



**19^{ème} Rencontre de l'Association Franco Méditerranéenne de Cardio-
Pneumologie en collaboration avec la Société Algérienne
d'Asthmologie, d'Allergologie et d'Immunologie Clinique
Oran, du 24 au 28 avril 2024**

Jeudi 25 avril 2024

Modérateurs : Dr Pierre ESCOURROU et Dr Mohammed ALIATI		
08h00 – 08h40	Le mot du Président	Dr Laurent SOUKARIE
	Session Sommeil	
08h40 – 09h00	Retour d'expérience sur la prise en charge des pathologies du sommeil en Algérie	Dr Mohamed BELLAMDANI & Dr Assia BESSAH
09h00 – 09h20	SAS et syndrome métabolique	Dr MAHMOUDI
09h20 – 09h40	Le sommeil, un nouveau facteur de risque cardio-vasculaire	Dr Pierre ESCOURROU
09h40- 10h00	Endoscopie du Sommeil	Dr Lilia POULAIN
10h00-10h20	Bipolarité et troubles de sommeil	Dr Mohammed ALIATI

Le sommeil, un nouveau facteur de risque cardio-vasculaire

Pierre ESCOURROU

Centre Interdisciplinaire du Sommeil

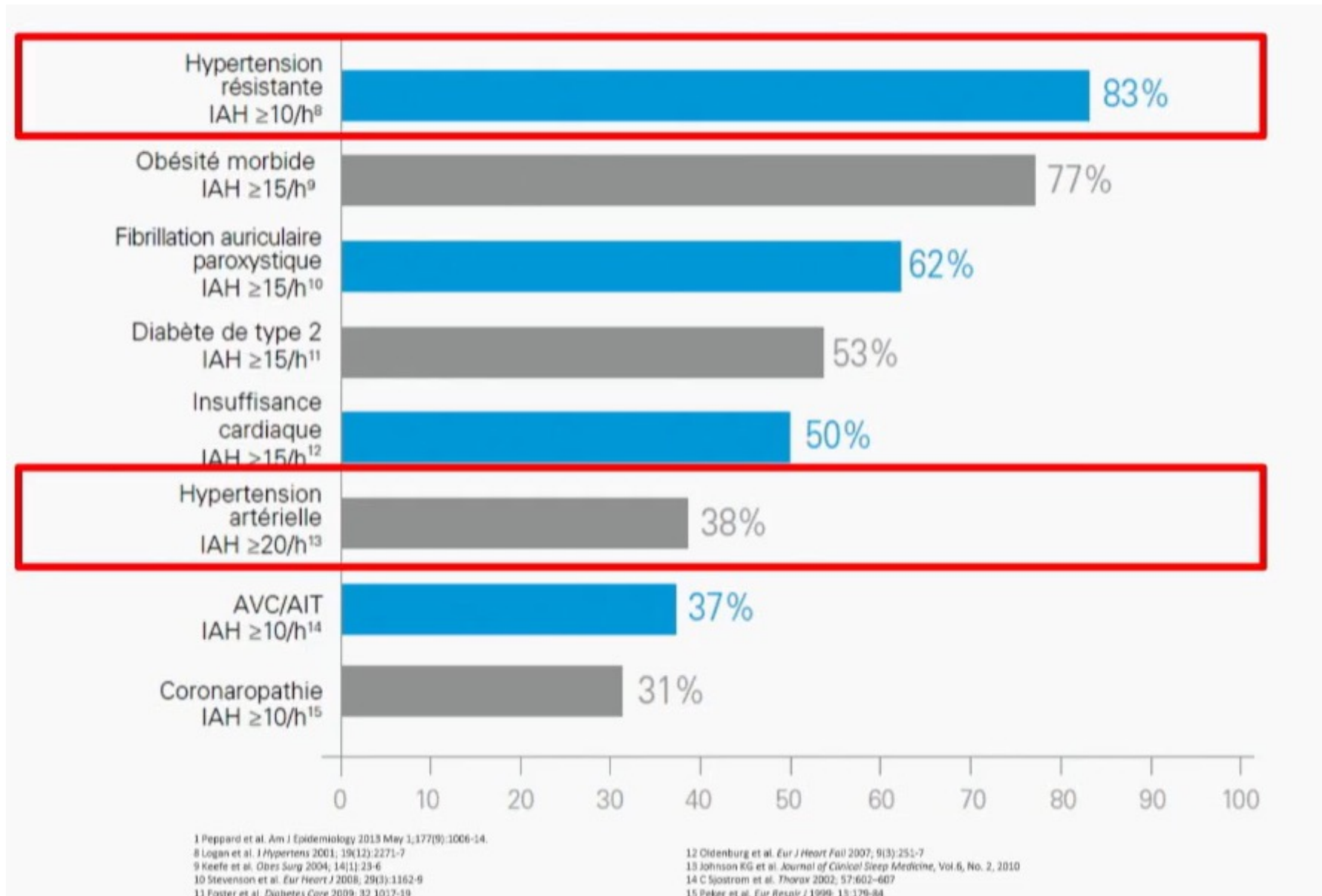
75116 Paris

dr.p.escourrou@gmail.com

Sommeil ?

- Le Sommeil est un état biologique indispensable à la vie....Le Sommeil est aussi nécessaire à l'organisme que l'air, l'eau et la nourriture.
- Quels sont les effets d'un Sommeil perturbé sur notre santé cardiovasculaire? (Insuffisance, excès ou mauvaise qualité du sommeil)

Relation SAOS et maladies Cardiovasculaires

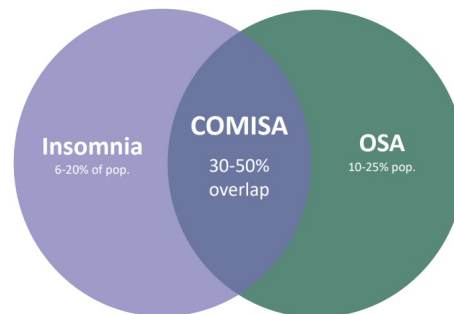


COMISA



Unique to insomnia:

- Difficulties initiating and maintaining sleep
- anxiety about sleep and sleep loss
- dysfunctional sleep-related beliefs and attitudes



Unique to OSA:

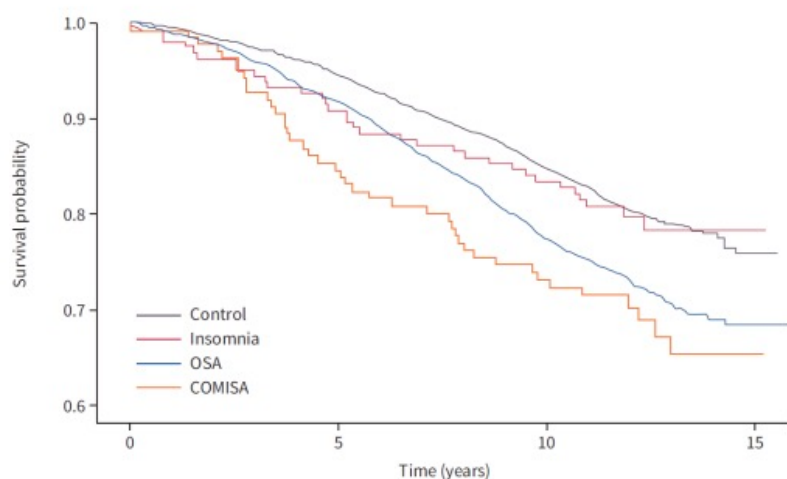
- Upper airway narrowing and collapse
- Hypoxia
- Frequent cortical arousals

Shared features:

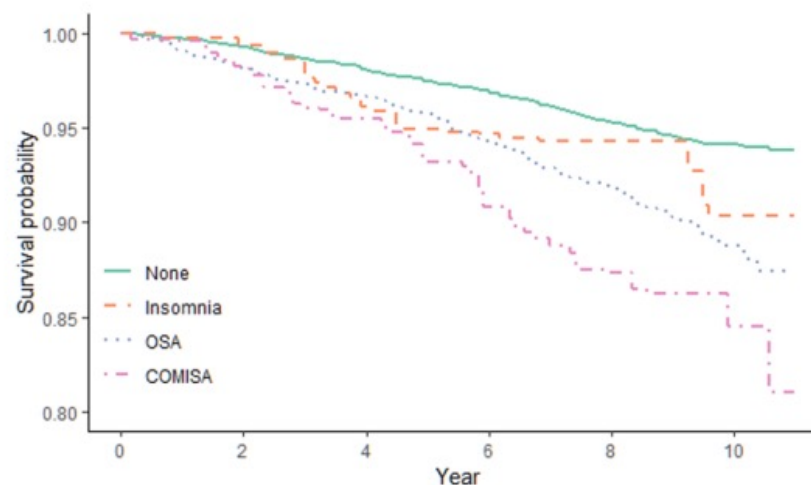
- Daytime symptoms
- Frequent awakenings
- Non-restorative sleep

Comorbid Insomnia Sleep Apnea

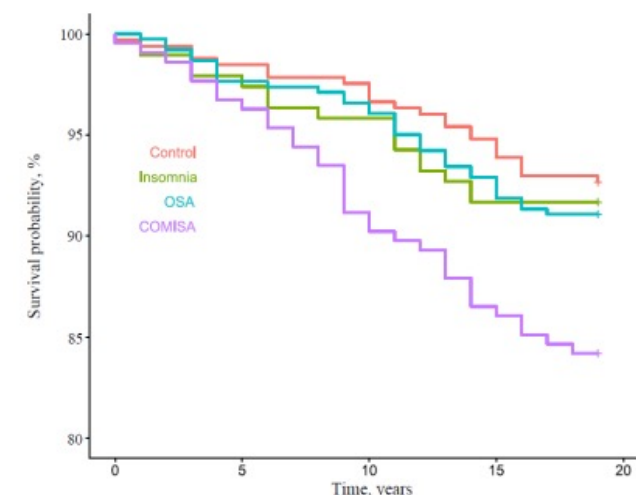
- People with COMISA have a ~50-70% increased risk of all-cause mortality, compared to people with neither disorder.



