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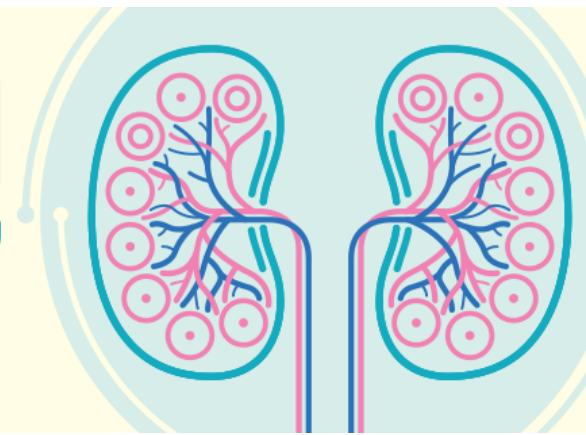
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CURSO DE NEFROLOGIA PEDIÁTRICA

A CRIANÇA COM DOENÇA NEFRO-UROLÓGICA

Sociedade Portuguesa de Nefrologia Pediátrica

26 e 27 2017
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Monitorização ambulatória da pressão arterial

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27 de Janeiro de 2017



O autor declara ausência de potenciais conflitos de interesses
(de acordo com o ponto 24. do documento UEMS 2012/30 “Accreditation of Live
Educational Events by the EACCME”)

Epidemiologia de HTA em crianças

A prevalência de HTA em crianças têm vindo a aumentar nas últimas décadas

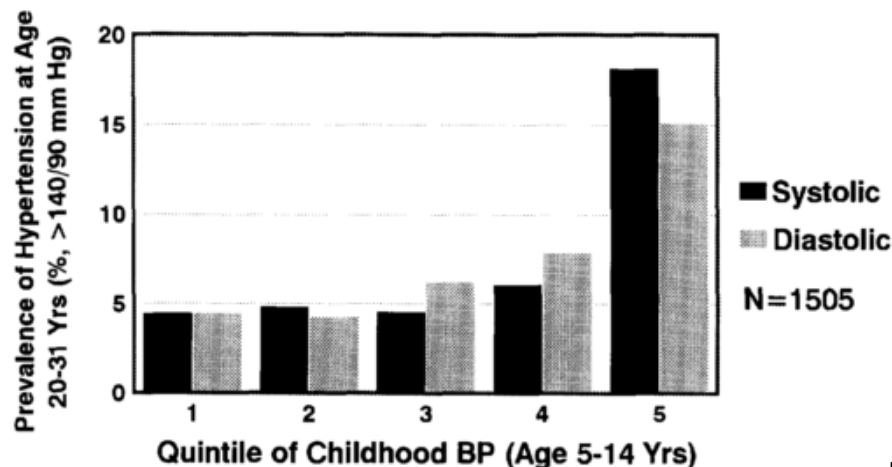
Anos 80 **2%**

2004 **4.5%** crianças em idade escolar

13.8% crianças obesas

Sorof et al, Pediatrics 2004

Quase 50% dos adultos com HTA tinham PA elevada na infância



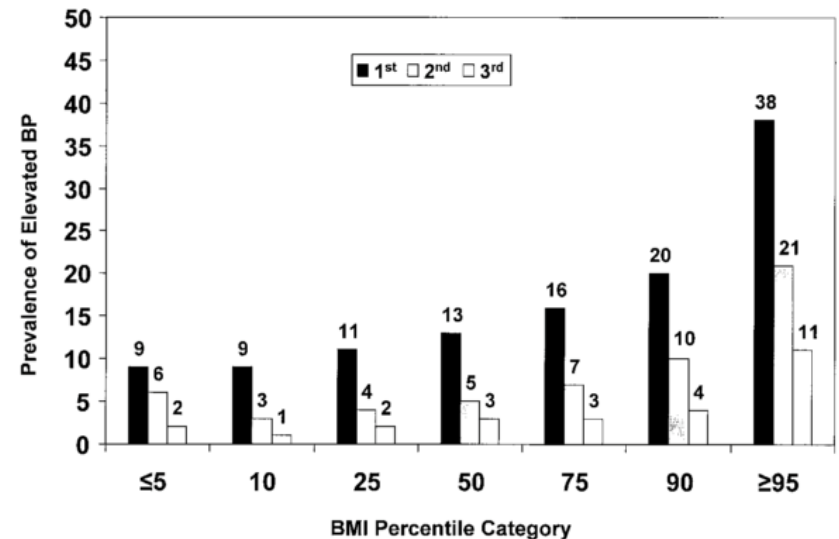
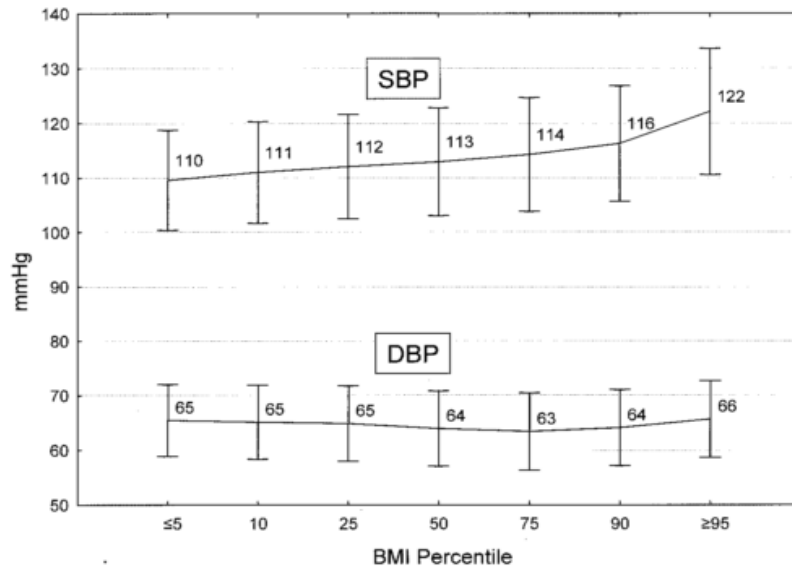
Bao et al, Am J Hypertens 1995

