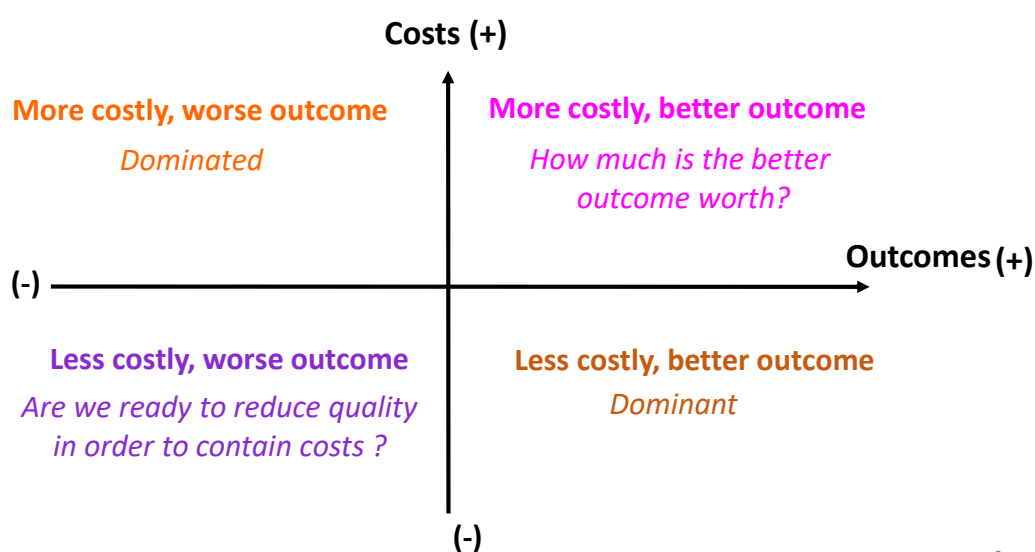


# Cost-effectiveness learnings with NOACs: the European perspectives

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## Economic evaluation: *Cost-Effectiveness plane*

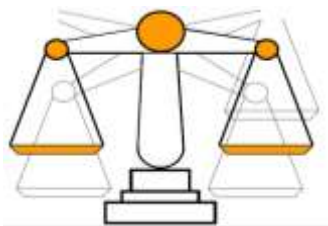


## Economic evaluation: Cost per QALY

### Costs

- Acquisition and administration cost of drugs (I.V. drugs)
- Hospitalization costs (transportation, adverse events)
- Physician fees (monitoring, home visit)
- Biology
- Medical Imaging
- Etc.

↓  
Euros  
(€)



**Incremental Cost-Effectiveness Ratio (ICER) = Cost per QALY gained**

$$ICER = \frac{Cost_{VKA} - Cost_{NOAC}}{Efficacy_{VKA} - Efficacy_{NOAC}}$$

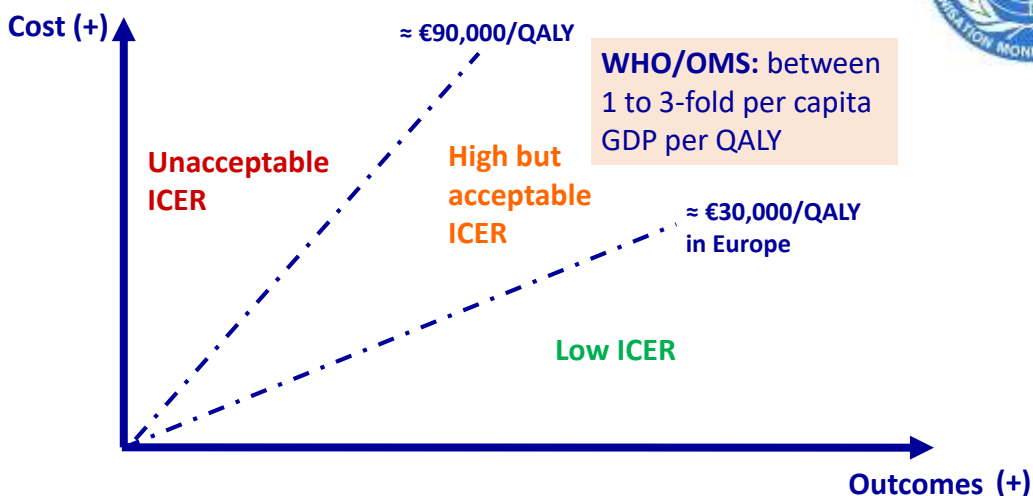
### Outcomes/Efficacy

- Events avoided (stroke, myocardial infarction)
- Death or tumor progression delayed (Overall survival, progression-free survival)
- Adverse events avoided (chemotherapy-induced anemia, alopecia, bleeding)
- Etc.