Lechat et al., (2021). *ERJ*.
Sleep Heart Health Study ($n = 5,236$)



Sweetman et al., (2022). *Sleep Epi*.
NHANES ($n = 6,877$)



Lechat et al., (2022). *NSS*.
Wisconsin Sleep Cohort ($n = 1,115$)

Life's Simple 7

-  1. Stop Smoking
-  2. Eat Better
-  3. Get Active
-  4. Lose Weight
-  5. Manage Blood Pressure
-  6. Control Cholesterol
-  7. Reduce Blood Sugar



Metric: Average hours of sleep per night

Scoring:

Points	Level
100	7-<9
90	9-<10
70	6-<7
40	5-<6 or ≥10
20	4-<5
0	<4



Donald M. Lloyd-Jones. Circulation. Life's Essential 8: Updating and Enhancing the American Heart Association's Construct of Cardiovascular Health: A Presidential Advisory From the American Heart Association, Volume: 146, Issue: 5, Pages: e18-e43, DOI: (10.1161/CIR.0000000000001078)

Distribution des 7 critères de santé CV dans la population adulte US

in the AHA 2020 Goals for Adults Aged ≥20 Years

	Level of Health for Each Metric		
	Poor	Intermediate	Ideal
Current smoking	Yes	Former ≤12 months	Never or quit >12 months Never tried; never smoked whole cigarette
BMI*	≥30 kg/m ²	25-29.9 kg/m ²	18.5-25 kg/m ²
PA†	None	1-149 min/week moderate or 1-74 min/wk vigorous 1-149 min/wk moderate + 2x vigorous >0 min <60 min of moderate or vigorous every day	≥150 min/wk moderate or ≥75 min/wk vigorous ≥150 min/wk moderate + 2x vigorous ≥60 of moderate or vigorous every day
Healthy diet pattern, number of components ‡	0-1	2-3	4-5
Total cholesterol	≥240 mg/dL	200-239 mg/dL or treated to goal	<200 mg/dL
Blood pressure	SBP ≥140 mmHg or DBP ≥90 mmHg	SBP 120-139 mmHg or DBP 80-89 mmHg or treated to goal	<120 mmHg/ <80 mmHg
Fasting plasma glucose	≥126 mg/dL	100-125 mg/dL	<100 mg/dL

AHA indicates American Heart Association; BMI, body mass index; DBP, diastolic blood pressure; PA, physical activity; and SBP, systolic blood pressure

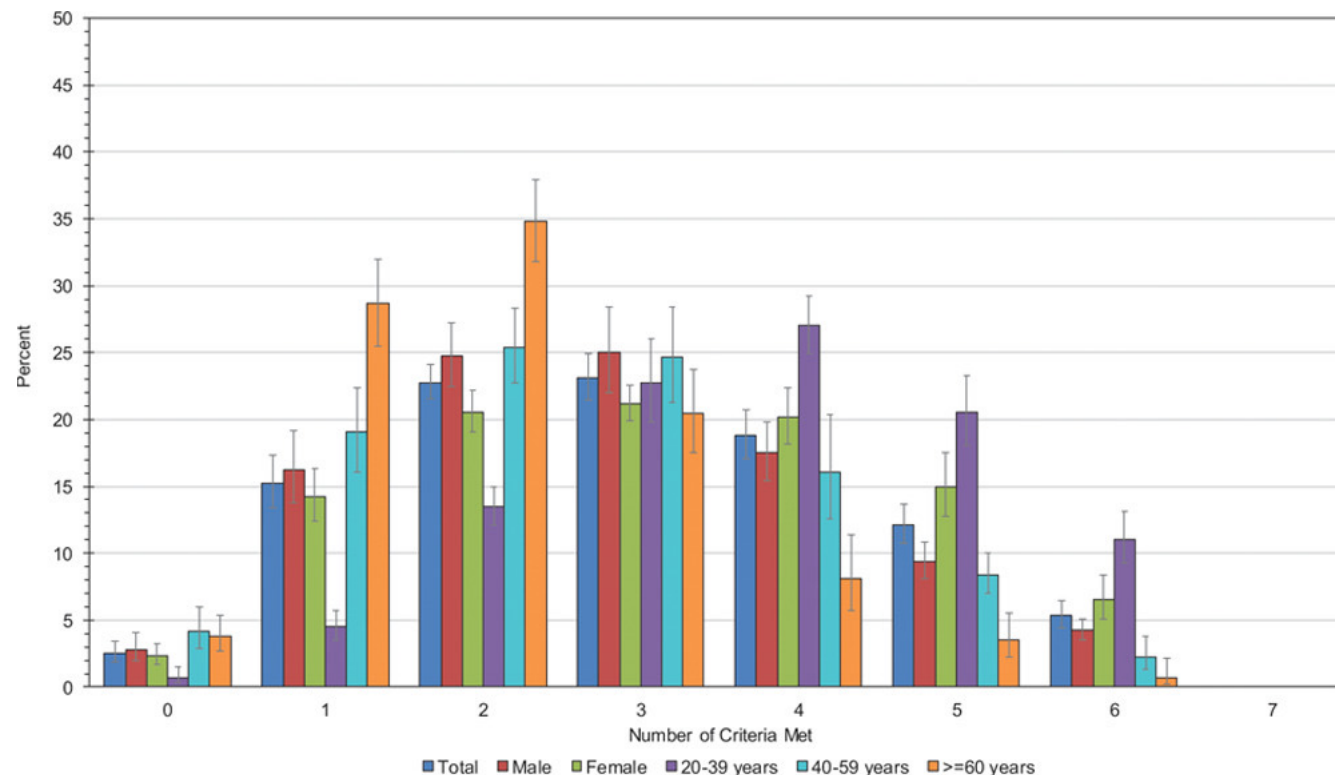


Chart 2-5. Age-standardized prevalence estimates of US adults ≥20 years of age meeting ideal criteria for different numbers of cardiovascular health components, overall and by sex and age groups, 2015 to 2016.

Salim S. Virani. Circulation. Heart Disease and Stroke Statistics—2020 Update: A Report From the American Heart Association,



Relation 8 CVHealth Score / mortalité totale et CV

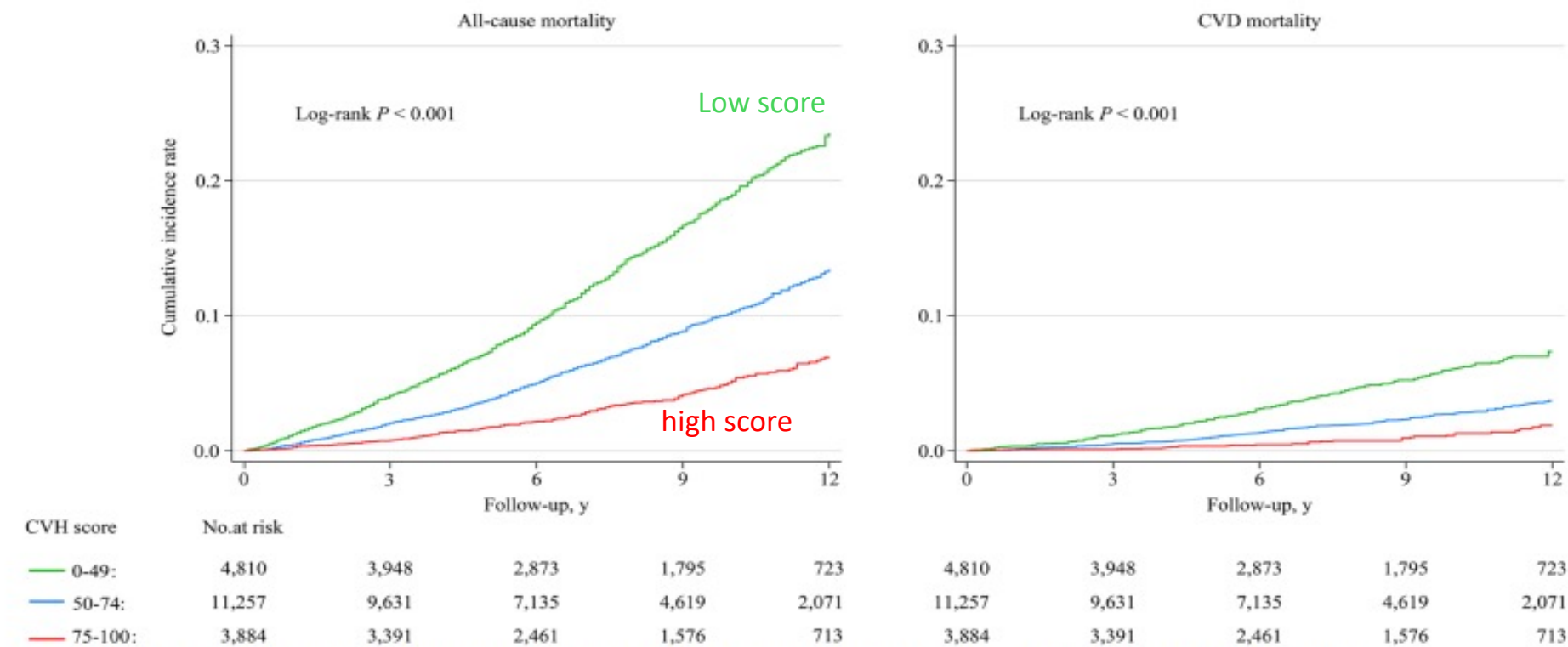


Fig. 2 Kaplan–Meier curves for cumulative all-cause and CVD-specific mortality by total scores of cardiovascular health metrics