- Fenómeno de *tracking* - Crianças hipertensas serão adultos hipertensos
- HTA é um importante FR para doença CV na vida adulta

HTA em crianças

Vários estudos reportam uma tendência de elevação da PA em paralelo com a crescente incidência de obesidade e excesso de peso em idade pediátrica

(Falaschetti E, 2010; Feber J, 2010; Gopinath B, 2011; Larsson C, 2011; Tybor DJ, 2011; Lawlor DA, 2010; Maximova K, 2010)



Sorof et al, Pediatrics 2004



***A pressão arterial é um parâmetro dinâmico...
Dado que falamos de crianças, os valores de normalidade variam ...***

Definição de HTA

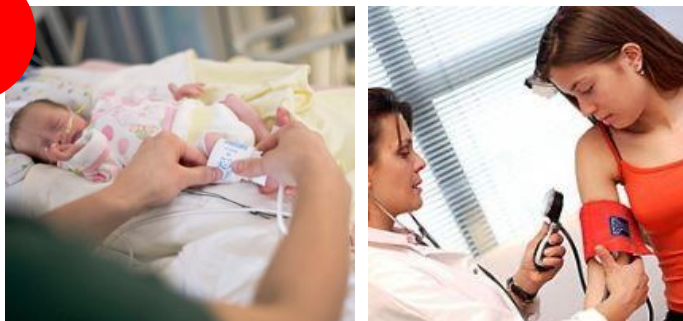
Ex: Criança de 4 anos, P50 de altura → P95 PA 111/69 mmHg

TABLE 3. BP Levels for Boys by Age and Height Percentile

Age, y	BP Percentile	SBP, mm Hg							DBP, mm Hg						
		Percentile of Height							Percentile of Height						
		5th	10th	25th	50th	75th	90th	95th	5th	10th	25th	50th	75th	90th	95th
1	50th	80	81	83	85	87	88	89	34	35	36	37	38	39	39
	90th	94	95	97	99	100	102	103	49	50	51	52	53	53	54
	95th	98	99	101	103	104	106	106	54	54	55	56	57	58	58
	99th	105	106	108	110	112	113	114	61	62	63	64	65	66	66
2	50th	84	85	87	88	90	92	92	39	40	41	42	43	44	44
	90th	97	99	100	102	104	105	106	54	55	56	57	58	58	59
	95th	101	102	104	106	108	109	110	59	59	60	61	62	63	63
	99th	109	110	111	113	115	117	117	66	67	68	69	70	71	71
3	50th	86	87	89	91	93	94	95	44	44	45	46	47	48	48
	90th	100	101	103	105	107	108	109	59	59	60	61	62	63	63
	95th	104	105	107	109	110	112	113	63	63	64	65	66	67	67
	99th	111	112	114	116	118	119	120	71	71	72	73	74	75	75
4	50th	88	89	91	93	95	96	97	47	48	49	50	51	51	52
	90th	102	103	105	107	109	110	111	62	63	64	65	66	66	67
	95th	106	107	109	111	112	114	115	66	67	68	69	70	71	71
	99th	113	114	116	118	120	121	122	74	75	76	77	78	78	79
5	50th	90	91	93	95	96	98	98	50	51	52	53	54	55	55
	90th	104	105	106	108	110	111	112	65	66	67	68	69	69	70
	95th	108	109	110	112	114	115	116	69	70	71	72	73	74	74
	99th	115	116	118	120	121	123	123	77	78	79	80	81	81	82

Diagnóstico de HTA em crianças

1



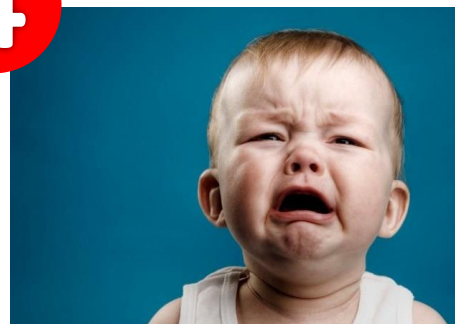
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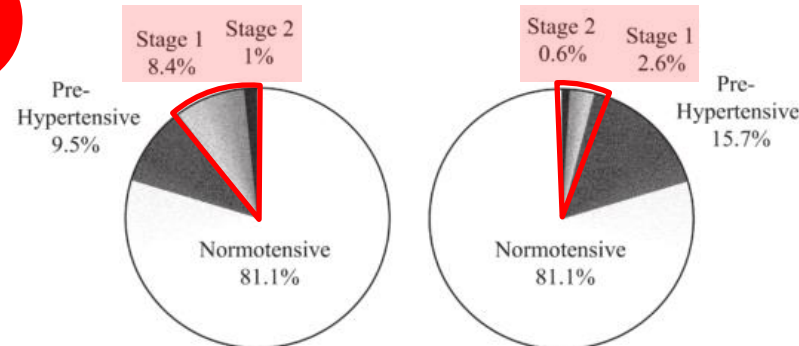
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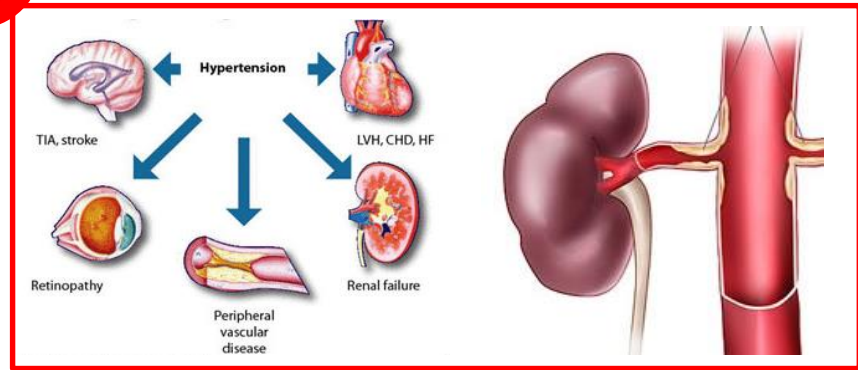


