

The Color of Bile, PBC and AIH in Minority Women

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Disclosures

A decorative graphic at the top of the slide features a network of interconnected nodes and lines. The nodes are represented by circles of varying sizes and colors, including shades of orange, red, and grey, set against a light background. The lines connecting them are thin and grey, creating a complex web-like structure.

- I have nothing to disclose.

PBC and AIH: A Strong Female Predominance

PBC

- 9:1 ratio F:M historic
- 4:1 ratio F:M modern
- Not a disease of children (role of hormones?)
- Genetic and environment interplay (UTIs? Xenobiotic theory).
- Traditionally (mistakenly) was thought to be a disease of White Europeans
 - Northern England, Australia etc

AIH

- 3.6:1 ratio F:M
- Can present in children
- Genetic predisposition multiple HLA subtypes: DR3, DR4 etc
- Environment interplay (xenobiotics).
- Recognized in all races early on:
 - Recent recognition of disparities & varying severity and outcomes based on race/ethnicity.

Prevalence of AILD is Increasing

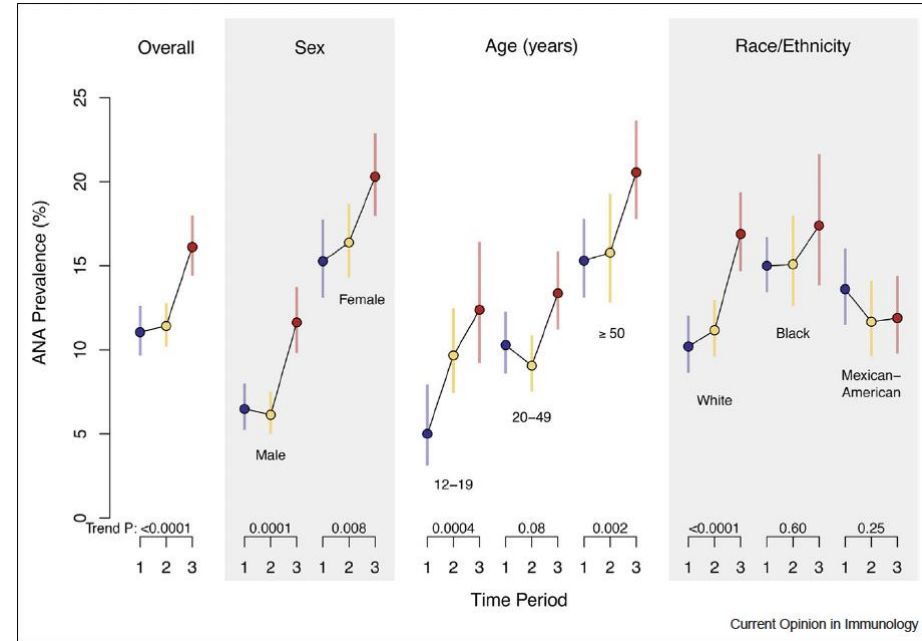
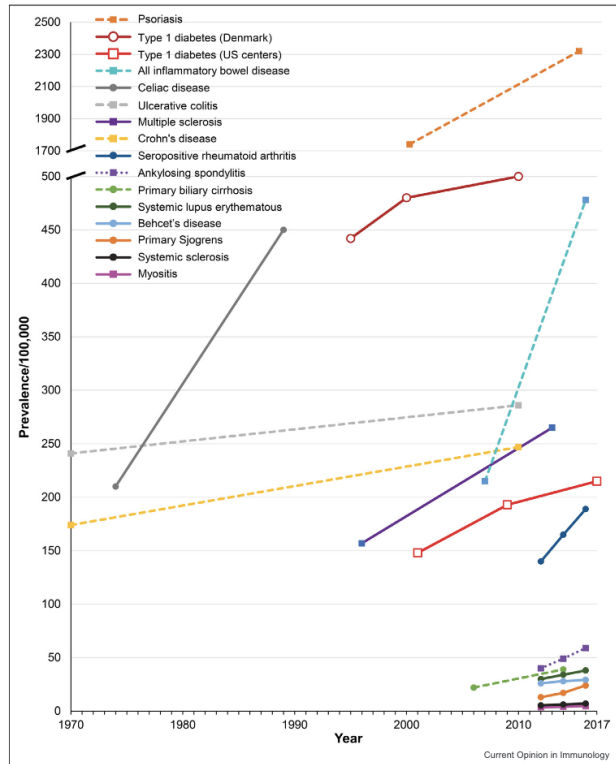
PBC