Population attributable risk factor: Activity (16,5%), Nicotine (14,7%), Diet (11%), Sleep (5,4%)

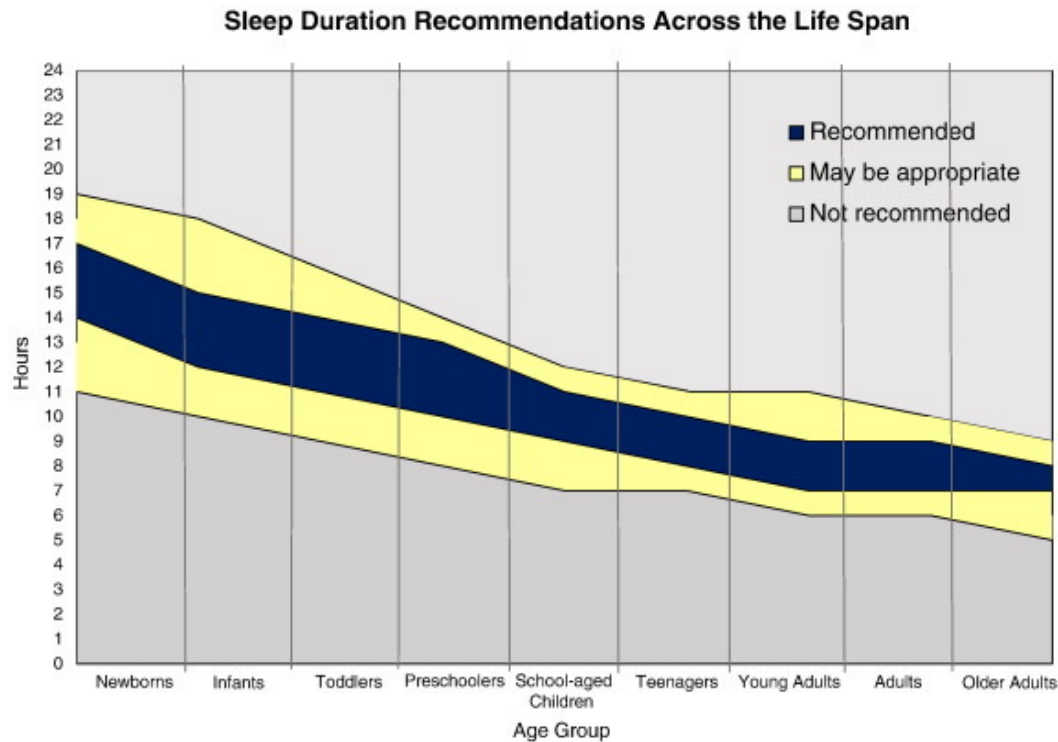
Troubles du sommeil et maladies CV

- Troubles du Sommeil
 - Durée du sommeil
 - Typologie
 - Régularité
- Maladies CV:
 - HTA
 - Coronaropathie
 - Troubles du rythme: FA
 - Insuffisance cardiaque

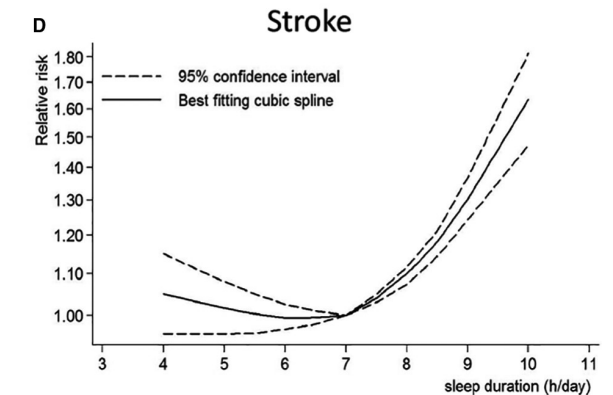
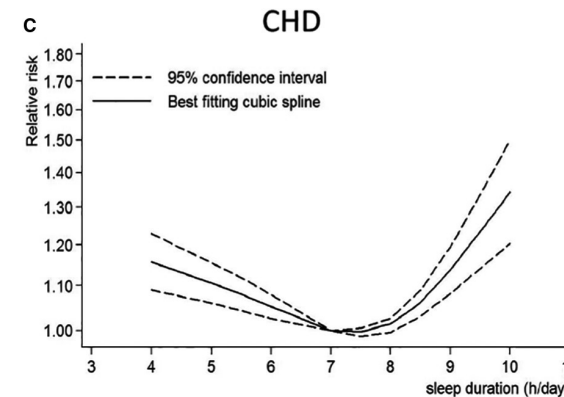
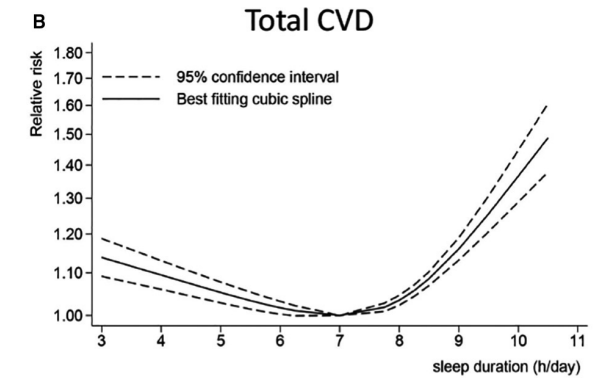
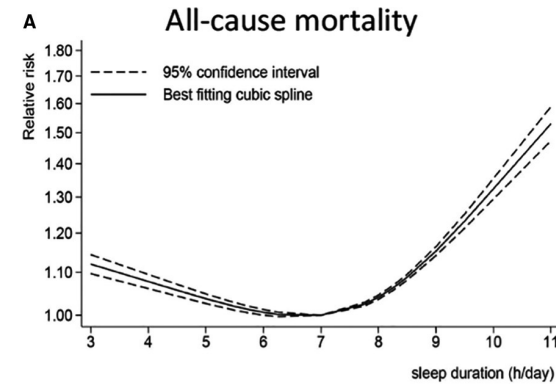
Durée du sommeil et mortalité CV: méta-analyse

N=67 études

Durée mesurée par QS



National Sleep Foundation 2015

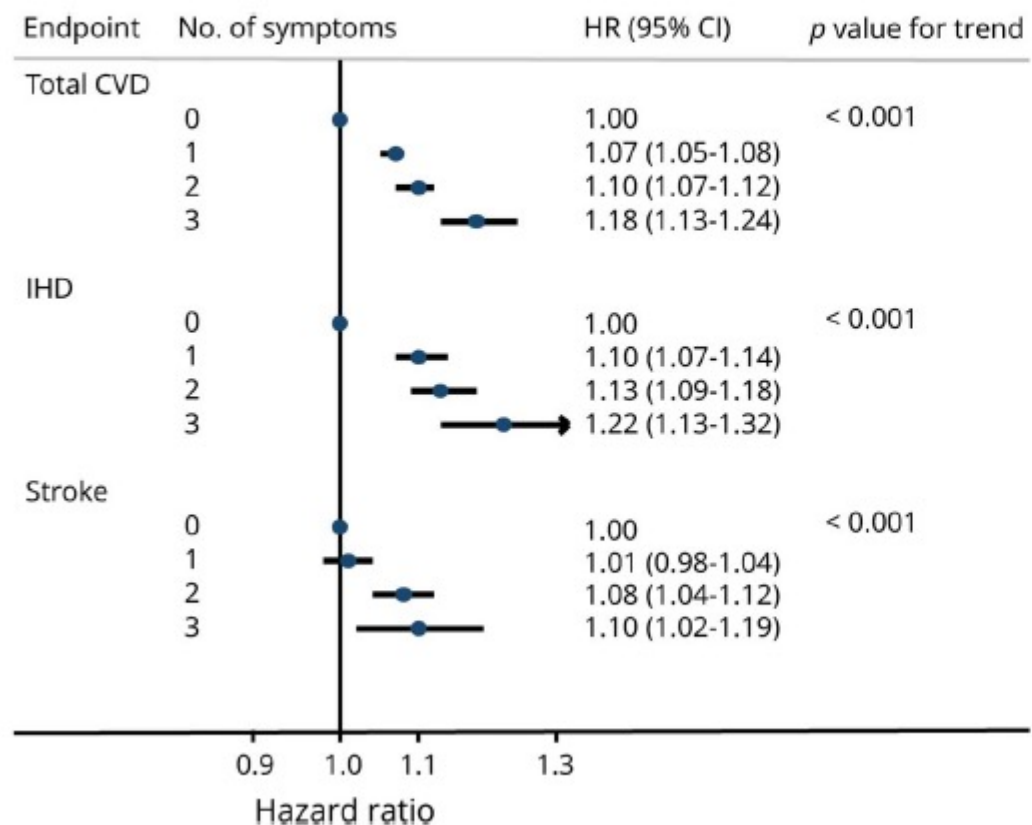


Jiawei Yin. Journal of the American Heart Association. Relationship of Sleep Duration With All-Cause Mortality and Cardiovascular Events:



Sévérité de l'Insomnie et incidence de la maladie coronaire et de l'AVC

Figure 1 HR (95% CI) of total and subtypes of CVD incidence according to number of insomnia symptoms



10-year prospective cohort
0,5 Million chinese patients
30-79 yrs free of Stroke, CHD, cancer

Baseline insomnia (*nbre de symptômes*)
initiating or maintaining sleep, early morning awakening,
and daytime dysfunction for at least 3 d/wk at baseline

Models were adjusted for age; education level; annual household income; marital status; alcohol consumption; smoking status; tea consumption; physical activity level; intake frequencies of red meat, fresh fruits, and fresh vegetables; family history of heart attack and stroke; body mass index; prevalent hypertension and diabetes mellitus; frequent use of sleep aid medications; frequency of snoring; and depression or anxiety symptoms. Models were stratified by sex, 10 study areas, and baseline age in 5-year intervals. The *p* values for trend were estimated by modeling the number of insomnia symptoms as a continuous variable. CI = confidence interval; CVD = cardio-cerebral vascular disease; HR = hazard ratio; IHD = ischemic heart disease.

Score de Santé Sommeil (HSS) et morbidité CV

Prospective study of 385 292 UK biobank participants

(suivi sur 8,5 ans)

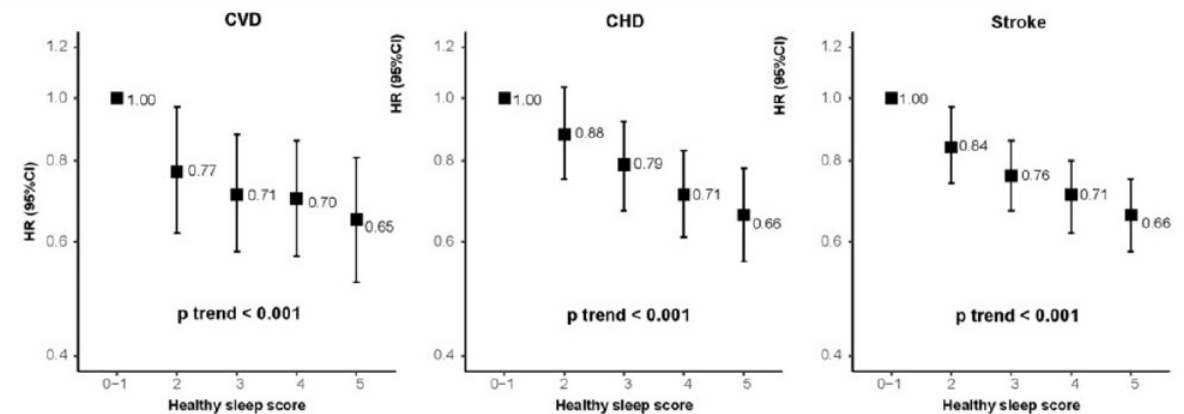
Healthy Sleep Score:

- Chronotype du matin 1/0
- Sommeil 7-8H 1
- Pas d'insomnie 1
- Pas de ronflement 1
- Pas de somnolence 1

- Classification HSS total
 - ✓ Sain >4
 - ✓ Intermédiaire 2-3
 - ✓ Mauvais < 1

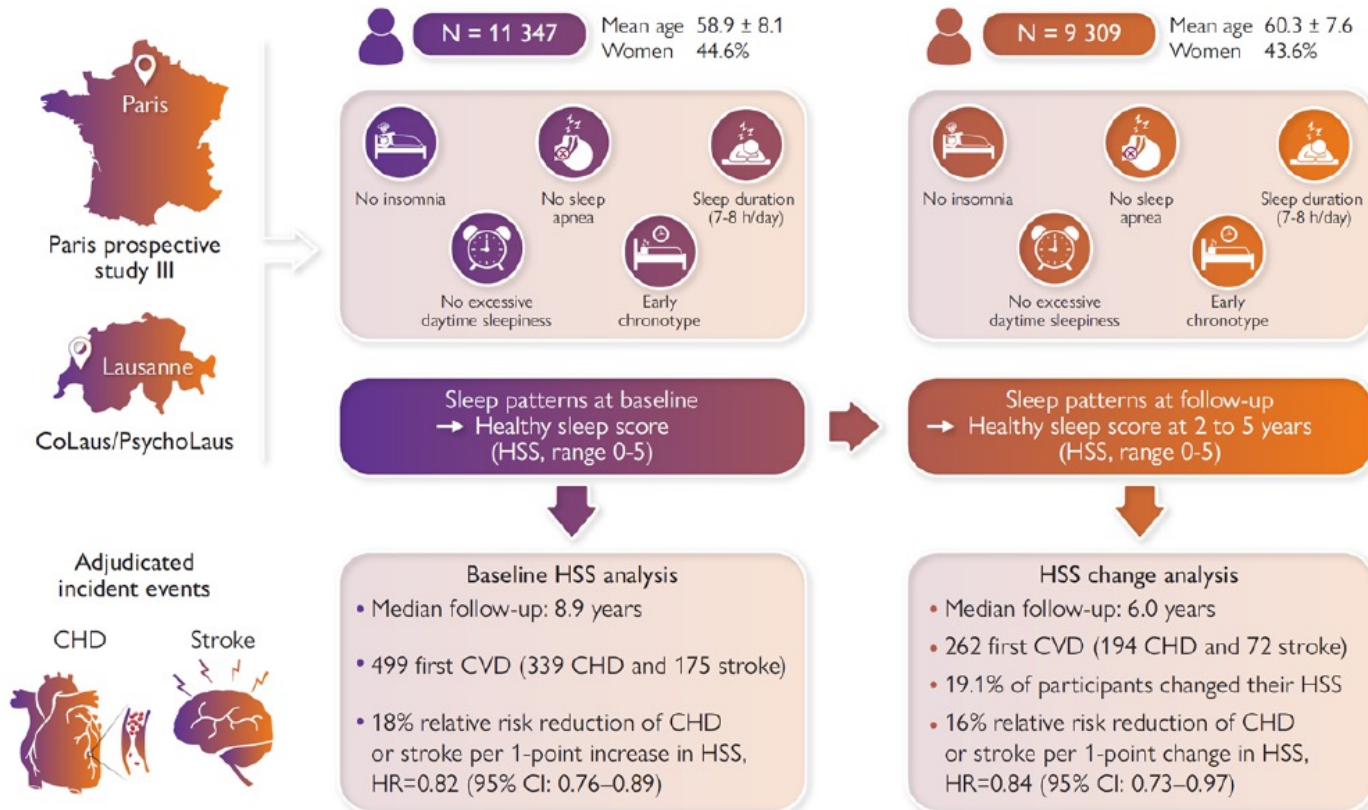
Low-risk sleep factors	% of 385 292 participants	CVD		CHD		Stroke	
		HR (95% CI) ^a	PAR%	HR (95% CI) ^a	PAR%	HR (95% CI) ^a	PAR%
Early chronotype	62.7	0.93 (0.89–0.97)	2.7 (1.0 to 4.5)	0.92 (0.87–0.98)	3.0 (0.8 to 5.2)	0.93 (0.86–1.01)	2.5 (0.0 to 5.0)
Sleep 7–8 h/day	68.7	0.88 (0.84–0.92)	4.4 (2.3 to 6.5)	0.87 (0.82–0.92)	4.9 (2.1 to 7.7)	0.90 (0.83–0.98)	3.4 (0.2 to 6.5)
Never/rarely insomnia	72.7	0.92 (0.87–0.97)	2.5 (1.4 to 3.6)	0.90 (0.84–0.96)	3.2 (2.5 to 3.9)	0.96 (0.88–1.05)	1.1 (-1.4 to 3.6)
No self-reported snoring	63.2	0.96 (0.91–1.01)	2.0 (-0.2 to 4.1)	0.95 (0.90–1.01)	2.3 (-0.4 to 5.0)	0.97 (0.90–1.05)	1.5 (-1.8 to 4.8)
No frequent daytime sleepiness	97.5	0.85 (0.76–0.97)	0.5	0.87 (0.75–1.01)	0.5	0.83 (0.68–1.02)	0.6
All five factors	21.8	0.87 (0.82–0.93)	11.5 (4.9 to 18.1)	0.86 (0.79–0.93)	13.1 (5.1 to 20.9)	0.90 (0.81–0.99)	8.7 (-2.5 to 19.8)

Risque Relatif d'incidence de MCV diminue plus le score HSS initial est élevé



Fan M et al, *Eur Heart J* 2020

Variation du SSS (HSS) et incidence de maladie CV



Baseline healthy sleep score		Healthy sleep score at follow-up	
		<3	≥3
	<3	17.2%	8.1%
	≥3	11.0%	63.7%