1ª avaliação

3ª avaliação

McNiece et al, 2007

6



Definição de HTA

Consensus Document

2016 European Society of Hypertension guidelines for the management of high blood pressure in children and adolescents

Empar Lurbe^{a,b}, Enrico Agabiti-Rosei^c, J. Kennedy Cruickshank^d, Anna Dominiczak^e, Serap Erdine^f, Asle Hirth^g, Cecilia Invitti^h, Mieczyslaw Litwinⁱ, Giuseppe Mancial^j, Denes Pall^k, Wolfgang Rascher^l, Josep Redon^{b,m,n}, Franz Schaefer^o, Tomas Seeman^p, Manish Sinha^q, Stella Stabouli^r, Nicholas J. Webb^s, Elke Wühl^t, and Alberto Zanchetti^u

TABLE 1. Classification of hypertension in children and adolescents

Category	0–15 years SBP and/or DBP percentile	16 years and older SBP and/or DBP values (mmHg)
Normal	<90th	<130/85
High-normal	≥90th to <95th percentile	130–139/85–89
Hypertension	≥95th percentile	≥140/90
Stage 1 hypertension	95th percentile to the 99th percentile and 5 mmHg	140–159/90–99
Stage 2 hypertension	>99th percentile plus 5 mmHg	160–179/100–109
ISH	SBP ≥95th percentile and DBP <90th percentile	≥140/<90

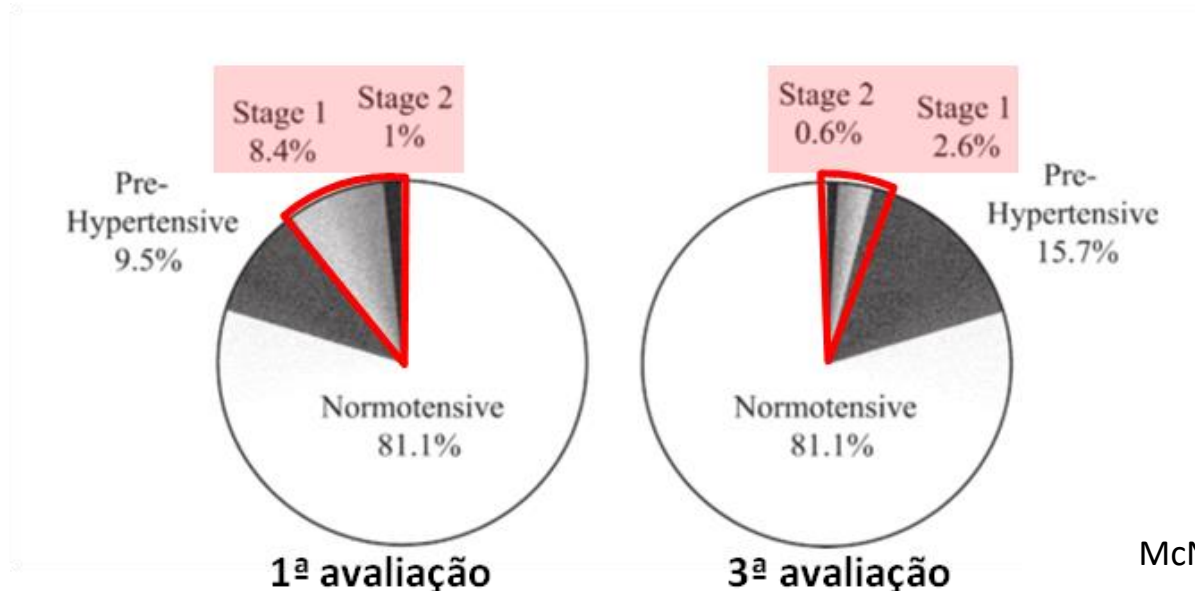
ISH, isolated systolic hypertension.

