



**CAMFiC AL DIA**  
L'actualització en AP



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# PREDICCIÓ DE MORTALITAT: PA clínica vs MAPA 24 h

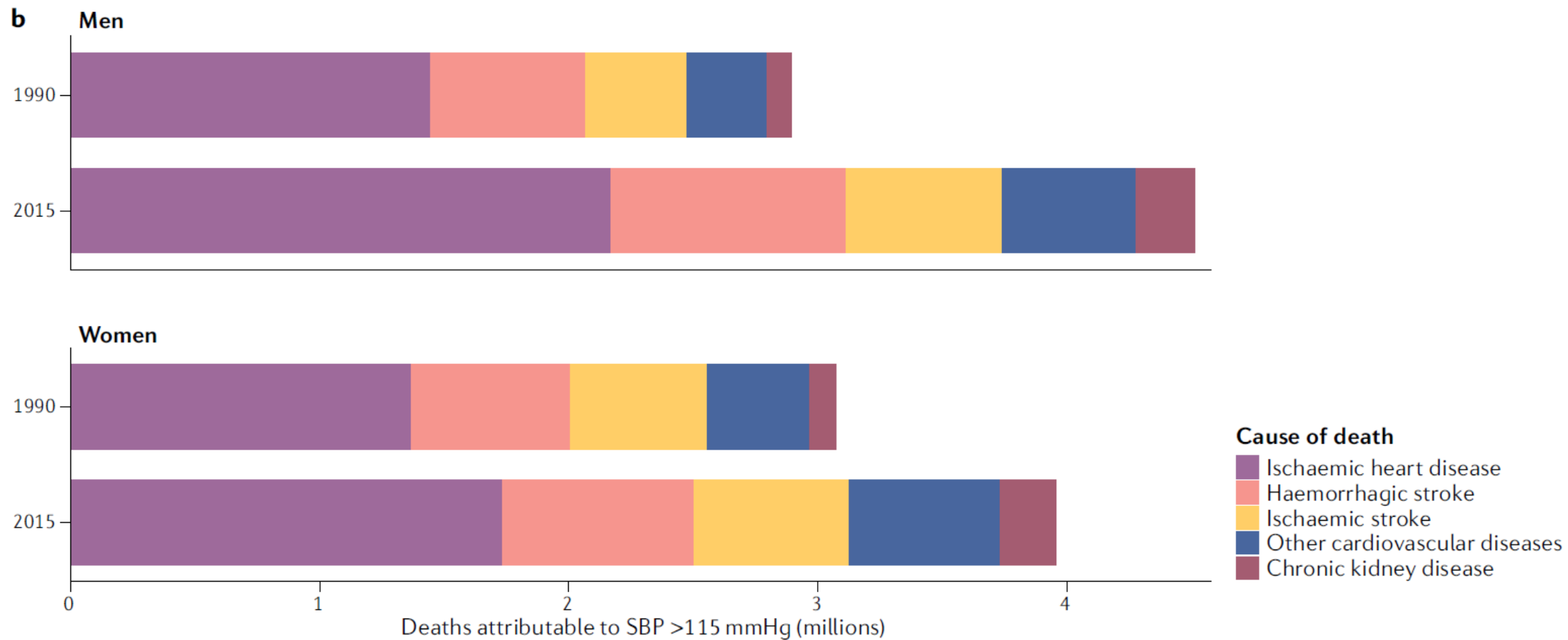
**Dr. Ernest Vinyoles**

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Grup de Treball HTA de la CAMFiC

# Global epidemiology (Deaths attributable to office SBP)



Nat Rev Cardiol 2021; 18:785–802.

