



# 3<sup>rd</sup> Paris NASH Symposium

French-US Meetings

July 6 & 7, 2017

Institut Pasteur - Paris

Organized by  
Arun Sanyal & Lawrence Serfaty

Virginia Commonwealth University School of Medicine, Richmond, Virginia, US  
Hôpital Saint-Antoine, APHP, Inserm, Université Pierre & Marie Curie, Paris, France

With the partnership of



# Disease burden report for Europe

*Dr. H. Razavi*

*July 6, 2017*



# Disclosure:

This work with funded by a multi-sponsored research grant from Intercept, Gilead and Boehringer Ingelheim. The funders had no influence over the design, the implementation, or the outcomes of the study.

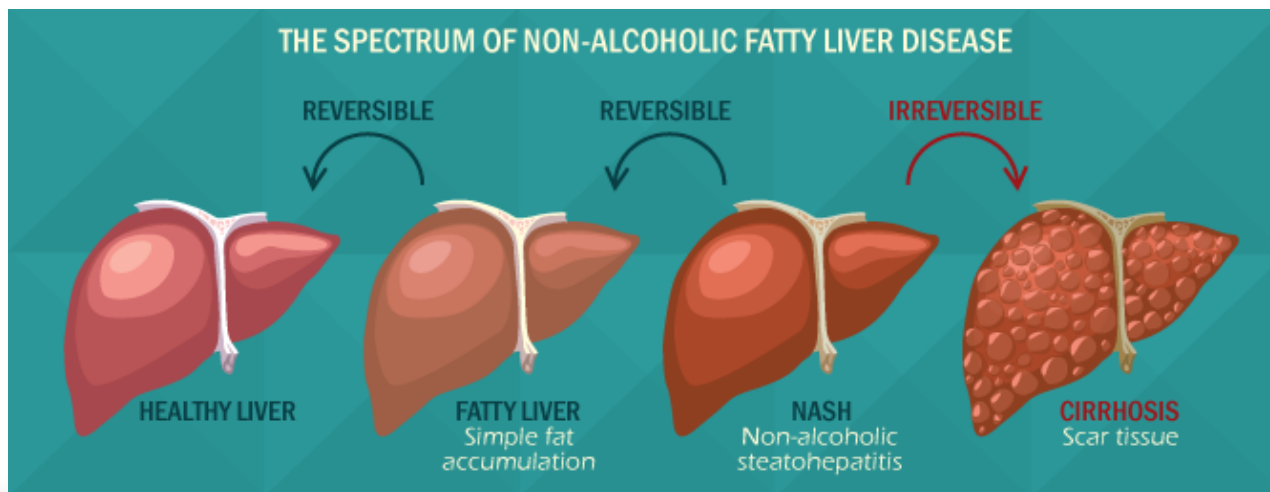
H. Razavi has not received any personal remuneration for this or any other project.