Pressão arterial clínica

A avaliação da PA clínica é frequentemente a 1ª abordagem no diagnóstico de HTA mas é sujeita a diversos tipos de erros

Principais problemas:

- Número de medições - Efeito de acomodação e regressão para a média
- Efeito da bata branca
- Dependência crescente de dispositivos automáticos



Pressão arterial clínica

A avaliação da PA clínica é frequentemente a 1ª abordagem no diagnóstico de HTA mas é sujeita a diversos tipos de erros

- Medição directa
- Não requer calibração
- **Boa correlação com PA**
- **Confirmar PA alta (auto)**



- **Variabilidade interobservador**
- Ritmo de desinsuflação
- **Erros de paralaxe**
- Dependente do observador
- Preferência de dígitos
- RN / lactentes
- **Mais moroso**

- **Facilidade de utilização**
- **Sem viéses dependentes de observador, preferência de dígitos, erros de paralaxe**
- **Mais fácil em RN/lactentes**

- **Medida indirecta de PAS / PAD**
- **Algoritmos variáveis**
- **Requer calibração**
- **Diferenças com PA auscultatória**

Auto-medição de PA no domicílio (AMPA)

A auto-medição de PA é um método de confirmação de PA elevada

*Em adultos é sempre recomendado
antes do início de terapêutica anti-hipertensora*

White WB, N Engl J Med 2003

Principais problemas (em crianças):

- **Ausência de dispositivos de medição de PA validados em idade pediátrica**

- Algoritmos e dispositivos não validados em crianças
- Braçadeiras não apropriadas

- **Ausência de valores de referência de AMPA em crianças**

- Guidelines da ESH (2016) aprovam o uso AMPA em crianças

Tabelas normativas provenientes de pequena amostra de crianças gregas (n=778)

Aplicáveis ? Necessários mais estudos em crianças!

Lurbe E et al, J Hypertens 2009

- Correlação com valores de MAPA ou PA clínica?

Stergiou GS et al, J Hypertens 2009

Monitorização ambulatória da pressão arterial (MAPA)

Vantagens:

- Única técnica que elimina viéses relacionados com observador e efeito bata branca
- Permite avaliação da PA nocturna
- Método custo-efectivo
- Correlação superior com predição de morbilidade e mortalidade CV

Hodgkinson J et al, BMJ 2011
Metoki H et al, J Hypertens 2006



2016 European Society of Hypertension guidelines for the management of high blood pressure in children and adolescents

Empar Lurbe^{a,b}, Enrico Agabiti-Rosei^c, J. Kennedy Cruickshank^d, Anna Dominiczak^e, Serap Erdine^f, Asle Hirth^g, Cecilia Invitti^h, Mieczyslaw Litwinⁱ, Giuseppe Mancia^j, Denes Pall^k, Wolfgang Rascher^l, Josep Redon^{b,m,n}, Franz Schaefer^o, Tomas Seeman^p, Manish Sinha^q, Stella Stabouli^r, Nicholas J. Webb^s, Elke Wühl^t, and Alberto Zanchetti^u

ABPM is now increasingly recognized as providing extremely useful information for the diagnosis and management of HTN and has contributed significantly to our understanding of HTN by 'unmasking' BP phenomena that were not readily apparent using office BP

Monitorização ambulatória da pressão arterial (MAPA)



2014



2016

*Adaptado de valores de referência
Grupo de HTA Alemanha*

- Apenas crianças de raça caucasiana
- Pouca variabilidade PAD
- Poucas crianças com baixa estatura (DRC)

Flynn JT, *Pediatr Nephrol* 2011

AHA Scientific Statement

Table 3. 90th and 95th Percentiles of Mean Daytime and Nighttime Ambulatory Systolic and Diastolic BP, Stratified According to Gender and Height

Height, cm	Systolic BP, mm Hg				Diastolic BP, mm Hg			
	Day		Night		Day		Night	
	90th pct	95th pct	90th pct	95th pct	90th pct	95th pct	90th pct	95th pct
Boys								
120	120.6	123.5	103.7	106.4	79.1	81.2	61.9	64.1
125	121.0	124.0	104.9	107.8	79.8	81.3	62.2	64.3
130	121.6	124.6	106.3	109.5	79.3	81.4	62.4	64.5
135	122.2	125.2	107.7	111.3	79.3	81.3	62.7	64.8
140	123.0	126.0	109.3	113.1	79.2	81.2	62.9	65.0
145	124.0	127.0	110.7	114.7	79.1	81.1	63.1	65.2
150	125.4	128.5	111.9	115.9	79.1	81.0	63.3	65.4
155	127.2	130.2	113.1	117.0	79.2	81.1	63.4	65.6
160	122.2	132.3	114.3	118.0	79.3	81.3	63.6	65.7
165	131.3	134.5	115.5	119.1	79.7	81.7	63.7	65.8
170	133.5	136.7	116.8	120.2	80.1	82.2	63.8	65.9
175	135.6	138.8	119.1	121.2	80.6	82.8	63.8	65.9
180	137.7	140.9	119.2	122.1	81.1	83.4	63.8	65.8
185	139.8	143.0	120.3	123.0	81.7	84.1	63.8	65.8
Girls								
120	118.5	121.1	105.7	109.0	79.7	81.8	64.0	66.4
125	119.5	122.1	106.4	109.8	79.7	81.8	63.8	66.2
130	120.4	123.1	107.2	110.6	79.7	81.8	63.3	66.0
135	121.4	124.1	107.9	111.3	79.7	81.8	63.4	65.8
140	122.3	125.1	108.4	111.9	79.8	81.8	63.2	65.7
145	123.4	126.3	109.1	112.5	79.8	81.9	63.0	65.6
150	124.6	127.5	109.9	113.1	79.9	81.9	63.0	65.5
155	125.7	128.5	110.6	113.8	79.9	81.9	62.9	65.5
160	126.6	129.3	111.1	114.0	79.9	81.9	62.9	65.4
165	127.2	129.8	111.2	114.0	79.9	81.9	62.7	65.2
170	127.5	130.0	111.2	114.0	79.9	81.8	62.5	65.0
175	127.6	129.9	111.2	114.0	79.8	81.7	62.3	64.7

BP indicates blood pressure; pct, percentile.

Adapted from Wühl et al,⁷³ with permission from Lippincott Williams & Wilkins.