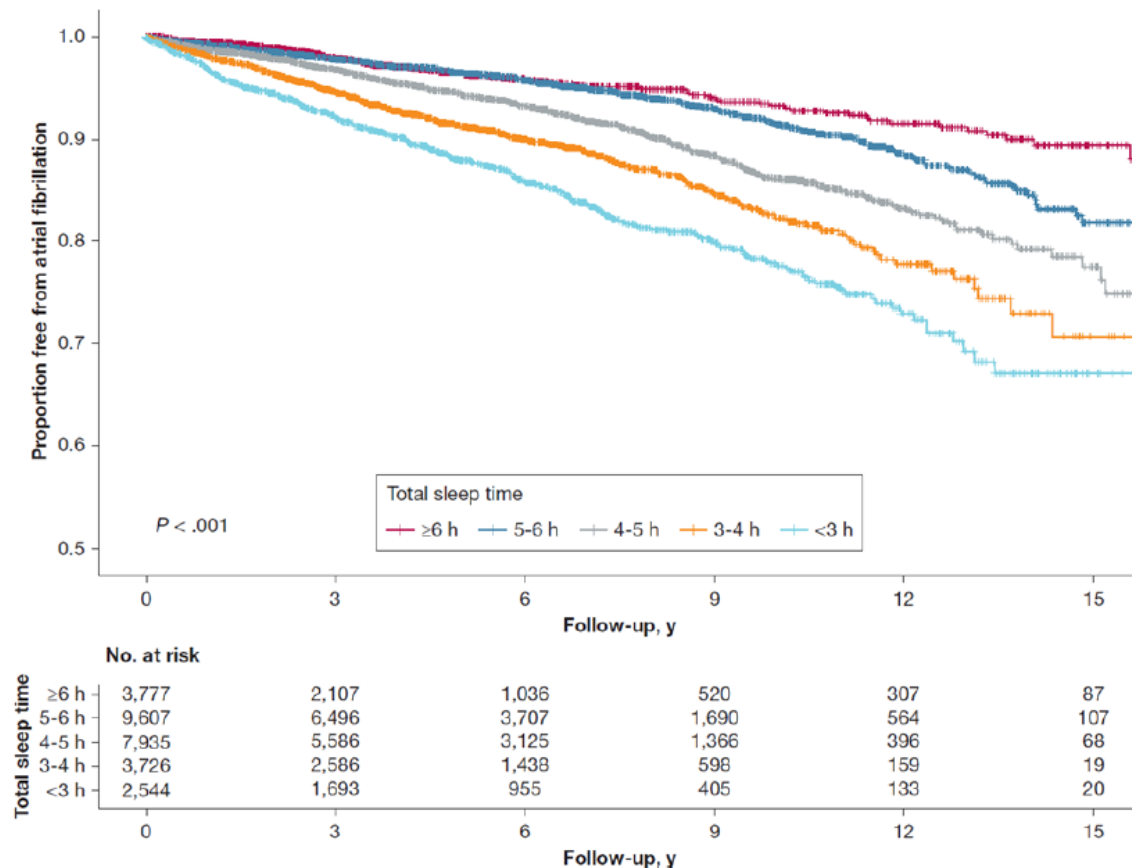
Crude CVD Incidence Rate per 1000 Person-Years

2 4 6 8 10

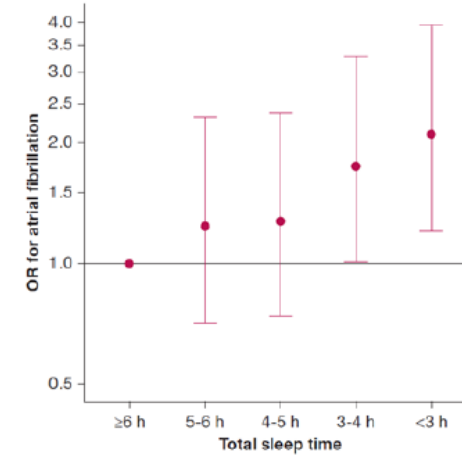
	Participants; n (%)	CVD (CHD or stroke)	
		Cases	HR (95% CI)
Continuous change in HSS (per unit higher compared with baseline HSS) ^a	9309 (100.0)	262	0.84 (0.73–0.97)
Baseline HSS			0.77 (0.69–0.87)
Categories of change in HSS			
Decrease ^b	1026 (11.0)	45	1.00
Stable low ^c	1601 (17.2)	64	0.70 (0.42–1.17)
Stable high ^d	5932 (63.7)	128	0.55 (0.39–0.79)
Increase ^e	750 (8.1)	25	0.61 (0.35–1.08)
Baseline HSS			0.86 (0.70–1.06)

Durée du Sommeil et Fibrillation auriculaire

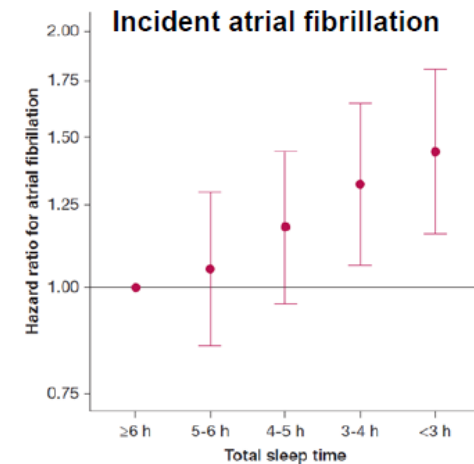
Protective effect of sleep duration



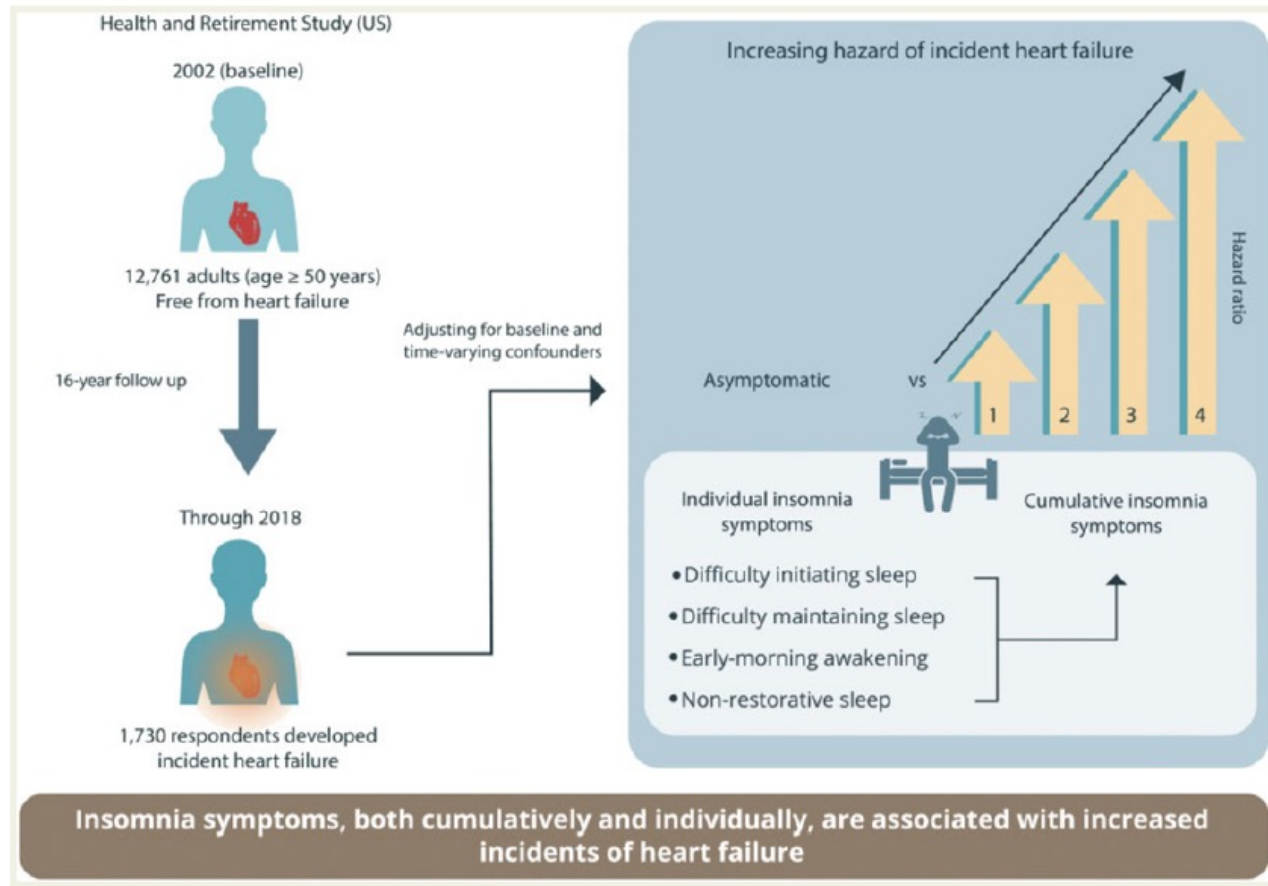
Prevalent atrial fibrillation



Incident atrial fibrillation



Insomnie et incidence de l'insuffisance cardiaque



Augmentation de l'incidence de l'IC
avec la sévérité de l'insomnie
(nbre de symptômes)