## Quina PA prediu millor la mortalitat?

- La PA de la consulta (clínica)
- La PA de fora de la consulta (ambulatoria)
- Les dues per igual

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# Relationship between clinic and ambulatory blood pressure and mortality: an observational cohort study in 59 124 patients

*Natalie Staplin\*, Alejandro de la Sierra\*, Luis M Ruilope, Jonathan R Emberson, Ernest Vinyoles, Manuel Gorostidi, Gema Ruiz-Hurtado, Julián Segura, Colin Baigent, Bryan Williams*

L'objectiu va ser examinar les associacions de la PA clínica i ambulatòria de 24 h amb la mortalitat CV i per totes les causes en una gran cohort de pacients atesos a AP.

Lancet. 2023 Jun 17;401:2041-2050

## Vinculació INE amb CARDIORISC



**59 124 patients (visita basal)**  
**223 Centres d'Atenció Primària**  
**17 CCAA**

9,7 anys

**7 134 morts (2 361 per causa CV)**

58,7 (14,1) anys, 53% homes  
PA clínica 148,0 (18,8) / 86,5 (11,5)  
mmHg  
PA 24 h 128,8 (13,7) / 76,2 (10,1)  
mmHg

Lancet. 2023 Jun 17;401:2041-2050

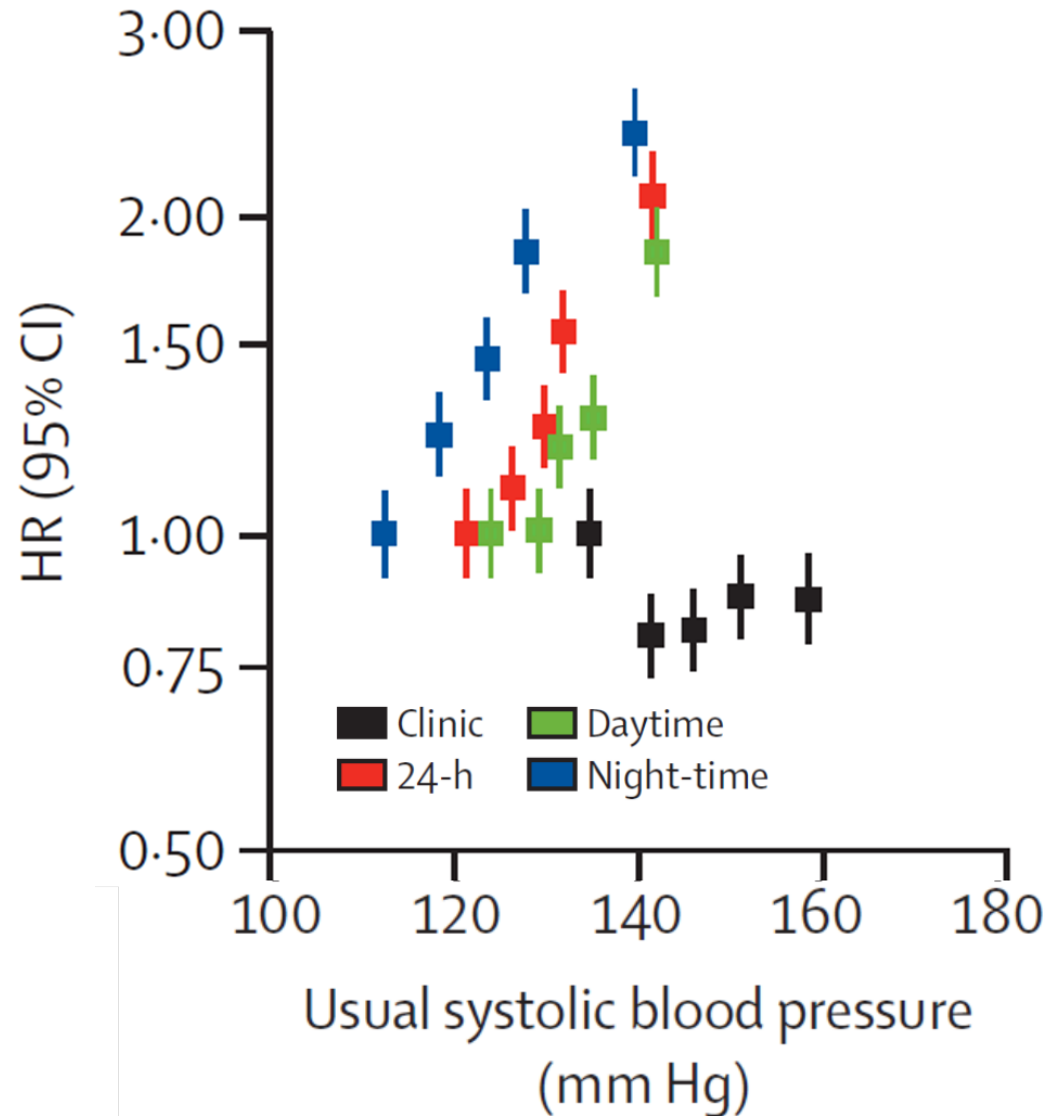
# Association of clinic and ambulatory systolic BP with cardiovascular death