# This work would not be possible without the inputs of the following experts

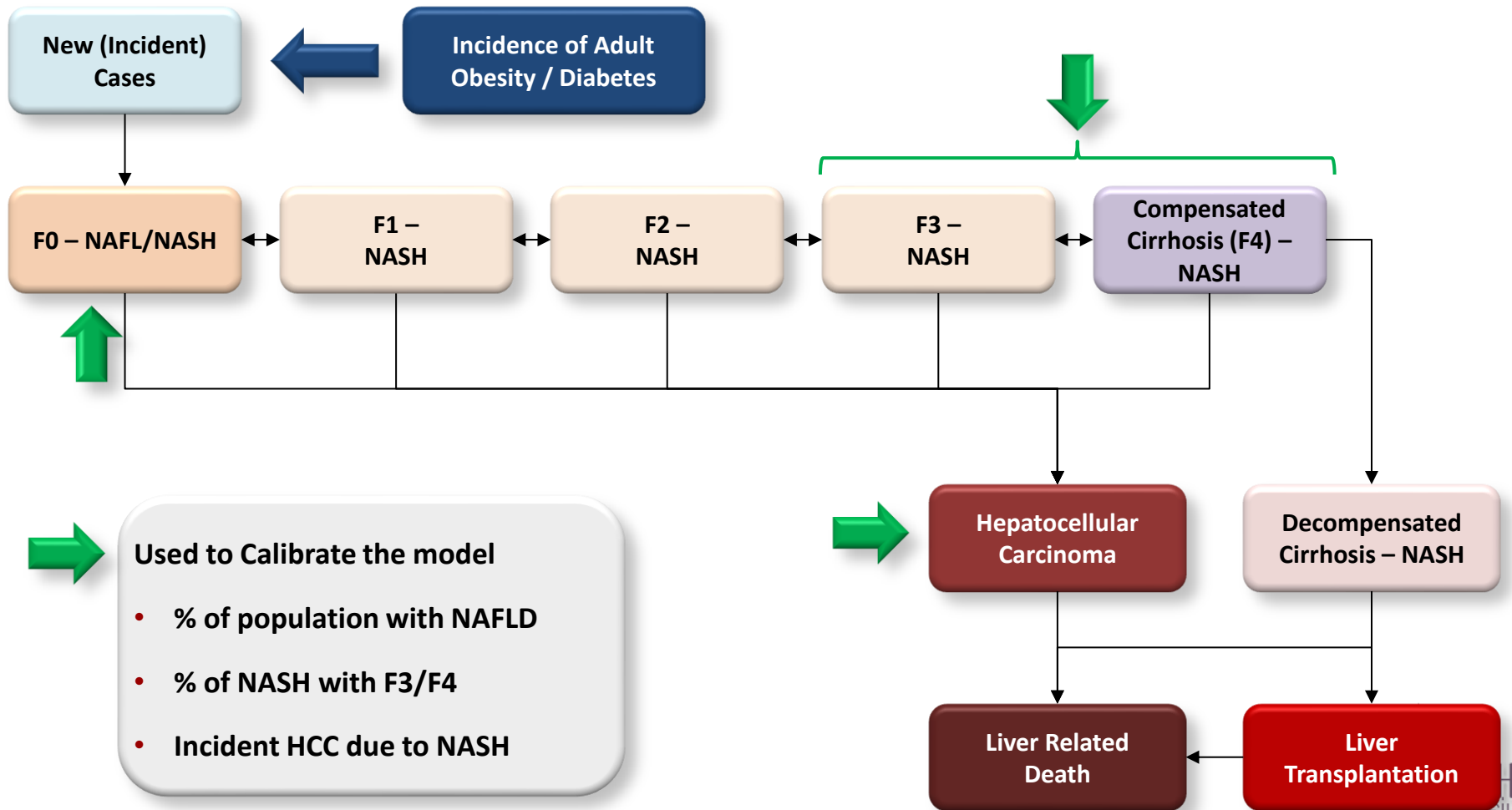
- France – Drs. Vlad Ratziu & Lawrence Serfaty
- Germany – Drs. Andreas Geier, Michael Manns, Christian Trautwein & Stefan Zeuzem
- Italy – Drs. Stefano Bellentani, Antonio Craxi, Giulio Marchesini & Salvatore Petta
- Spain – Drs. Maria Arias-Loste, Joan Caballeria, Javier Crespo & Manuel Romero Gomez
- United Kingdom – Drs. Quentin Anstee, Christopher Day, Jude Oben & Philip Newsome

# Methodology

- Convened a panel of NAFLD experts in each country
- Collect published epidemiology data for NAFLD
- Gathered country specific rates for obesity and diabetes to estimate incidence
- Used published work to estimate progression rates for non-alcoholic fatty liver (NAFL) and nonalcoholic steatohepatitis (NASH)
- Modeled the disease progression
- Validates the forecasts against reported NASH related HCC cases



# The Markov model took into consideration the reversible nature of the disease



# Prevalence assumptions across countries

	<b>% of Total Population ≥15+ with NAFLD</b>	
<b>US</b>	30%	NHANES III - Lazo 2013, Younossi 2015
<b>France</b>	25%	Poynard 2010, Ratziu 2012, Blachier 2013
<b>Germany</b>	25%	Haring 2009
<b>Italy</b>	29%	Bedogni 2005
<b>Spain</b>	25%	Caballeria 2010
<b>UK</b>	25%	Armstrong 2012
<b>China</b>	21%	Fan 2009, Fan 2013

## NASH

- 15.6% of 776 aircrew who died in 525 fatal aircraft accidents had fatty liver and 19.2% of NAFLD cases had NASH (Ground 1990 as reported in Grant 2004)
- 328 cases completed ultrasound at Brooks Army Medical center; 26.5% of NAFLD cases had NASH (Williams 2011)
- Among 576 liver biopsies with definite NASH, 21% were classified as F3/F4 (Kleiner 2005)

