ▶ The initial workup was defined as hepatitis B and C testing, a serum ferritin, and an ultrasound including the liver
- ▶ Patient demographic data was collected and analyzed to evaluate for differences among patient groups

# RESULTS

**11233 unique patients were seen in our clinic during the study period**

**1519 patients (13.5%) had a new abnormal AST or ALT**

**237 patients (2.1%) failed to meet criteria for mild elevation in AST or ALT**

**137 patients (1.2%) were excluded due to pre-existing conditions**

Pre-Existing Condition	Number
Chronic Hepatitis C	34 (24.8%)
Non-Alcoholic Liver Cirrhosis	27 (19.7%)
Other Chronic Non-Alcoholic Liver Disease	23 (16.8%)
Unspecified Hepatitis	14 (10.2%)
Unspecified Liver Disorder	9 (6.6%)
Alcoholic Liver Cirrhosis	3 (2.2%)
Other	38 (27.7%)



# RESULTS

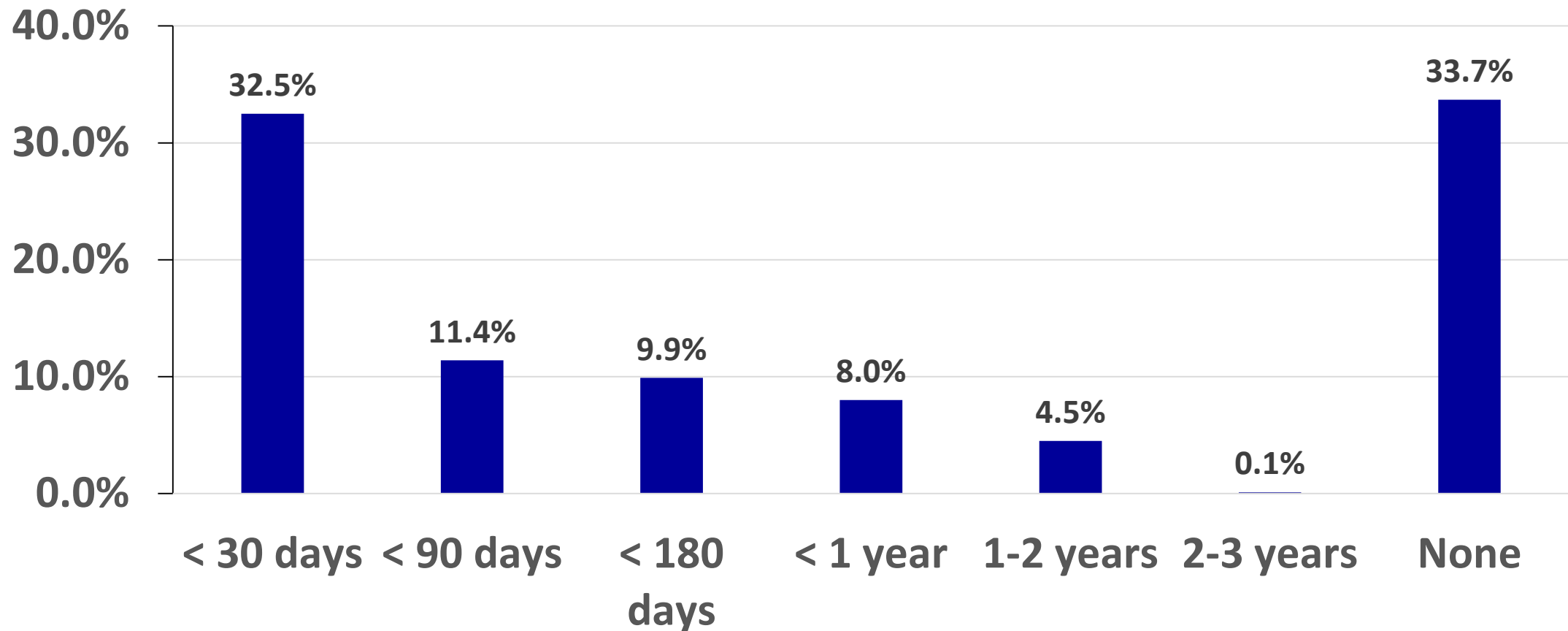
**1145 patients (10.2%) had new unexplained mild elevations in AST or ALT and were included in the study**