	Confounder adjusted		Additionally adjusted for clinic or 24-h blood pressure	
	HR (95% CI)	p value	HR (95% CI)	p value
Clinic systolic	1.22 (1.13–1.31)	<0.0001	1.04 (0.96–1.12)	0.37
24-h systolic	1.48 (1.38–1.58)	<0.0001	1.51 (1.41–1.62)	<0.0001
Daytime systolic	1.46 (1.36–1.56)	<0.0001	1.48 (1.37–1.59)	<0.0001
Night-time systolic	1.50 (1.41–1.59)	<0.0001	1.51 (1.42–1.61)	<0.0001

Lancet. 2023 Jun 17;401:2041-2050

Confounder-adjusted model is adjusted for age, sex, smoking status, BMI, diabetes status, dyslipidaemia status, previous cardiovascular disease, and number of antihypertensive drugs. In the model with additional adjustment for clinic or 24-h systolic blood pressure, clinic blood pressure is adjusted for 24-h blood pressure and ambulatory blood pressure indices are adjusted for clinic blood pressure

# Association of clinic and ambulatory BP with CV death



Adjusted for age, sex, smoking, BMI, DM, dyslipidaemia, previous CV disease, and number of antihypertensive drugs. Additional adjustment for clinic or 24-h BP, clinic BP is adjusted for 24-h BP and ambulatory BP measures are adjusted for clinic BP.

Lancet. 2023 Jun 17;401:2041-2050

## Quina PA prediu millor la mortalitat?

La PA de la consulta (**clínica**)

La PA de fora de la consulta (**ambulatòria**)

Les dues per igual

La PA ambulatòria, especialment la PA nocturna, és millor predictora del risc de mort per totes les causes i de mort cardiovascular que la PA de la consulta.

I la morbiditat?




Lancet. 2023 Jun 17;401:2041-2050



ARTICLE



# Role of ambulatory blood pressure on prediction of cardiovascular disease. A cohort study

Ernest Vinyoles <sup>1,2,3</sup>✉, Clara Puig <sup>2,3</sup>, Albert Roso-Llorach<sup>2</sup>, Núria Soldevila<sup>1,3</sup>, Alejandro de la Sierra<sup>4</sup>, Manuel Gorostidi<sup>5</sup>, Julián Segura <sup>6</sup>, Juan A. Divison-Garrote<sup>7</sup>, Miguel-Ángel Muñoz<sup>3</sup> and Luís Miguel Ruilope<sup>6</sup>




Sistema d'Informació per al Desenvolupament de la Investigació en Atenció Primària

**CMBD-AH**  
Conjunt Mínim Bàsic de Dades d'Altes Hospitalàries.

PERIS SLT002/16/00061

J Hum Hypertens. 2023 Apr;37:279-285.

**6,6 [IC 95% 4,9-8,4] anys**



## 496 esdeveniments

Coronary heart disease	192 (38.7%)
Stroke	180 (36.3%)
Hospital Admission for Heart Failure	78 (15.7%)
Peripheral Artery Disease	25 (5.0%)
Cardiovascular mortality	21 (4.2%)

Global incident rate: 19.3 (95% CI 17.7–21.1) cases per 1 000 person-years.