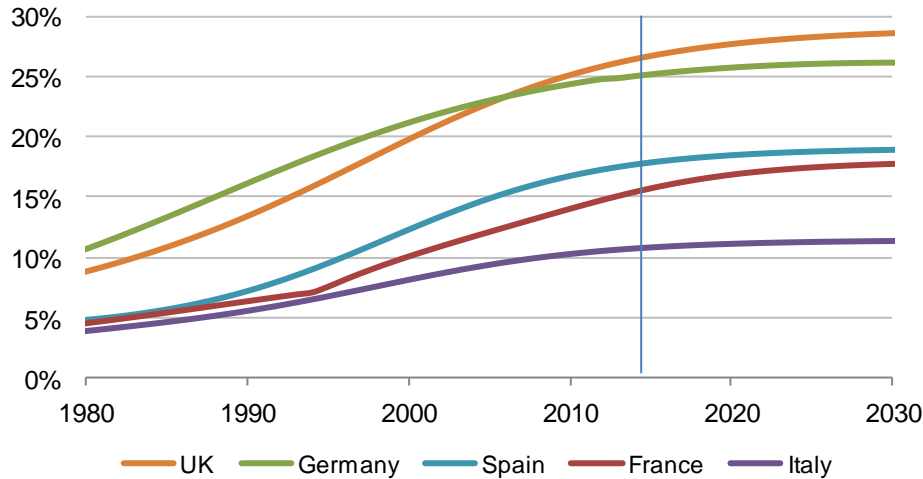
# NASH prevalence and obesity in the EU5 are lower than the US

	<b>BMI≥30</b>	<b>% of total population ≥15+ with NAFLD</b>	<b>% of NAFLD with NASH</b>	<b>% of total population ≥15+ with NASH</b>
<b>US</b>	28%	30%	20%	6.3%
<b>France</b>	16%	25%	16%	4.2%
<b>Germany</b>	19%	25%	18%	4.6%
<b>Italy</b>	16%	28%	17%	4.9%
<b>Spain</b>	18%	25%	17%	4.4%
<b>UK</b>	21%	25%	18%	4.8%
<b>China</b>	4%	20%	13%	2.8%
<b>Japan</b>	4%	20%	16%	3.4%