<b>Comorbid Conditions</b>	<b>Prevalence</b>
Hypertension	47.7%
Obesity/Morbid Obesity	41.8%
Hyperlipidemia	26.5%
Diabetes Mellitus	24.0%
Overweight	21.0%
Alcohol Use	4.4%

<b>Work-up Test</b>	<b>Number</b>
Creatinine Kinase	427 (37.3%)
Hepatitis C	245 (21.4%)
Hepatitis B	231 (20.2%)
Ultrasound	221 (19.3%)
Ferritin	204 (17.8%)
ANA	88 (7.7%)
EBV	27 (2.4%)

# RESULTS

## Follow-up AST/ALT Testing



# RESULTS

**1145 patients (10.2%) had new unexplained mild elevations in AST or ALT and were included in the study**

**49 patients (4.3%) received the full initial testing**

**679 patients (59.3%) received some of the work-up tests, but not the full testing**

**417 patients (36.4%) received no work-up testing**

**39 patients (3.41% overall) tested positive for chronic hepatitis C (15.9% positive test rate)**

**3 patients (0.26% overall) tested positive for chronic hepatitis B (1.3% positive test rate)**

# RESULTS

## Demographics

Category	Full Testing Group	No Testing Group	P Value
Mean Age	54 ± 12.7	47 ± 17.1	0.0124
Age under 65	40 (81.6%)	402 (85.4%)	0.485
Age 65+	9 (18.4%)	69 (14.6%)	
Male	23 (46.9%)	247 (52.4%)	0.468
Female	26 (53.1%)	224 (47.6%)	

# RESULTS

## Demographics

Category	Full Testing Group	No Testing Group	P Value
BMI <25	10 (20.4%)	70 (14.9%)	0.110
BMI 25-29.9	14 (28.6%)	68 (21.7%)	0.558
BMI 30+	16 (32.7%)	219 (46.5%)	0.0646
Never Smoker	20 (40.8%)	209 (44.4%)	0.640
<b>Quit Smoking</b>	<b>21 (42.9%)</b>	<b>133 (28.2%)</b>	<b>0.0395</b>
Active Smoker	7 (14.3%)	119 (25.3%)	0.0823

# RESULTS

## Demographics

Category	Full Testing Group	No Testing Group	P Value
White	26 (53.1%)	276 (58.6%)	0.458
Black/Other	23 (46.9%)	195 (41.4%)	
<b>Medicare</b>	<b>21 (42.9%)</b>	<b>111 (23.6%)</b>	<b>0.0052</b>
Medicaid	10 (20.4%)	140 (29.7%)	0.171
Private/Other	18 (36.7%)	220 (46.7%)	0.186

# DISCUSSION

- ▶ The overall rate of unexplained mild elevations in transaminases for our residency program was 10.2%, which is higher than the reported national prevalence<sup>2,3</sup>.
- ▶ Hepatitis B and C testing occurred in approximately 1 out of 5 patients in this population.
- ▶ Only 4.3% of patients received the recommended initial testing.
  - ▶ Multifactorial physician and patient factors may limit generalizability

# DISCUSSION

- ▶ There were 39 confirmed cases of chronic hepatitis C.
  - ▶ The overall prevalence in this clinic population will range between 3.4% and 15.9%.
  - ▶ This is significantly higher than the 1.8% overall prevalence reported for the general US population<sup>5</sup>.



# DISCUSSION

- ▶ Significant demographic characteristics:
  - ▶ Patients were significantly older in the full testing group.
  - ▶ Medicare patients received proportionally more of the full workups that were done.
  - ▶ There was a significant population of disabled patients in the full testing group (24.5%).

# LIMITATIONS

- ▶ Incomplete data in the EMR
- ▶ Unrecognized external tests and studies
  - ▶ Unreliable access to certain data structures
- ▶ Cannot determine causation for associations

# CONCLUSIONS

- ▶ Mild asymptomatic transaminase elevations are common in our residency population
- ▶ Hepatitis C is an important cause for this laboratory abnormality
  - ▶ Screening for hepatitis C in all patients with mild transaminase elevations may be warranted
- ▶ Workup for this laboratory abnormality is a significant quality improvement target

QUESTIONS

# REFERENCES

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