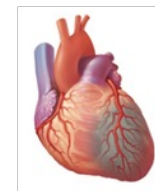
J Hum Hypertens. 2023 Apr;37:279-285.



## ABPM Registry

3 907 patients without cardiovascular disease

6.6 years



496 CV events or CV death

La PA de 24 h i la PA sistòlica nocturna són variables independents associades a morbimortalitat CV en pacients en prevenció primària.

### 24 hours-BP

Systolic

Diastolic

### Nighttime BP

Systolic

Hazard Ratio (95% CI)

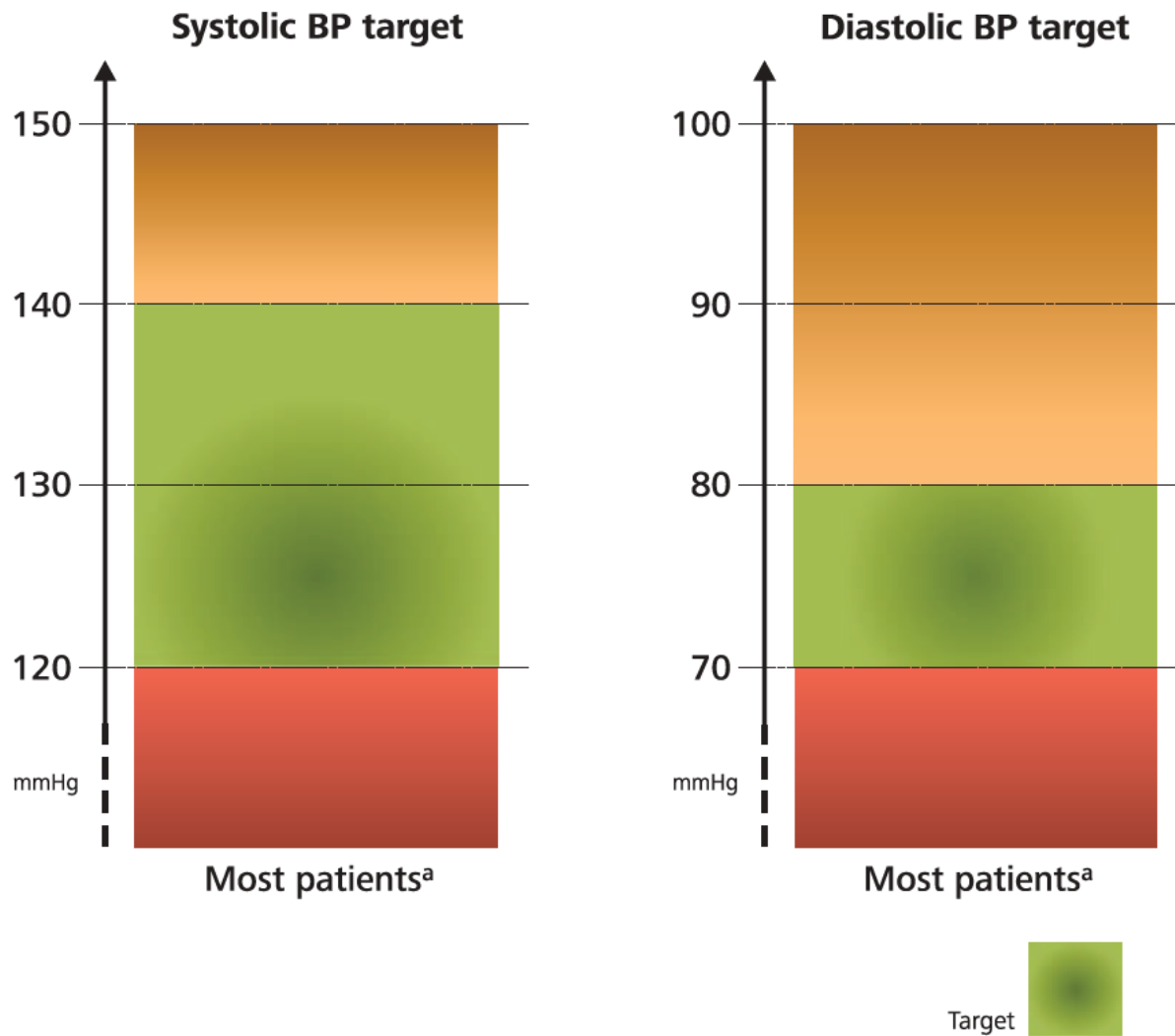
1.494 (1.326–1.685)