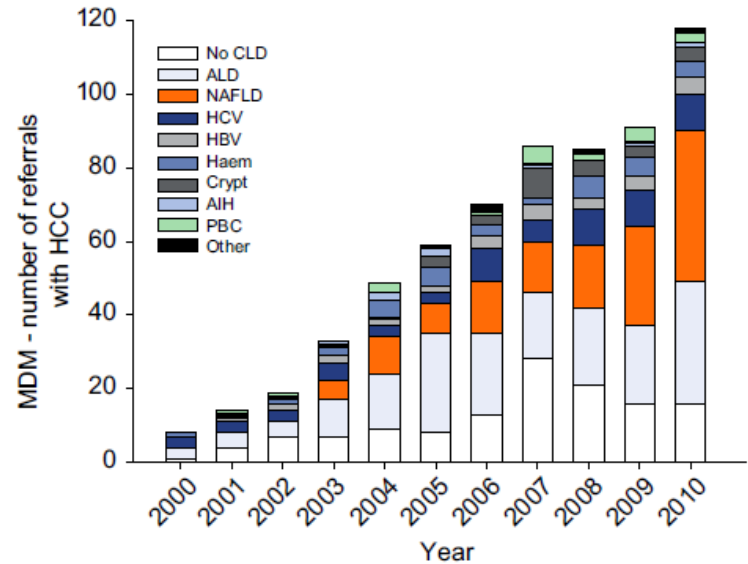


# Obesity has been increasing in the European countries

Adult Obesity Rate



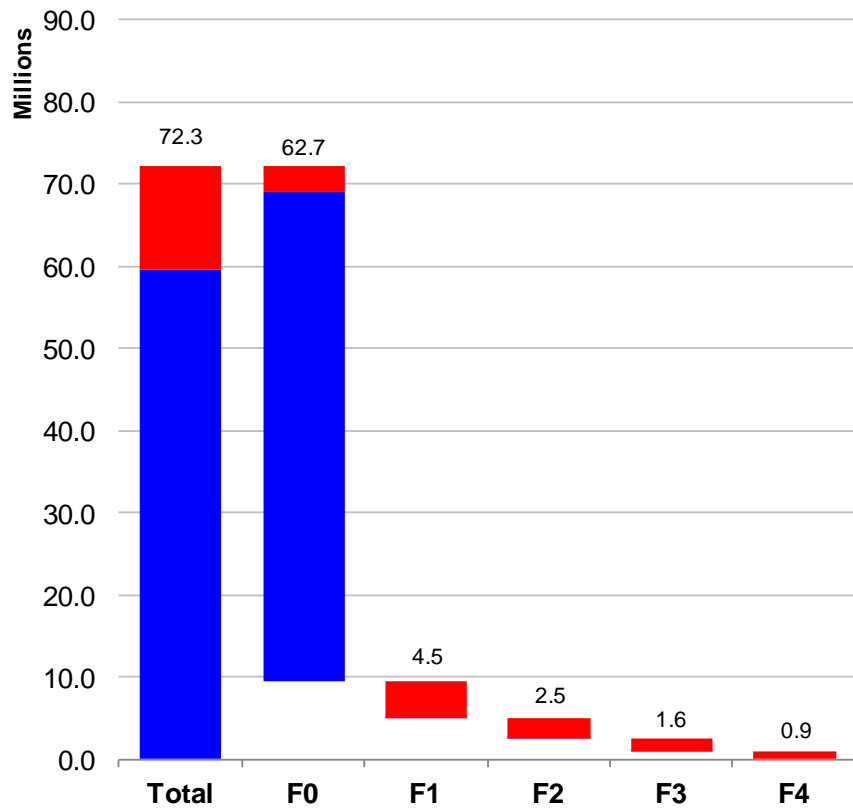
Adult obesity have been increasing but the rate of increase has (and is projected to) slowed.



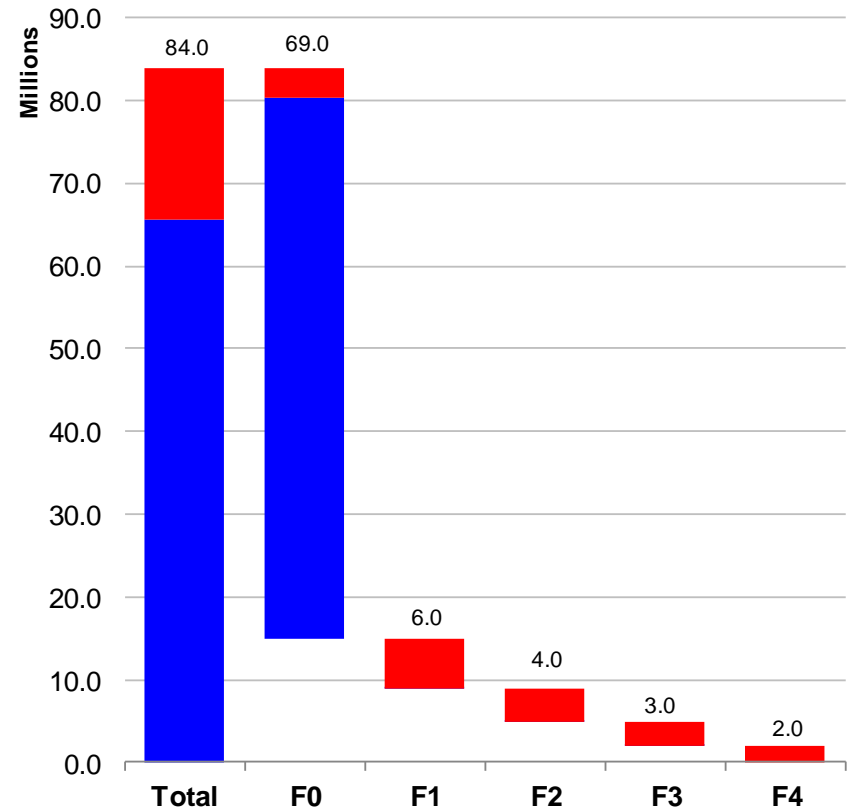
UK – The proportion of HCC attributable to NAFLD in Newcastle was 34.8% in 2010, a tenfold increase as compared to 2000 (Dyson 2014)