Table 3. Suggested Revised Schema for Staging of Ambulatory BP Levels in Children

Classification	Office BP*	Mean Ambulatory SBP or DBP†‡	SBP or DBP Load, %‡§
Normal BP	<90th %tile	<95th %tile	<25
White coat hypertension	≥95th %tile	<95th %tile	<25
Prehypertension	≥90th %tile or >120/80 mm Hg	<95th %tile	≥25
Masked hypertension	<95th %tile	>95th %tile	≥25
Ambulatory hypertension¶	>95th %tile	>95th %tile	25–50
Severe ambulatory hypertension (at risk for end-organ damage)	>95th %tile	>95th %tile	>50

%tile indicates percentile; BP, blood pressure; DBP, diastolic blood pressure; and SBP, systolic blood pressure.

*Based on National High Blood Pressure Education Program Task Force normative data.^{101a}

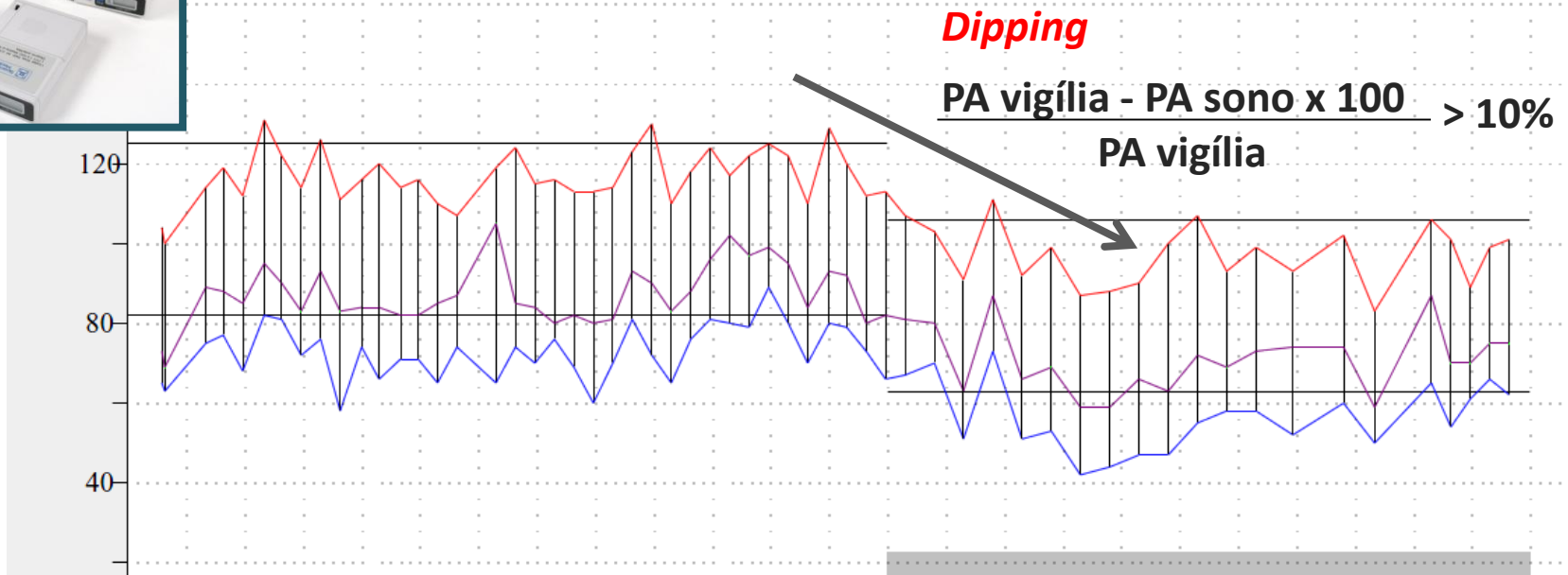
†Based on normative pediatric ABPM values in Appendix Tables A1 through A4.

‡For either the wake or sleep period of the study, or both.

§For patients with elevated load but normal mean ambulatory BP and office BP that is either normal (<90th percentile) or hypertensive (≥95th percentile), no specific ambulatory BP classification can be assigned based on current evidence and expert consensus. These “unclassified” patients should be evaluated on a case-by-case basis, taking into account the presence of secondary hypertension or multiple cardiovascular risk factors.

¶Some clinicians may prefer the term *sustained hypertension* rather than *ambulatory hypertension*.

Monitorização ambulatória da pressão arterial (MAPA)