0.767 (0.654–0.899)

1.270 (1.016–1.587)

**Ambulatory BP maintains a statistically significant association, in the fully-adjusted model**

J Hum Hypertens. 2023 Apr;37:279-285.



Però no ens hem de quedar només amb la PA de la consulta: cal avaluar la PA ambulatoria

**FIGURE 10** Office BP targets in the general adult hypertensive population.

<sup>a</sup>The first objective of antihypertensive treatment should be to lower BP to <140/80 mmHg in most patients, because this accounts for the major portion of the protective effect of BP-lowering.

<sup>a</sup>If drug treatment is well tolerated, treated SBP values should be targeted to 130 mmHg or lower in most patients up to 79 years old.

<sup>a</sup>Despite the smaller incremental benefit, an effort should be made to reach a BP range of 120–129/70–79 mmHg in patients up to 79 years old, but only if treatment is well tolerated. Evidence on the advantages of this lower BP target range is not available or unequivocal in a number of clinically important subgroups of patients (e.g. patients with LVH, CKD, or ISH). These issues are discussed in the sections on special conditions (see Sections 17 to 20).

<sup>a</sup>In patients at least 80 years old who are not frail, the first objective of antihypertensive treatment is to lower BP below 150 mmHg. However, a SBP target range between 130–139 mmHg may be considered, if well tolerated.

<sup>a</sup>In very frail patients, treatment targets should be individualized.

## **ORIGINAL ARTICLE**

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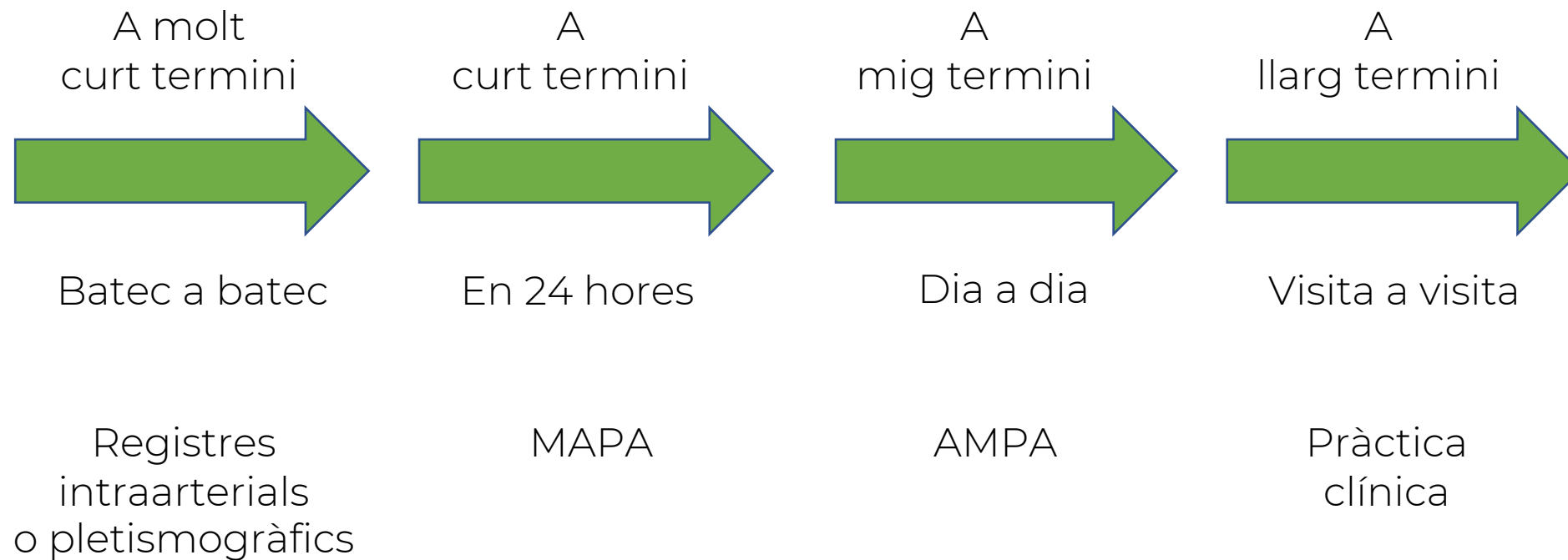
# Prognostic Relevance of Short-Term Blood Pressure Variability. The Spanish ABPM Registry