# NASH population is expected to grow by 45% while cirrhotic cases will increase by 120% in EU

EU5, 2016



EU5, 2030

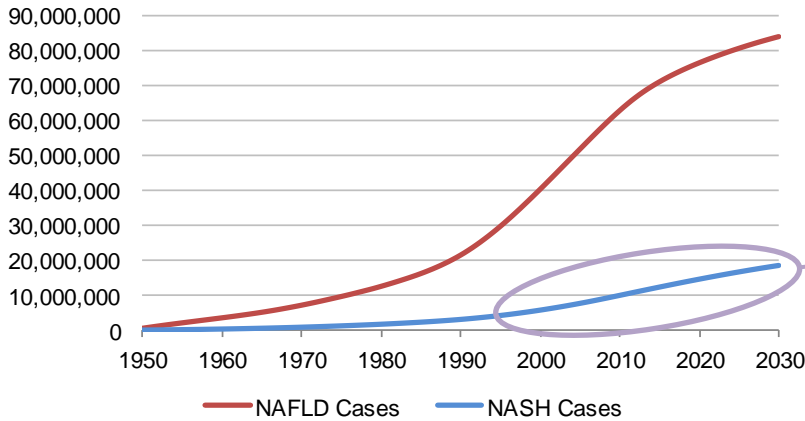


 NASH

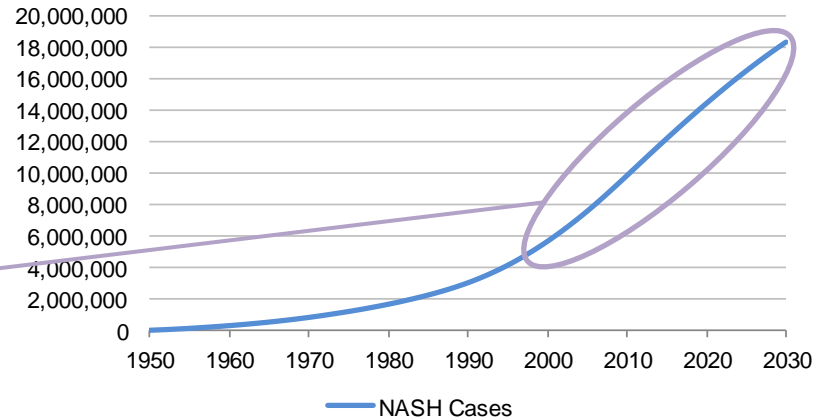
 NAFL

# The increase in NAFLD cases is slowing down but NASH, HCC, and liver related deaths will increase

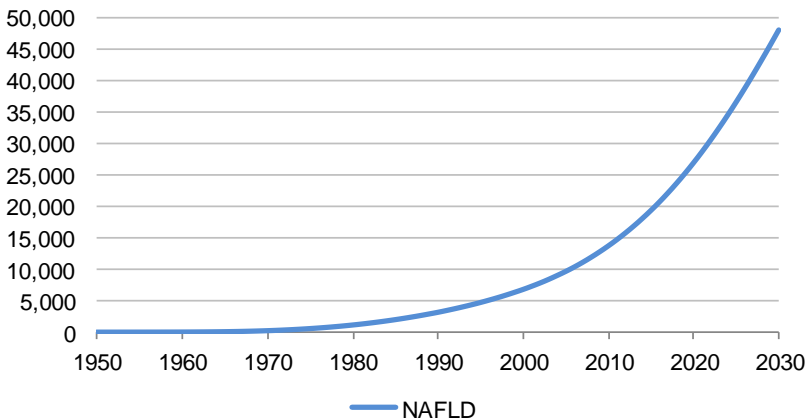
### NAFLD & NASH Cases - EU5



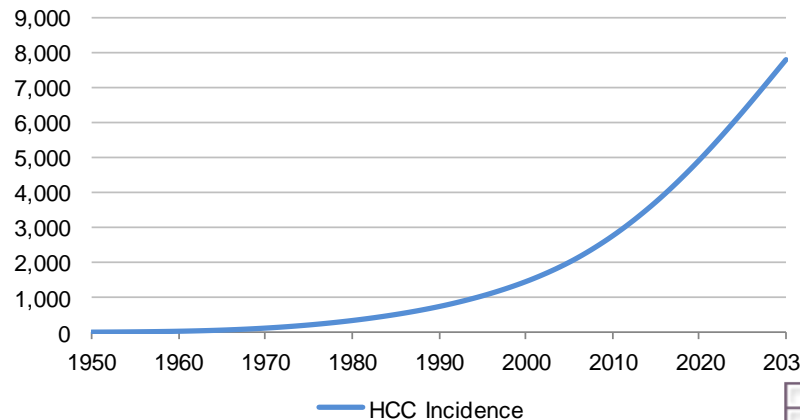
### NASH Cases - EU5



### Annual Liver Related Deaths - EU5

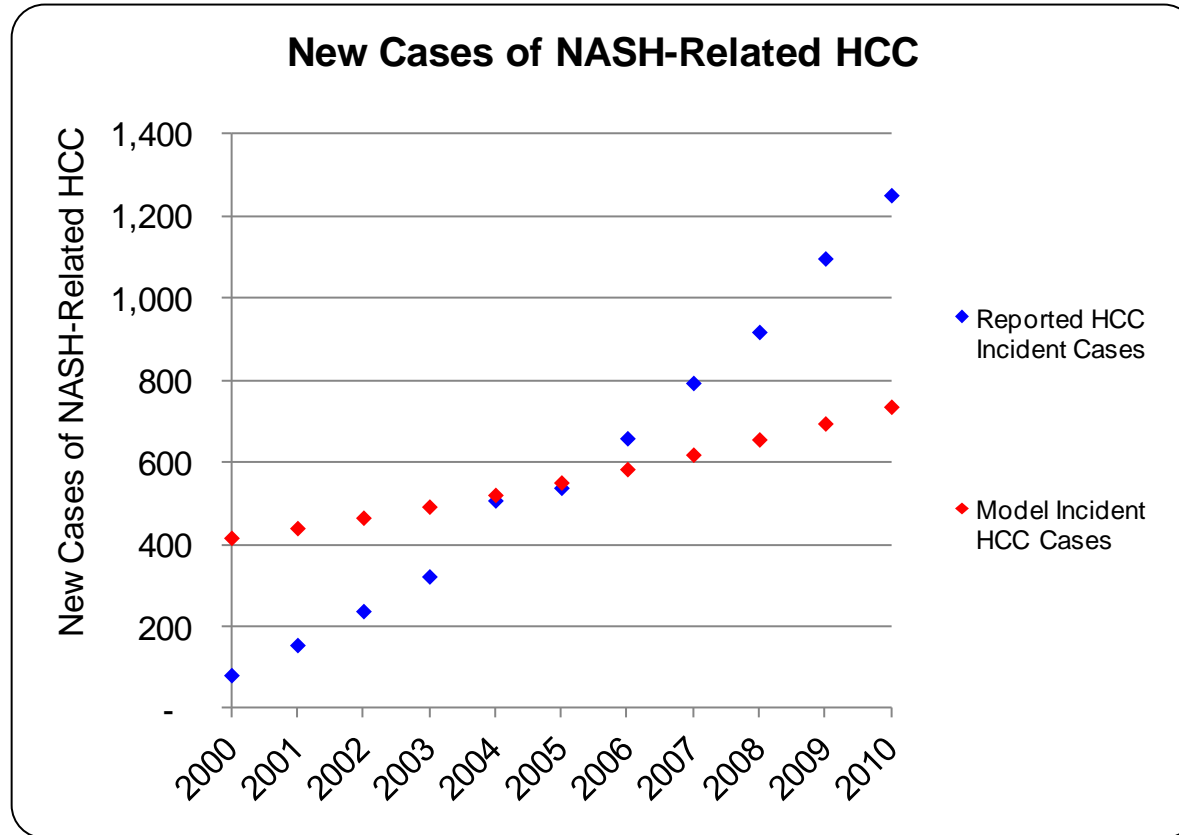


### Annual HCC Incidence - EU5



# Reported vs modeled HCC cases - UK

- 2000-2010 model HCC incidence as compared to estimates from Dyson 2014:



- Cancer Research UK. 2016. Cancer Statistics for the UK. Available at: <http://www.cancerresearchuk.org/health-professional/cancer-statistics>  
- Dyson J, Jaques B, Chattopadhyay D, Lochan R, Graham J, Das D, et al. Hepatocellular cancer: the impact of obesity, type 2 diabetes and a multidisciplinary team. *J Hepatol.* 2014;60(1):110-7.

# Conclusions

- In the absence of interventions, advanced liver diseases associated with NAFLD will more than double over the next 15 years while total NAFLD cases will increase by 16%
- NAFLD is reversible – diet and exercise can reverse liver fibrosis
- Interventions are required to manage the increase in future disease burden
- Countries should promote awareness of NAFLD and strategies to reduce the disease burden (including weight loss and diet)
- These same interventions will also have an impact on other non-communicable diseases including cardiovascular diseases and diabetes
- Better reporting systems are required to track NAFLD related disease burden to measure progress



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