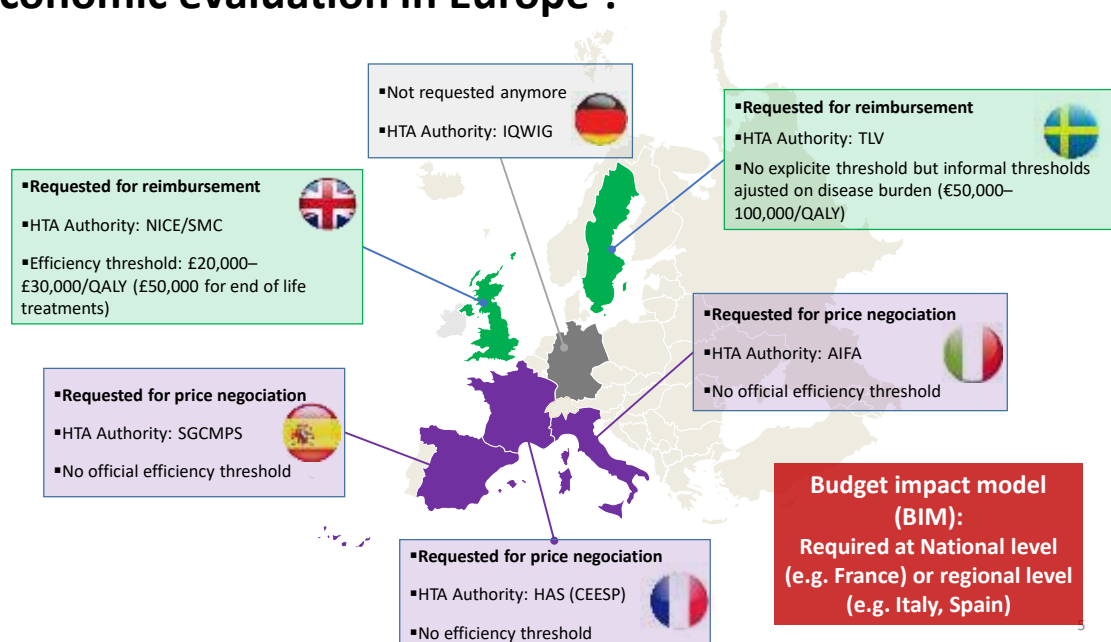


Quality adjusted life years  
(QALY)

## Economic evaluation: Efficiency threshold



## Economic evaluation in Europe ?



## What is the cost of atrial fibrillation (AF) ?



€5,000 to €30,000 / stroke [1] according to type (ischemic or hemorrhagic stroke) and severity  
 → €360 millions / year in France [2]

€8,000 to €35,000 / year for 'post-stroke' cost according to handicap [3]



[1] Cotté FE, et al. J Stroke Cerebrovasc Dis. 2014 Feb;23(2):e73-83. [2] Cotté FE, et al. Europace. 2016 Apr;18(4):501-7. [3] De Pourvoirville. Archives of Cardiovascular Diseases Supplements, 2016.

# What is the real cost of stroke prevention?



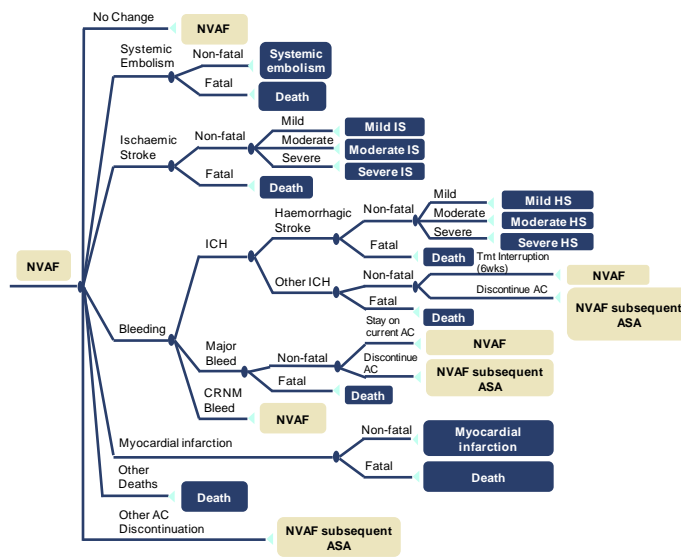
€40 millions/year for VKA treatment  
 AND  
 €160 millions/year for 20 millions INR tests  
 in France [1]