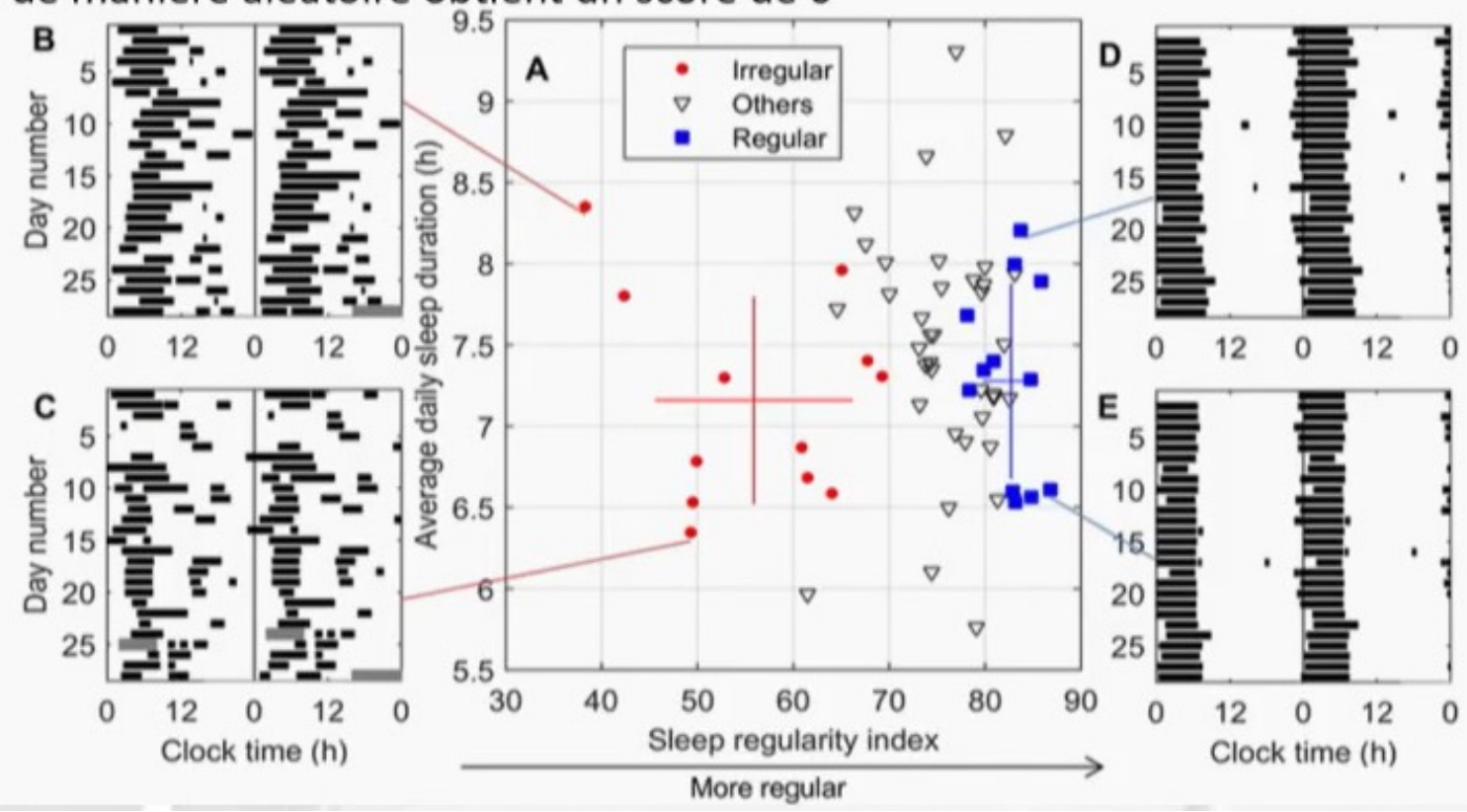
Respondent characteristics	Adjusted HR (95% CI) ^a	P-value
Number of insomnia symptoms (ref: no symptoms)		
One	1.22 (1.08–1.38)	0.0012
Two	1.45 (1.21–1.72)	<0.001
Three	1.66 (1.37–2.02)	<0.001
Four	1.80 (1.25–2.59)	0.0011
Individual insomnia symptoms		
Difficulty initiating sleep (ref: no)	1.17 (1.01–1.36)	0.028
Difficulty maintaining sleep (ref: no)	1.14 (1.01–1.28)	0.028
Early morning awakening (ref: no)	1.20 (1.02–1.43)	0.03
Non-restorative sleep (ref: no)	1.25 (1.06–1.46)	0.006

Régularité du sommeil

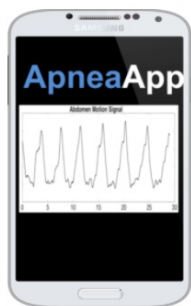
Sleep regularity index : le pourcentage de probabilité qu'un individu se trouve dans le même état (endormi ou éveillé) à deux moments identiques à 24 heures d'intervalle, la moyenne étant calculée pour l'ensemble de l'étude. **Mesure les changements qui se produisent dans les habitudes de sommeil sur une échelle de temps circadienne.**

100 % = 1 personne qui dort et se réveille exactement aux mêmes heures chaque jour
0 % = 1 personne qui dort et se réveille de manière aléatoire obtient un score de 0

SRI = marqueur d'une perturbation circadienne / désynchronisation circadienne / désalignement circadien



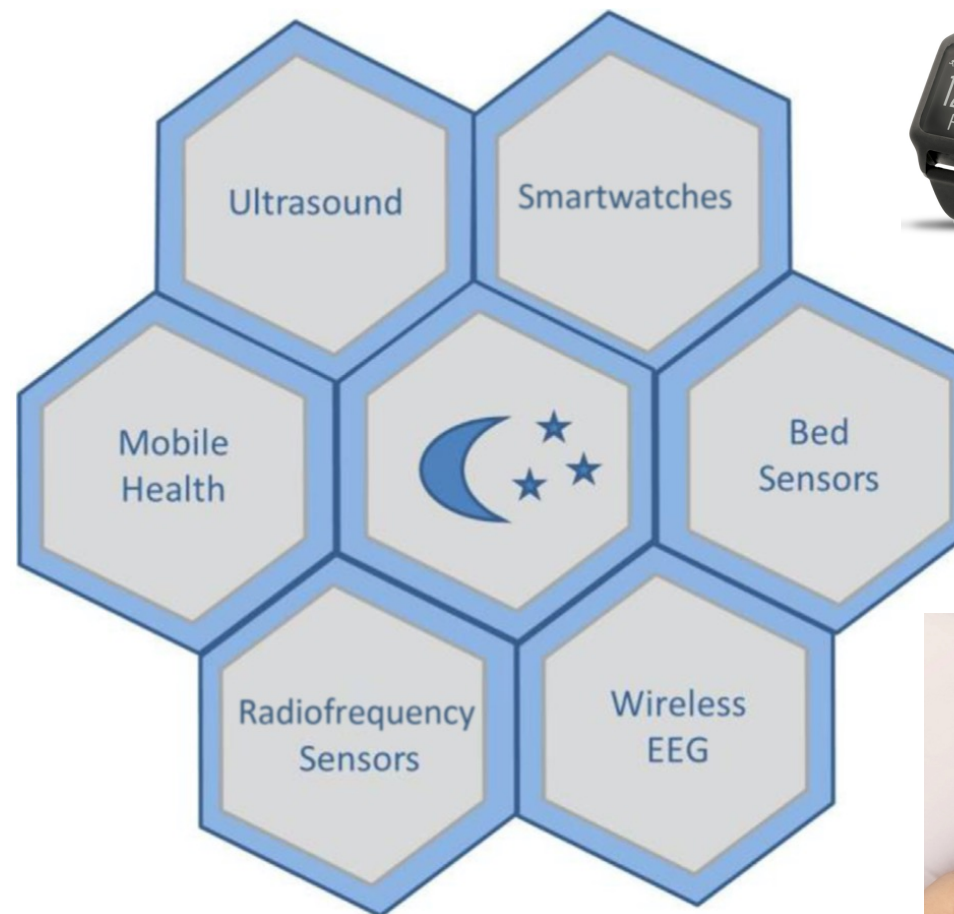
Current sleep sensing technologies



Snore Control



SnoreLab :
Snore Recorder
SnoreLab Ltd
#57 in Medical
★★★★★ 4.7 • 42K Rati
Free · Offers In-App