- Until the 2010s, almost exclusively reported in Europe, North America, Australia, NZ → 10-22/100,000
- Previously reported as rare in Asia
- Since 2020 Asian countries reported PBC 4.7 South Korea, 5.6 Hong Kong and 49 per 100,000 in Southern China
- In Japan PBC tripled from 11.6 in 2004 to 33.8 per 100,000 in 2016
- US FOLD Study data prevalence of PBC (2003-2014)
 - 29/100,000 White
 - 20/100,000 Black
 - 22/100,000 ASIAN

AIH

- Swedish study from 1998 10.7/100k
- Denmark 23.9/100k from 1994-2012
- US study from 2014-2019 reported prevalence of 31/100,000
 - 13% Black
 - 2% Asian
 - 1% Latinx
- Pediatric incidence lower 0.2-0.4/100k
- Reported high incidence of AIH in Alaska Native 43/100,000
- Increasing world-wide prevalence of AIH up 50% over past decade!

Autoimmune Disease Prevalence Increasing

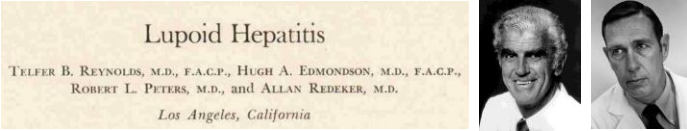
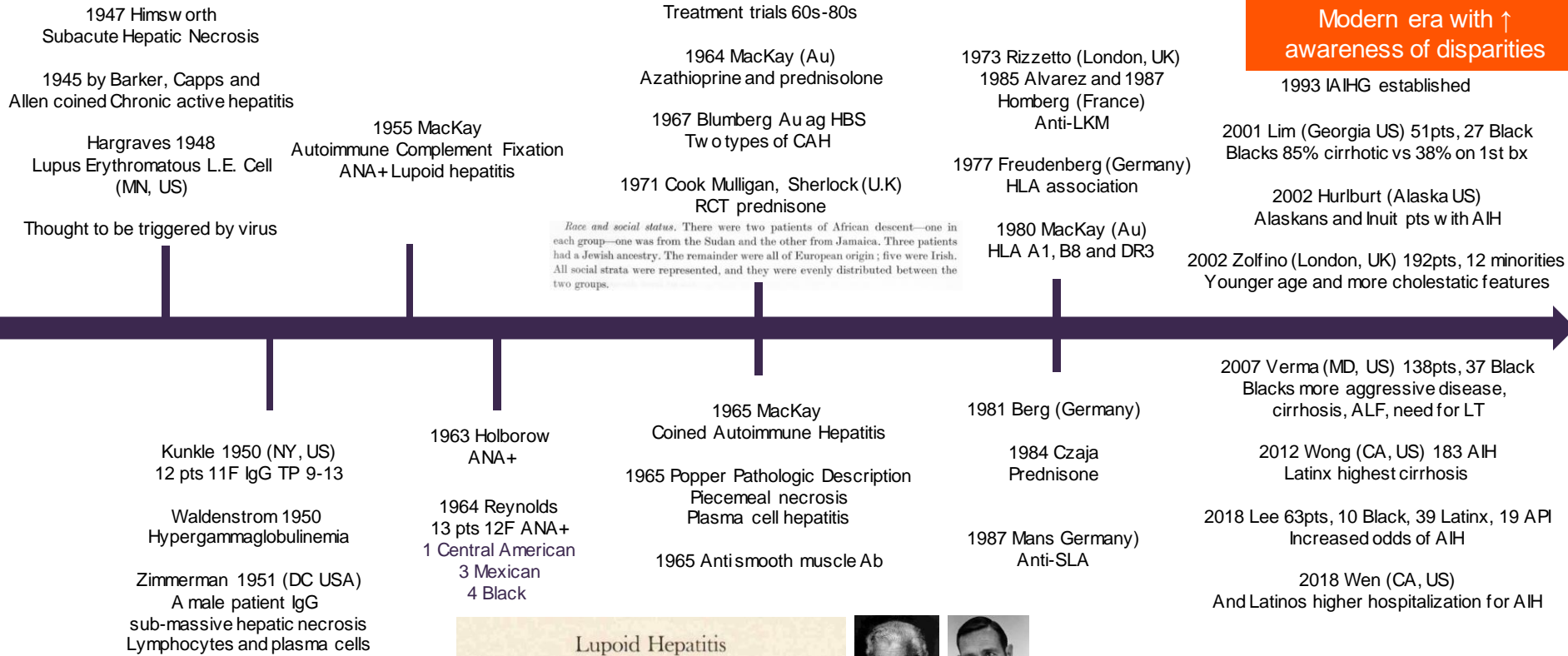


Period 1 (1988–1991, blue), period 2 (1999–2004, yellow), and period 3 (2011–2012, red).