Alejandro de la Sierra<sup>ID</sup>, Bryan Williams<sup>ID</sup>, Michael Bursztyn<sup>ID</sup>, Gianfranco Parati<sup>ID</sup>, George Stergiou<sup>ID</sup>, Ernest Vinyoles<sup>ID</sup>, Julián Segura<sup>ID</sup>, Manuel Gorostidi<sup>ID</sup>, Luis M. Ruilope<sup>ID</sup>

To evaluate the association of short-term BP variability, with all-cause and cardiovascular mortality in a large cohort of patients with hypertension (n=59 124).

Hypertension. 2024 Mar 20. Epub ahead of print.

# Tipus de variabilitat de la pressió arterial i la seva mesura





**Table 4. Hazard Ratios for a Systolic Daytime SD $\geq$ 13 mm Hg, a Systolic Nighttime SD $\geq$ 12 mm Hg, a Systolic-Weighted SD $\geq$ 12 mm Hg, and a Systolic ARV $\geq$ 10 mm Hg, in Relation to Total and Cardiovascular Mortality**

Systolic BPV parameter	Total mortality		Cardiovascular mortality	
	Model 1*	Model 2†	Model 1*	Model 2†
Daytime SD $\geq$ 13 mm Hg	1.26 (1.19–1.33)	1.18 (1.11–1.24)	1.37 (1.24–1.51)	1.26 (1.14–1.39)
Nighttime SD $\geq$ 12 mm Hg	1.13 (1.07–1.19)	1.08 (1.02–1.14)	1.23 (1.12–1.34)	1.15 (1.05–1.27)
WSD $\geq$ 12 mm Hg	1.23 (1.16–1.30)	1.12 (1.06–1.19)	1.30 (1.18–1.44)	1.16 (1.04–1.28)
ARV $\geq$ 10 mm Hg	1.25 (1.17–1.33)	1.14 (1.07–1.22)	1.35 (1.20–1.51)	1.21 (1.07–1.36)

