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# **The Changing pathogenesis of liver cancer in Hawaii over three decades**

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# The Changing pathogenesis of liver cancer in Hawaii over three decades



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## Background

- Worldwide trends support the increasing contribution of hepatic steatosis on the incidence of HCC
- This study investigates if similar trends are seen in Hawaii, where the incidence of HCC is higher than most of the United States

## Methods

- Data from 1651 patients with HCC from 1991 to 2023 including 60-70% of Hawaii's liver cancer cases.
- Data collected included demographics, risk factors, disease etiology, treatment and outcome.
- Time intervals were used to compare the impact of each of these risk factors to evaluate for changes in risk factors over time.

## Results

- Overall increase in proportion of HCC cases with NAFLD/NASH alone or NAFLD/NASH with cirrhosis.
- HCC cases presenting with cirrhosis alone decreased.
- There were increases in proportion of HCC cases with NAFLD/NASH and metabolic risk factors including obesity, type 2 diabetes, hyperlipidemia, and hypertension.
- Cases with a history of smoking remain high.
- HCV-associated cases increased through 2015 while HBV-associated cases decreased through 2020.
- There was no significant change in the proportion of alcohol-associated cases.

Diagnosis Year	NAFLD/NASH (p<0.0001)	Hyperlipidemia (p<0.0001)	Diabetes (p<0.0001)	Obesity (p<0.0001)	Excess Alcohol (p<0.0001)	HBV (p<0.0001)	HCV (p=0.0003)	Smoking (p<0.0001)	Hypertension (p=0.0039)
1993-1997 (n=84)	3.6	6.6	32.9	6	35.7	51.2	28.2	41.1	40
1998-2002 (n=162)	8.6	10.3	26.5	8.6	38.3	42.6	31.5	52.9	58.1
2003-2007 (n=234)	5.6	18.9	25.2	17.1	46.2	40.6	42.7	59.4	49
2008-2012 (n=351)	12.8	26.5	35.3	23.1	43.6	38.6	40.5	63	59.4
2013-2017 (n=436)	15.3	32.8	42.7	27.5	43.5	28.6	46.7	67.2	62.4
2018-2022 (n=370)	29	51.6	45	27.3	43.4	32.2	34.3	65	65.4
Overall (n=1,613)	15.2	30.4	37	22.1	43	35.8	39.6	62.1	60.3

## Discussion

- The trend of HCC cases across the United States as a result of metabolic disease mirrors the increased trend in Hawaii. This is likely due to the increase prevalence of obesity which has doubled in Hawaii over this time period.
- Cases of HCC from HBV are overall improving but remain problematic. Despite the availability of vaccines, HBV not only contributes to ongoing incidence of HCC but is associated with a high mortality rate in Hawaii that is three times the United States average.

## Conclusions

- HBV remains a large contributor to HCC in Hawaii while HCC is decreasing
- NAFLD/NASH and metabolic risk factors associated with HCC have increased in Hawaii the worldwide trend
- Efforts will need to be made to manage these metabolic factors if we are to meaningfully decrease the impact of these trends.

## Acknowledgements

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