AIH

History of AIH



Minorities and AIH

- Minorities have a **higher OR for the diagnosis of AIH** after adjusting for age and sex.
- Blacks and Latinx patients **have a higher rate of hospitalization** for AIH relative to their census population.
- Alaskan Natives have a **high prevalence** of AIH 43/100,000 and more **jaundice at presentation**.
- Hispanics more commonly *present with cirrhosis*:
 - Our USC cohort 28% had \geq F3 at presentation, but 19% had PBC-AIH variant and among those 60% had advanced fibrosis at presentation.
- Black patients with AIH
 - **Present at a younger age.**
 - **Have more severe disease.**
 - **More cirrhosis on index liver biopsy.**
 - **Higher rates of liver failure, LT and death.**
 - **The overall mortality in black patients (24.3% versus 6.2%, P 0.009).**

	Adjusted OR	95% CI	p-values
Race			
White	REF	REF	REF
Black	9.6	(1.8, 177.5)	0.03
Latino	25.0	(5.3, 448.3)	< .01
API	10.8	(2.2, 195.8)	0.02
Other	0.9	(0.0, 22.1)	0.92
Sex			
Male	REF	REF	REF
Female	5.8	(2.9, 13.4)	< .01
Age	1.0	(1.0, 1.0)	0.10

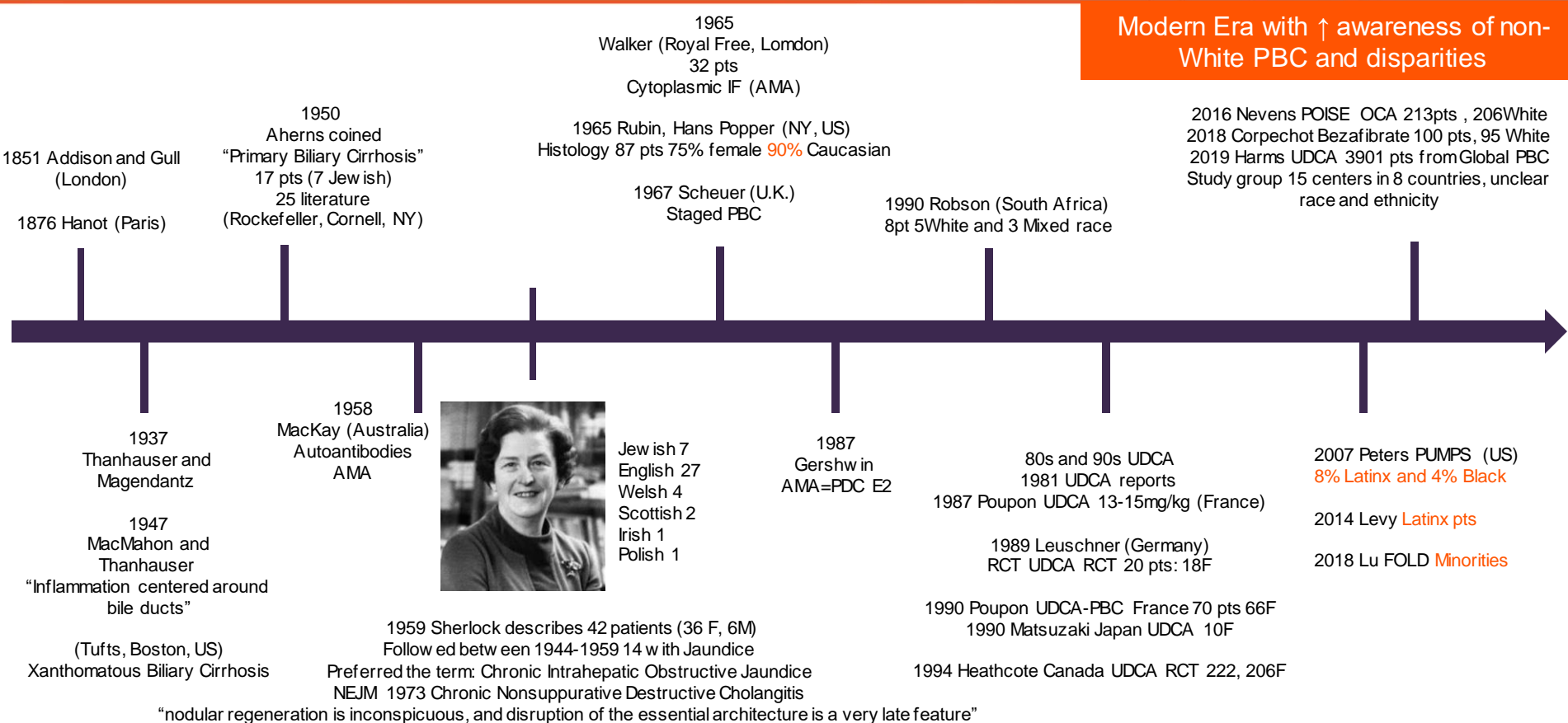
Multivariable Model of Factors Associated with AIH Diagnosis