VIGILIA

Média de **PAS** / **PAD** / **PAM**

Carga de PA diurna

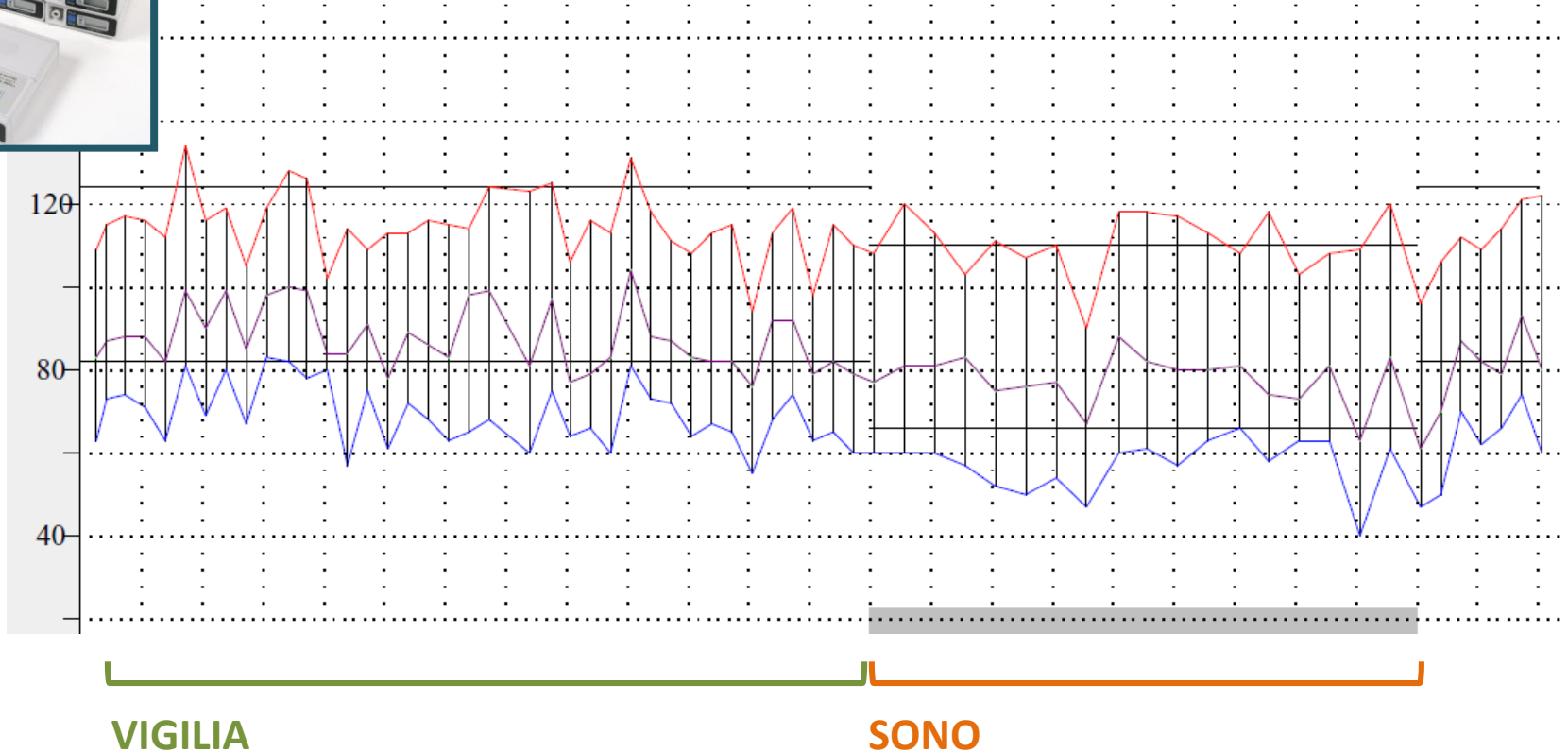
% de leituras/tempo acima dos limites normais

SONO

Média de **PAS** / **PAD** / **PAM**

Carga de PA nocturna

Monitorização ambulatória da pressão arterial (MAPA)



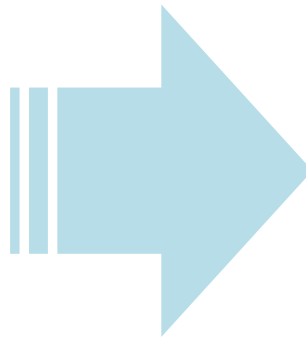
Non Dipper

Diminuição da média da PAS ou PAD nocturna <10% da diurna

Monitorização ambulatória da pressão arterial (MAPA)

Confirmação de diagnóstico

(antes de iniciar tratamento)



Durante o seguimento

*(HTA difícil controle; assegurar eficácia de tx
++ se LOA; sintomas de hipotensão)*



Monitorização ambulatória da pressão arterial (MAPA)



Indications for 24-hour ABPM

TABLE 10. Recommendations for 24-h ambulatory blood pressure monitoring

During the process of diagnosis

Confirm hypertension before starting antihypertensive drug treatment to avoid treatment of white-coat hypertension

Target organ damage (LVH and microalbuminuria) and office BP normal (masked hypertension)

DM1 and DM2

CKD

Renal, liver or heart transplant

Severe obesity with or without sleep-disordered breathing

Hypertensive response during the treadmill test

Discrepancy between office BP and home BP

During antihypertensive drug treatment

Evaluate for apparent drug-resistant hypertension

Assessment of BP control in children with target organ damage

Symptoms of hypotension

Clinical trials

Other clinical conditions

Autonomic dysfunction

Suspicion of catecholamine-secreting tumors



BP, blood pressure; CKD, chronic kidney disease; DM1, type 1 diabetes; DM2, type 2 diabetes; LVH, left ventricular hypertrophy.

Vantagens do MAPA (vs PA clínica)?



- 1. Melhor acuidade no diagnóstico de HTA**
- 2. Identificação da perda de *dipping***
- 3. Melhor valor preditivo de LOA**
- 4. Monitorização do tratamento da HTA**

Vantagens do MAPA (vs PA clínica)?