Oura



Sunrise



Dream



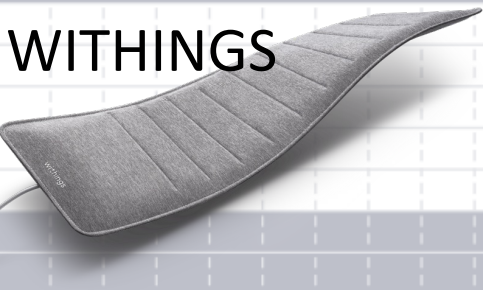
Wespers



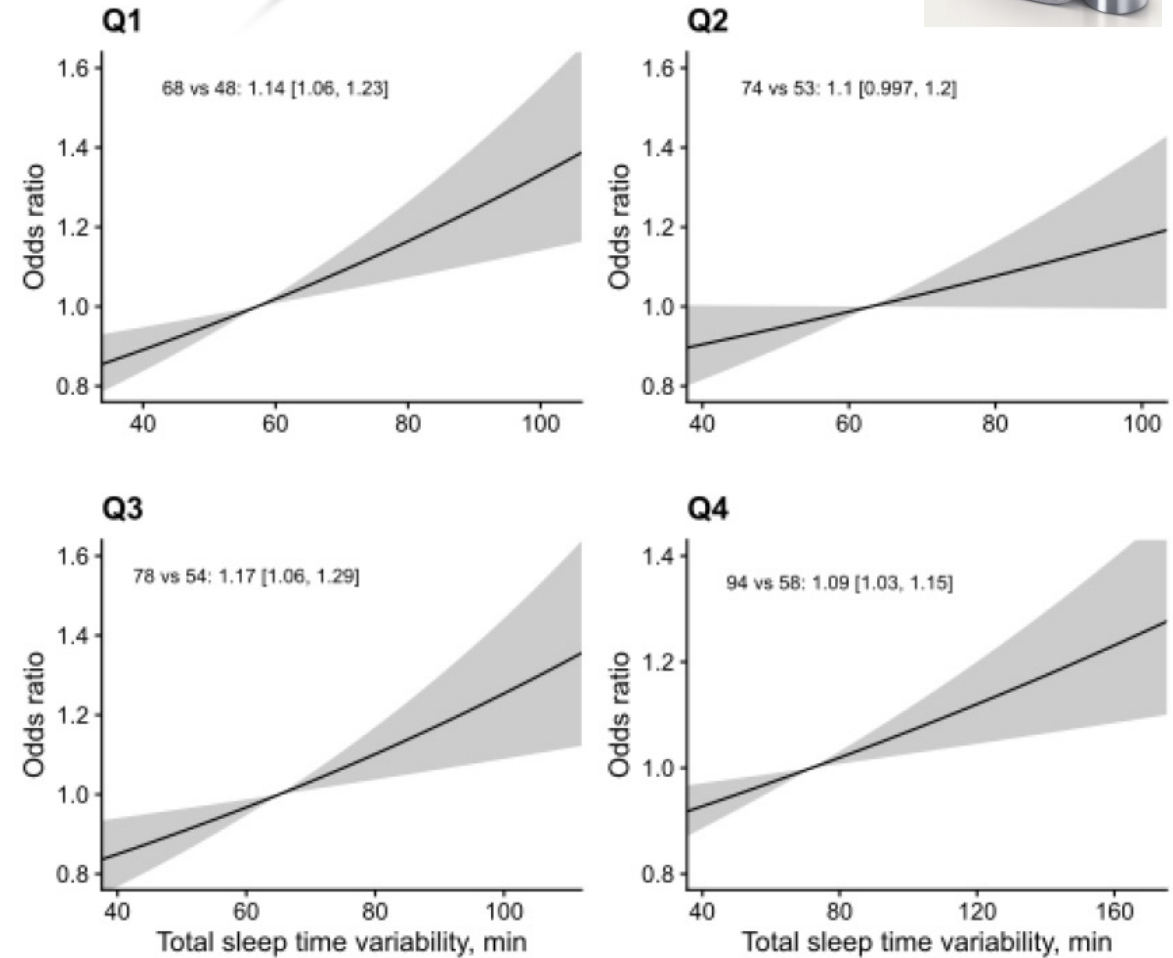
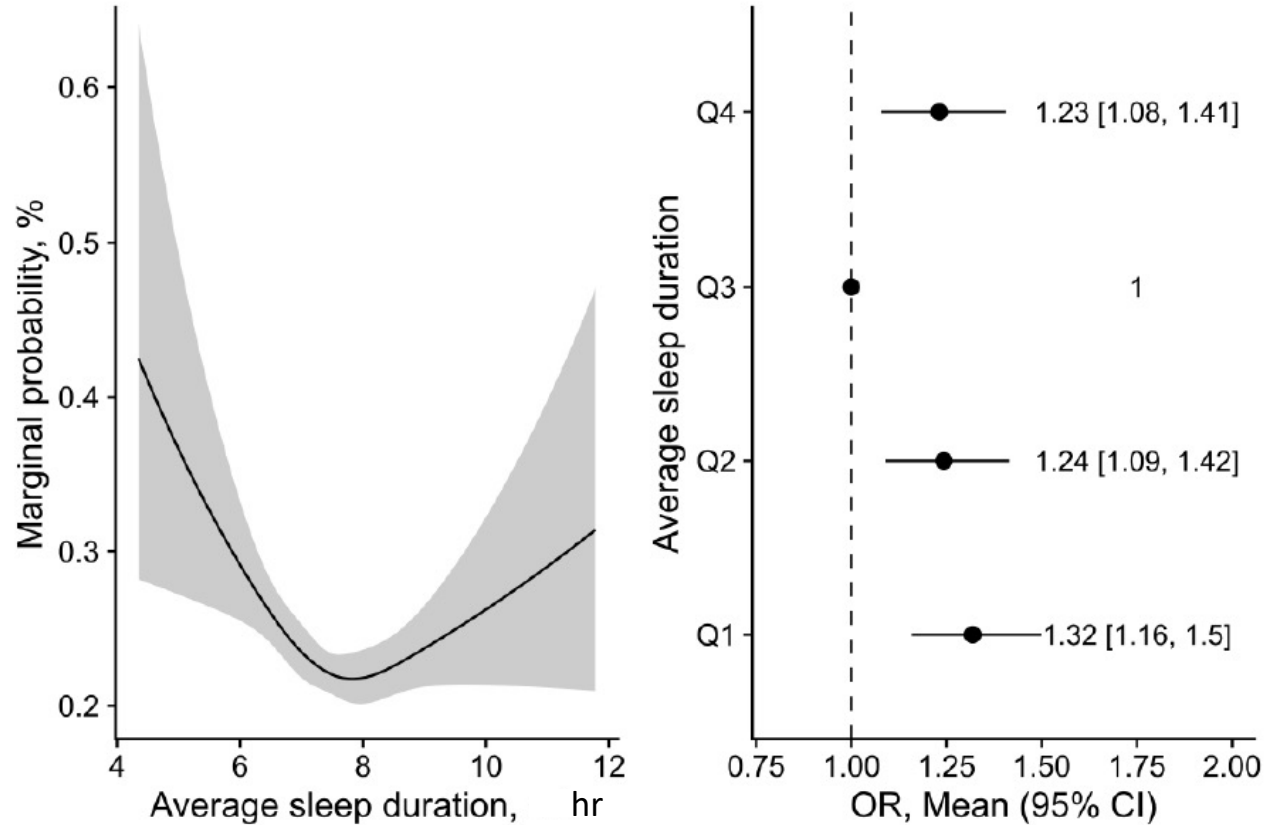
Agenda du sommeil

17 mars - 17 avr. passé au lit (TIB) Temps de sommeil (TST) Week-end Sorties du lit principales Données imprécises

Date	Temps de sommeil total	Temps au lit SE*		13 h	14 h	15 h	16 h	17 h	18 h	19 h	20 h	21 h	22 h	23 h	1 h	2 h	3 h	4 h	5 h	6 h	7 h	8 h	9 h	10 h	11 h	Sorties du lit	IAH	Ronflements	Fréquence cardiaque moy.
16-17 Mar	9h10 Endormi	10h13 Au lit	90 % Efficacité																						0	5	1h38	69 bpm	
17-18 Mar	8h20 Endormi	8h50 Au lit	94 % Efficacité																						0	0	11 min	75 bpm	
18-19 Mar	8h44 Endormi	9h39 Au lit	91 % Efficacité																						0	8	36 min	61 bpm	
19-20 Mar	10h20 Endormi	11h30 Au lit	90 % Efficacité																						1	15	52 min	60 bpm	
20-21 Mar	7h50 Endormi	8h32 Au lit	92 % Efficacité																						0	12	38 min	62 bpm	
21-22 Mar	9h03 Endormi	10h50 Au lit	84 % Efficacité																						4	7	39 min	65 bpm	
22-23 Mar	7h47 Endormi	8h35 Au lit	91 % Efficacité																						0	11	34 min	66 bpm	
23-24 Mar	9h52 Endormi	10h16 Au lit	96 % Efficacité																						1	0	1h49	73 bpm	
24-25 Mar	8h26 Endormi	9h39 Au lit	87 % Efficacité																						2	4	1h21	72 bpm	
25-26 Mar	7h07 Endormi	7h21 Au lit	97 % Efficacité																						0	3	19 min	69 bpm	
26-27 Mar	9h03 Endormi	10h11 Au lit	89 % Efficacité																						0	8	37 min	67 bpm	
27-28 Mar	8h56 Endormi	12h31 Au lit	71 % Efficacité																						2	9	59 min	67 bpm	
28-29 Mar	8h20 Endormi	10h13 Au lit	82 % Efficacité																						0	17	37 min	68 bpm	
29-30 Mar	8h19 Endormi	10h00 Au lit	83 % Efficacité																						1	7	1h13	71 bpm	
30-31 Mar	8h39 Endormi	9h05 Au lit	95 % Efficacité																						0	13	14 min	64 bpm	
31-01 Mar	7h26 Endormi	9h05 Au lit	82 % Efficacité																						0	6	0 min	79 bpm	
01-02 Apr	7h20 Endormi	8h37 Au lit	85 % Efficacité																						0	7	1h07	65 bpm	
02-03 Apr	10h45 Endormi	12h13 Au lit	88 % Efficacité																						1	3	57 min	66 bpm	
03-04 Apr	6h27 Endormi	8h03 Au lit	80 % Efficacité																						2	14	22 min	66 bpm	
04-05 Apr	7h56 Endormi	8h36 Au lit	92 % Efficacité																						0	5	22 min	73 bpm	
05-06 Apr	7h58 Endormi	8h42 Au lit	92 % Efficacité																						0	10	1 min	71 bpm	
06-07 Apr	9h55 Endormi	10h58 Au lit	90 % Efficacité																						0	3	0 min	66 bpm	
07-08 Apr	9h00 Endormi	9h33 Au lit	94 % Efficacité																						0	8	0 min	62 bpm	
08-09 Apr	7h43 Endormi	8h14 Au lit	94 % Efficacité																						0	19	54 min	62 bpm	
09-10 Apr	10h19 Endormi	10h39 Au lit	97 % Efficacité																						0	12	1h51	68 bpm	
10-11 Apr	5h09 Endormi	7h35 Au lit	68 % Efficacité																						3	9	22 min	72 bpm	
11-12 Apr	7h48 Endormi	9h48 Au lit	80 % Efficacité																						0	2	0 min	60 bpm	
12-13 Apr	-	-	-																						-	Aucune donnée	-	-	
13-14 Apr	-	-	-																						-	Aucune donnée	-	-	
14-15 Apr	9h59 Endormi	12h18 Au lit	81 % Efficacité																						1	27	38 min	67 bpm	
15-16 Apr	7h02 Endormi	9h41 Au lit	73 % Efficacité																						0	4	0 min	65 bpm	