PBC

History of PBC

Modern Era with ↑ awareness of non-White PBC and disparities

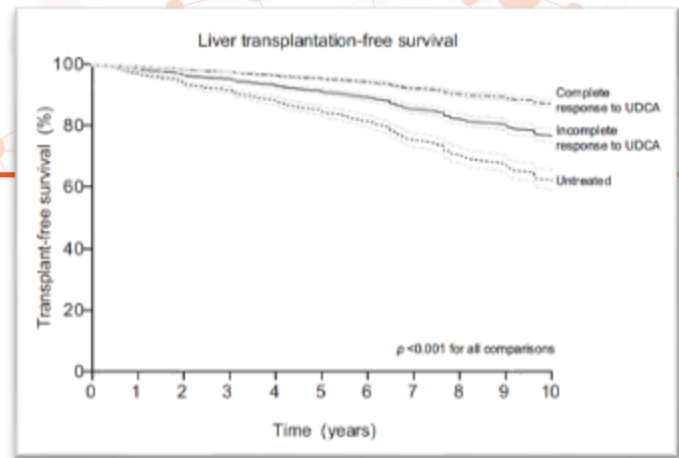


Minorities and PBC

- Latinx and Black patients are more likely to present with decompensated liver disease.
 - Black patients present **younger**.
 - Lower odds of receiving UDCA! Possible misdiagnosis?
 - Black pts higher odds of **mortality** (OR 1.34 95% CI 1.08-1.67) which **reversible** with UDCA.
 - Latinx pts more **advanced disease, less responsive to UDCA, higher mortality**.
 - Latinx pts **more variant/overlap** disease.
 - AAPI and AI **high risk and LT and death, less UDCA use, least studied**.
- All minorities have **higher odd of hospitalization** (OR 1.9 95% CI 1.7-2.1).
- Lower income, less insured, lower literacy level.
- Less liver transplant.
- Latinx pts higher MELD at LT and high waitlist mortality.
- **All patients of color are under-represented in clinical trials.**

Raising Awareness

- Misdiagnosis and under-diagnosis.
- UDCA improves LT-free survival.
 - PBC median time to \geq F3 \rightarrow 2 years.
 - 50% of untreated PBC patients progress to cirrhosis by 4 years.
 - Cirrhosis at presentation worse prognosis for both AIH and PBC.
 - Early diagnosis and access to care and regular health maintenance.
- Etiology? Interplay of biology and environment including physical environment (toxic waste), social, and economic factors.



- Health behaviors (diet, exercise, tobacco, alcohol, drug use)
- Pathogen exposure
- Water and air quality
- Toxins, heavy metals, medications, herbals
- Community resources (parks, gyms, healthcare centers)

Physical Environment

Biology

- Culture/language
- Education
- Health literacy
- Racism, discrimination, stress
- Stereotype threat
- Integration/segregation
- Coping strategies, support
- Laws and policies (immigration status, law enforcement)
- Violence (domestic, community)
- Threat of deportation

Social Factors

Economics

- Genetic/hereditary predisposition (HLA polymorphisms)
- Sex
- Immune mechanisms, microenvironment
- Microbiome
- Epigenetic modifications
- Cellular metabolites, proteins and organelle stress
- Adaptation and cell death

- Income and wealth
- Employment opportunities
- Neighborhood conditions
 - Safe housing and transportation
 - Access to nutritious food
 - Access to quality public education
- Insurance access
- **Health care access**
 - **Primary care and regular labs**
 - Specialty care/transplant centers
 - Mental health
 - Quality of care, Implicit bias of providers
 - Immunizations

Work To Be Done in PBC and AIH

Clinical Care

- Cultural and linguistic competency of providers.
- ↑ Recruiting minority providers
- Educate providers about AIH and PBC in racial and ethnic minorities
- ↑ Telemedicine, ↑ access to hepatologist provider networks

Research

- Need biological data
- Study clinical outcomes systematically in minorities
- ↑ SDOH research
- Enroll minorities in RCTs
- Diversify research staff, use multilingual team (Spanish, Mandarin etc)
- Collaborate → rare disease

Public Policy

- ↑ Social workers
- ↑ Health coverage for indigent and immigrant patients
- ↑ Community health clinics, better access to specialty care (telehealth?)
- Access to screening (incidentally abnormal labs)
- Political advocacy

Thank you!

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