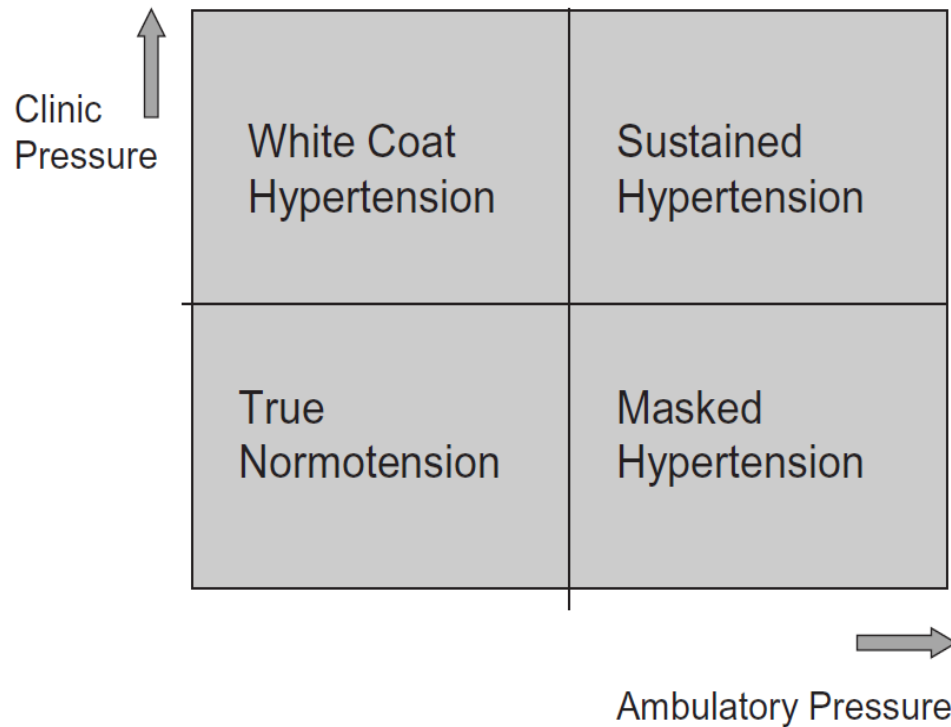
1. **Melhor acuidade no diagnóstico de HTA**
2. Identificação da perda de *dipping*
3. Melhor valor preditivo de LOA
4. Monitorização do tratamento da HTA

Vantagens do MAPA (vs PA clínica)?



HTA de bata branca (HTA BB)

Aumento de PA no consultório mas PA normal no exterior



Vantagens do MAPA (vs PA clínica)?



HTA de bata branca (HTA BB)

Aumento de PA no consultório mas PA normal no exterior

■ Risco cardiovascular da HTA de bata branca?

→ Crianças:

Menor risco de morbidade CV e LOA do que HTA confirmada

Maior índice de massa ventricular esquerda que normotensos
(mas vários estudos não encontram diferenças significativas)

Stabouli S et al, *Pediat Nephrol* 2005

McNiece K et al, *Hypertens* 2007

Sorof JM et al, *Am J Hypertens.* 2001

Fenómeno
inócuo ?

Marcador de HTA
sustentada ?

Vantagens do MAPA (vs PA clínica)?



HTA mascarada

Hipertensão no MAPA ou no exterior mas PA clínica normal

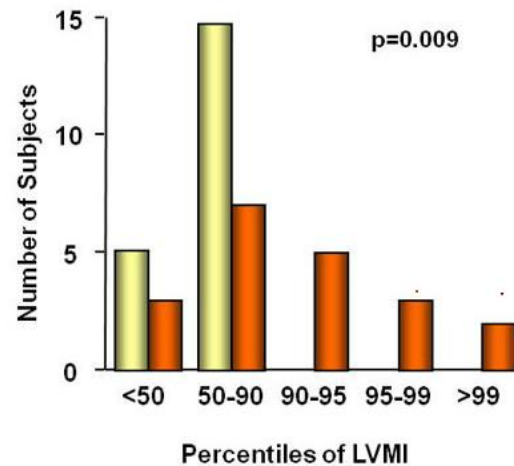
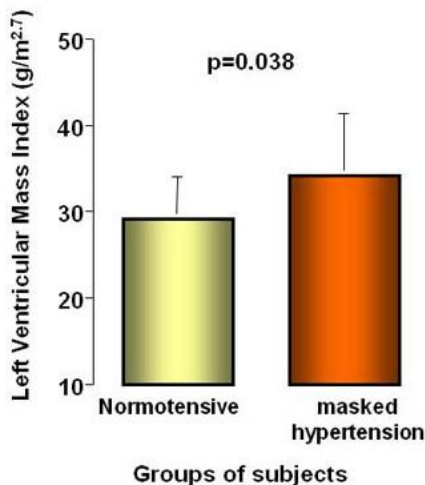
▪ Risco cardiovascular da HTA mascarada?

→ Crianças:

Risco elevado de desenvolvimento de HTA sustentada

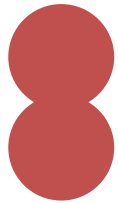
Massa ventricular esquerda semelhante a crianças com HTA confirmada

Stabouli S et al. *Pediatr Nephrol* 2005
Mitsnefes M et al, *J Am Soc Nephrol* 2010



Lurbe E et al. *Hypertension* 2005

Vantagens do MAPA (vs PA clínica)?