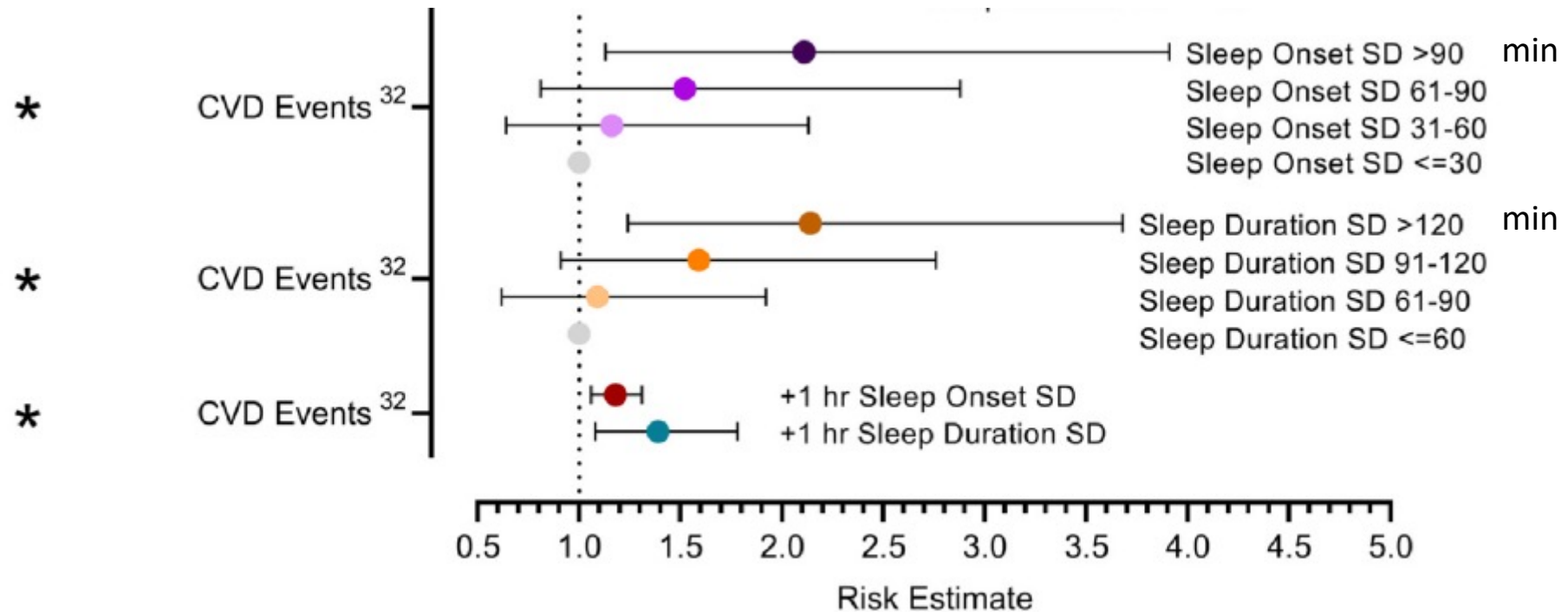


Variabilité du Sommeil et HTA



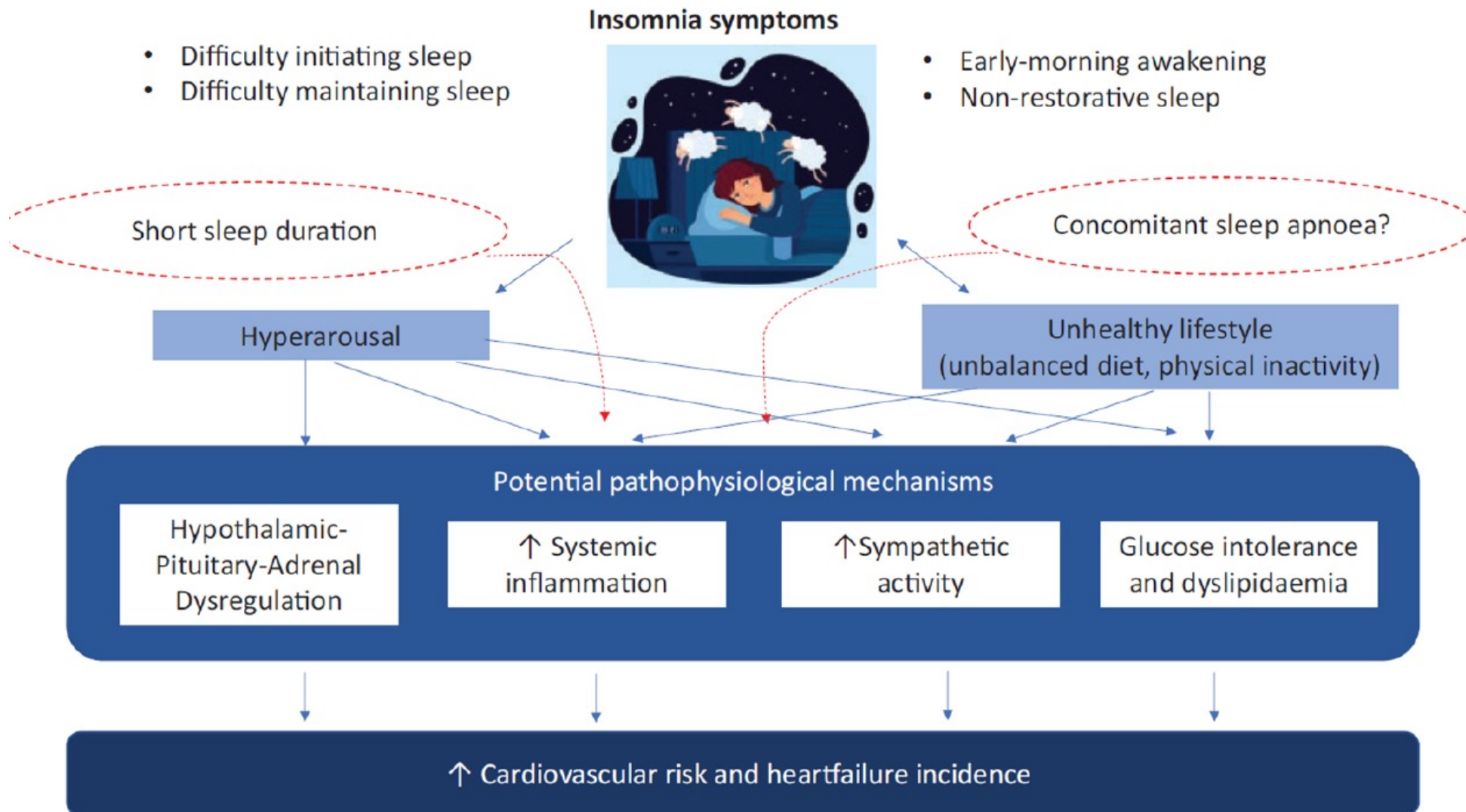
Sleep irregularity is associated with hypertension: Findings from over two million nights with a large global population sample. Hannah Scott, 2023

Variabilité du Sommeil et risque de maladie CV



Huang T, Mariani S, Redline S. Sleep irregularity and risk of cardiovascular events: the multi-ethnic study of atherosclerosis. *J Am Coll Cardiol.* 2020 (cohorte prospective)

Mécanismes ?



Conclusions

- Le sommeil participe au risque CV global
- Par plusieurs composantes:
 - durée
 - chronotype
 - régularité
 - par ses anomalies intrinsèques: apnées, myoclonies
- Les nouveaux moyens d'exploration: actimétrie, objets connectés... permettront d'évaluer et de corriger ces composantes chez les patients ayant des troubles du sommeil