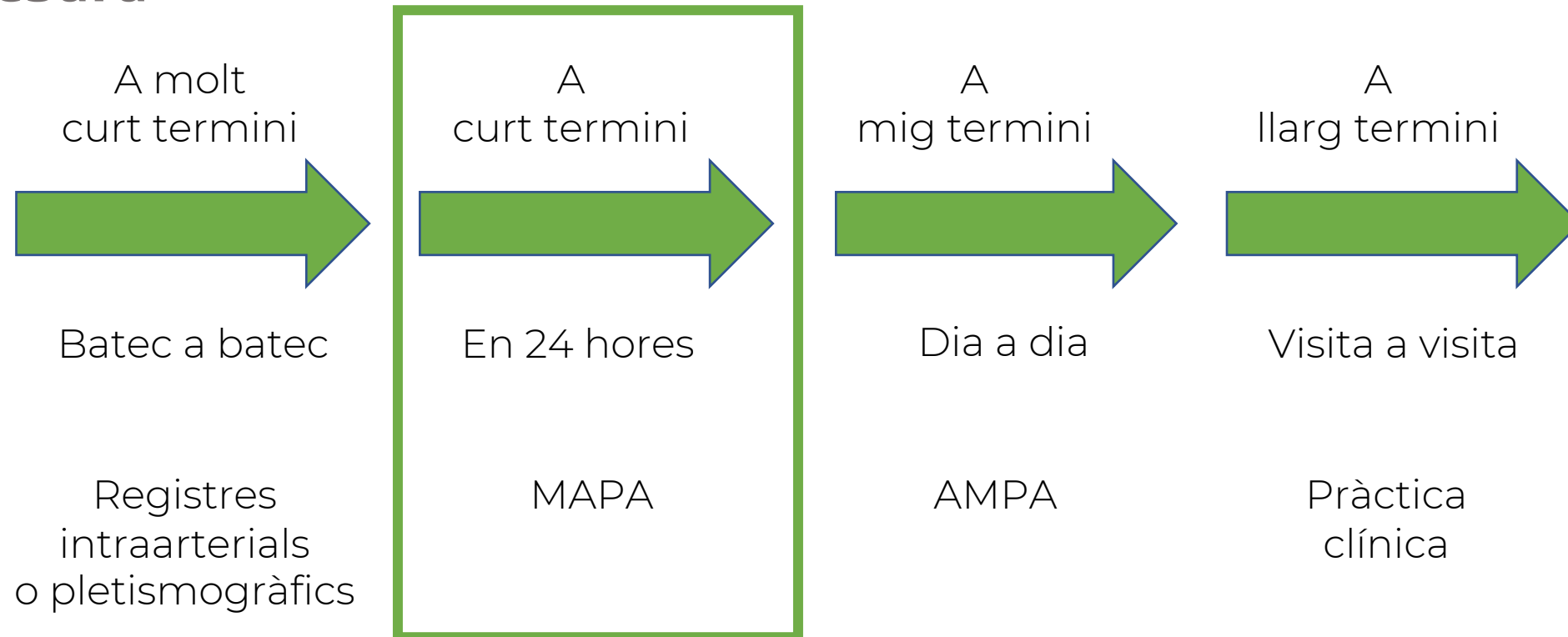
ARV indicates average real variability; BP, blood pressure; BPVR, BP variability ratio; SBP, systolic blood pressure; VIM, variation independent of the mean; and WSD, weighted SD.

\*Model 1 was adjusted for age, sex, body mass index, smoking, diabetes, dyslipidemia, antihypertensive treatment, and previous cardiovascular disease.

†Model 2 was additionally adjusted as follows: daytime SD was adjusted for daytime SBP, nighttime SD was adjusted for nighttime SBP, WSD, and ARV were adjusted for 24-hour SBP.

Hypertension. 2024 Mar 20. Epub ahead of print.