€50 millions/year for major bleeding (7,000 hospitalizations/year) in French AF patients [2]



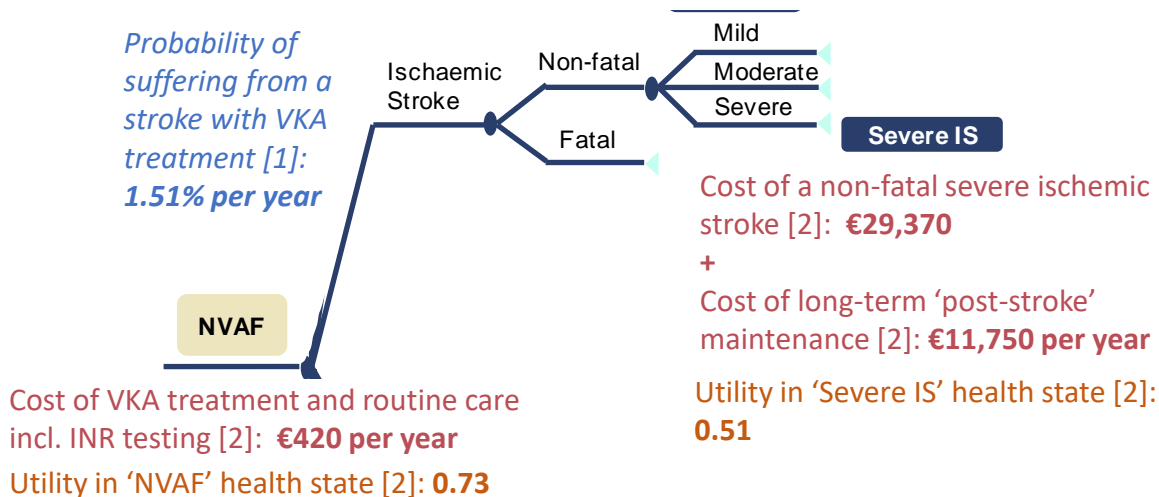
[1] Delourmeau B. Archives of Cardiovascular Diseases Supplements, 2016. [2] Cotté FE, et al. Europace. 2016 Apr;18(4):501-7.

## Economic evaluation in stroke prevention: French perspective



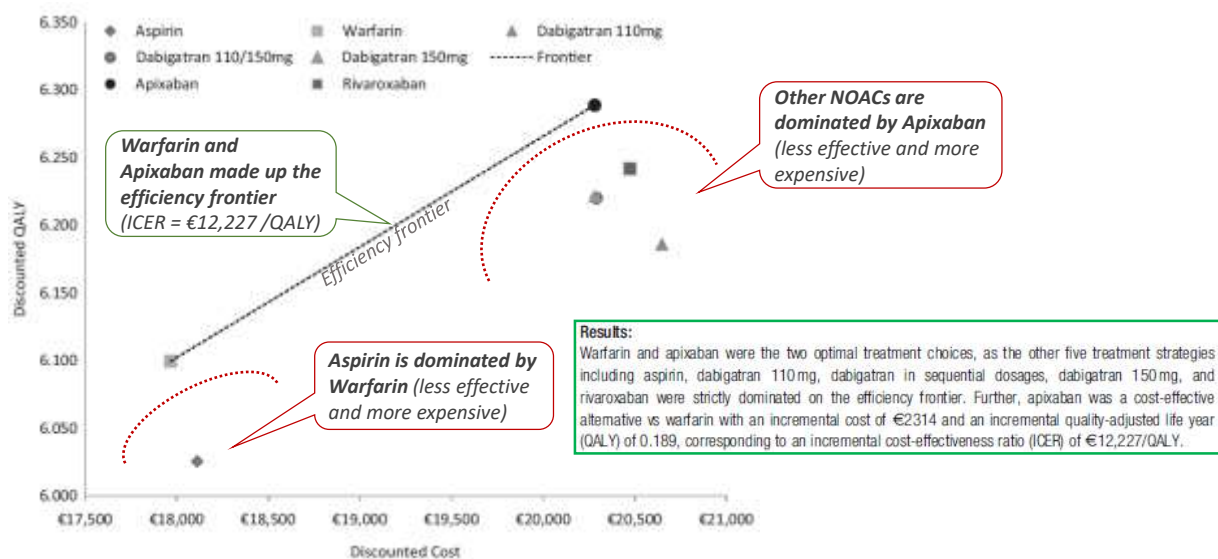
Lanitis T, Cotté FE, Gaudin AF, Kachaner I, Kongnakorn T, Durand-Zaleski I. J Med Econ. 2014 Aug;17(8):587-98

## Economic evaluation in stroke prevention: *French perspective*



[1] Granger et al. NEJM 2011 (ARISTOTLE study) [2] Lanitis et al. JME. 2014

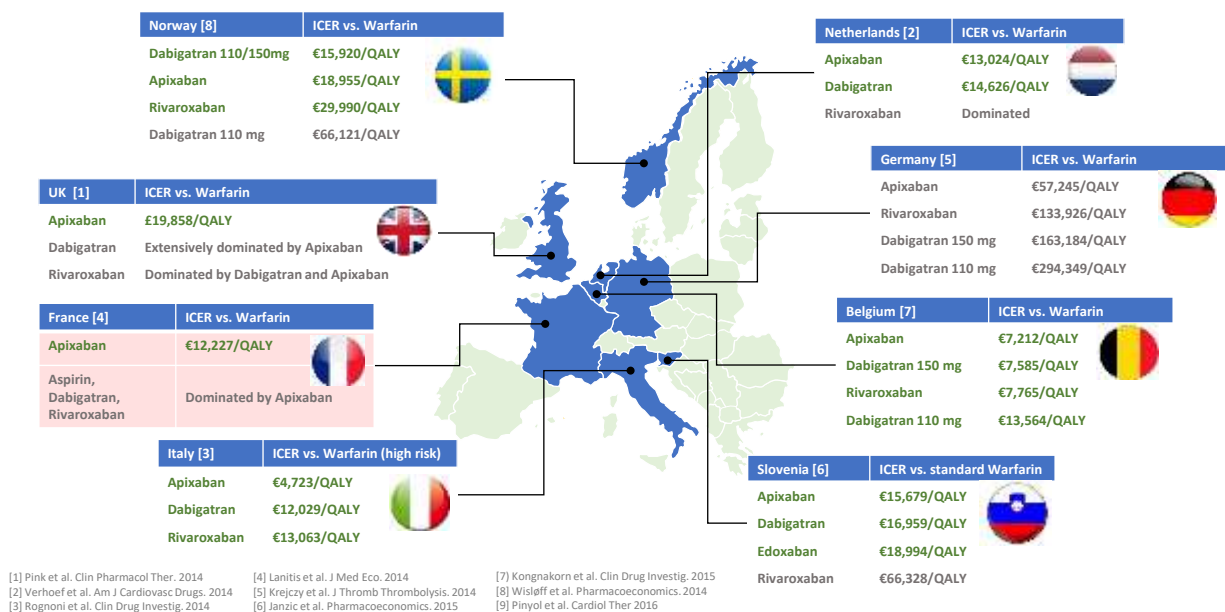
## Economic evaluation in stroke prevention: *French perspective*



Lanitis T, Cotté FE, Gaudin AF, Kachaner I, Kongnakorn T, Durand-Zaleski I. J Med Econ. 2014 Aug;17(8):587-98

## Cost-utility studies evaluating multiple stroke prevention strategies in AF patients

(based on review of Pinyol et al. *Cardiol Ther*, 2016 [9])



## Economic evaluation in stroke prevention: *Conclusions*

- **Burden of AF is huge** because of both stroke and prevention costs and **economic evaluation of new drugs, including NOACs**, is becoming increasingly important in European countries for reimbursement or price negotiation;
- Among country specific cost-utility studies, all but one (i.e. Germany) concluded that at least one of the **NOACs provided an acceptable ICER (< €30,000/QALY)**, ranging from €4,723/QALY in Italy to 19,858/QALY in UK;
- For seven in eight studies, **Apixaban was the most efficient strategy** because it was fund dominant (i.e. France, UK) or had a better ICER than other NOACs (i.e. Italy, Netherlands, Germany, Belgium, Slovenia).