# Tipus de variabilitat de la pressió arterial i la seva mesura

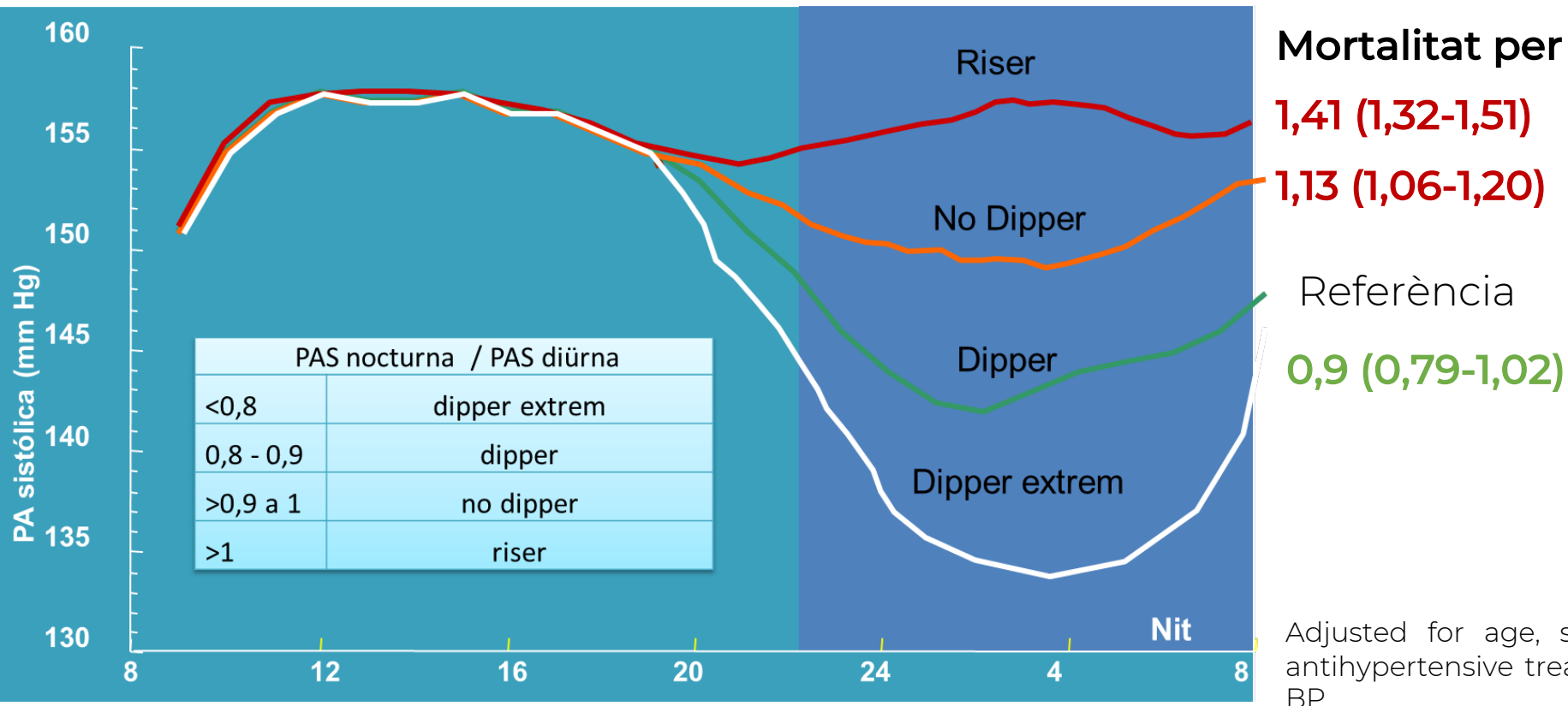


**La variabilitat tensional s'associa a mortalitat**



# A blunted nocturnal blood pressure decline is associated with all-cause and cardiovascular mortality

Alejandro de la Sierra<sup>a</sup>, Natalie Staplin<sup>b</sup>, Luis M. Ruilope<sup>c</sup>, Manuel Gorostidi<sup>d</sup>, Ernest Vinyoles<sup>e</sup>, Julián Segura<sup>c</sup>, Colin Baigent<sup>b</sup>, and Bryan Williams<sup>f</sup>



Es manté l'associació amb mortalitat fins i tot en absència d'HTA nocturna

Adjusted for age, sex, BMI, smoking, DM, dyslipidemia, antihypertensive treatment, previous CV disease and 24 h-BP

## Conclusions

- La PA ambulatoria prediu millor la morbimortalitat que la PA de consulta
- Especialment, la PA nocturna i el patró circadiari
- La variabilitat elevada de la PA també s'associa a mortalitat
- **La mesura de la PA ambulatoria (AMPA / MAPA) ha de deixar de ser excepcional per esdevenir habitual**





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