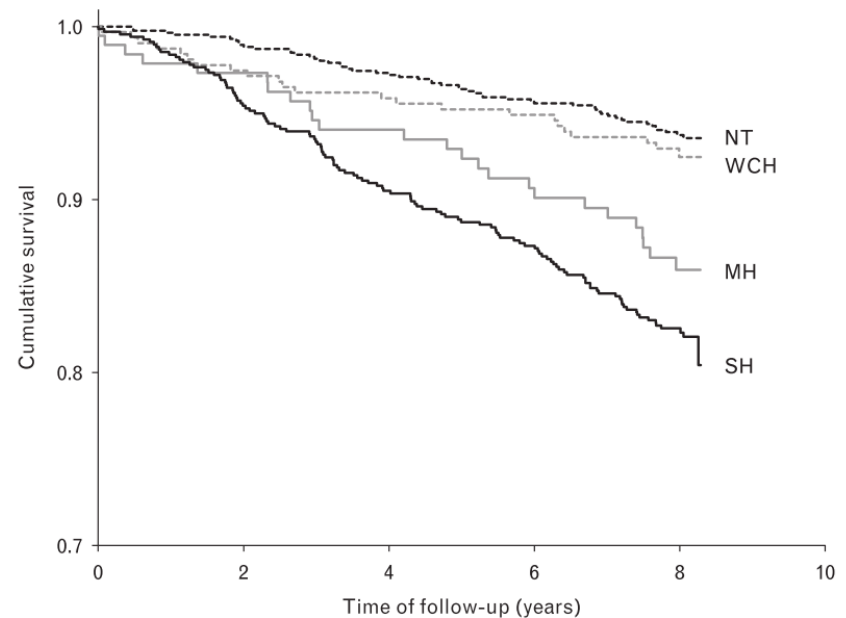
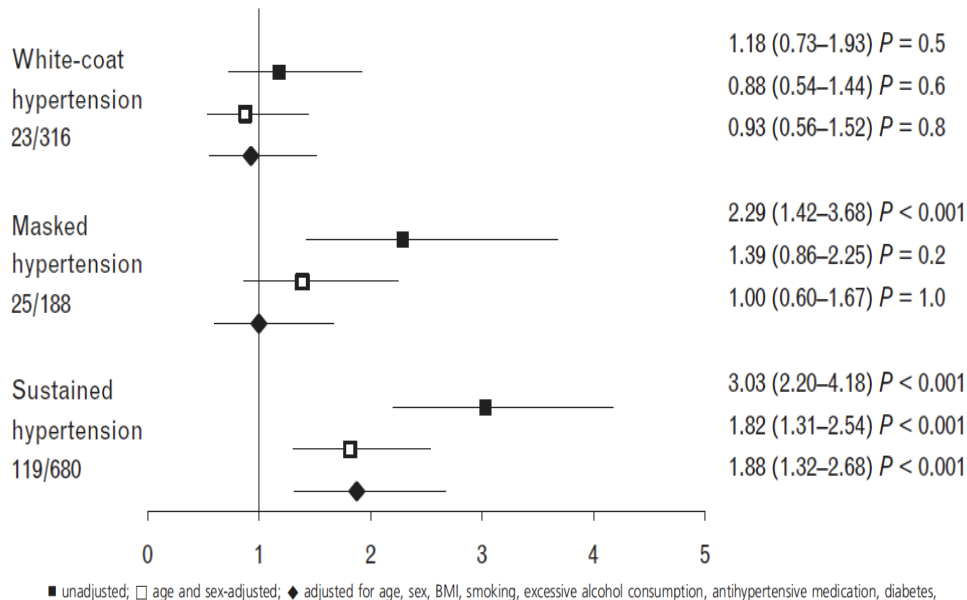
HTA BB

HTA mascarada

HTA BB – risco similar a normotensos ?

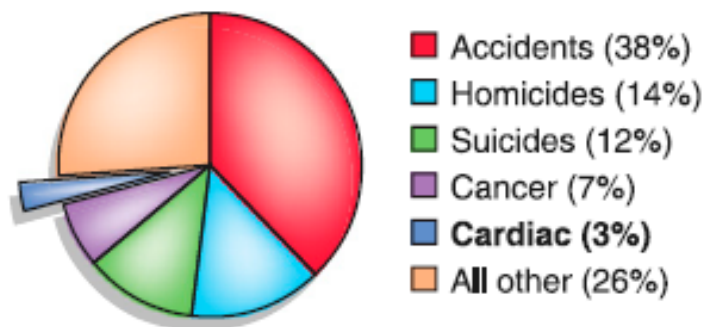
HTA mascarada – risco igual ao de HTA confirmada ?

(a)

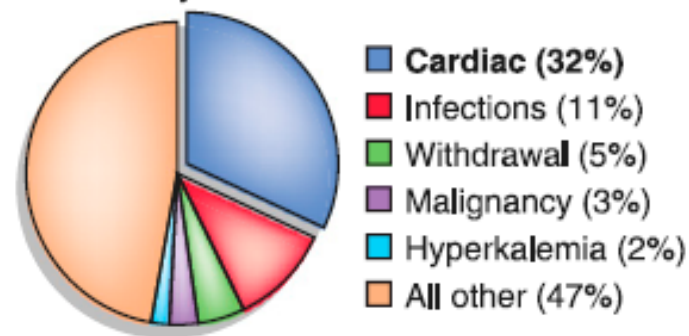


Causas de morte em crianças com DRC

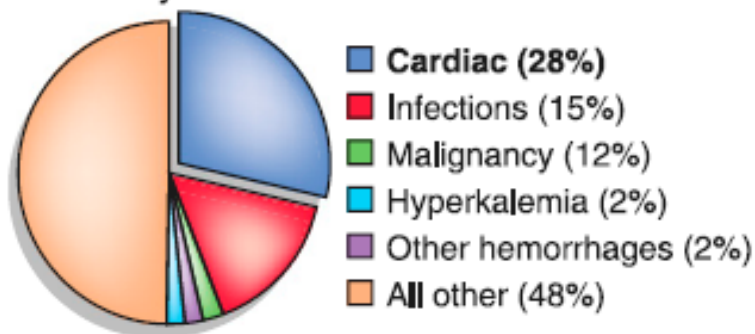
General population
1–24 years



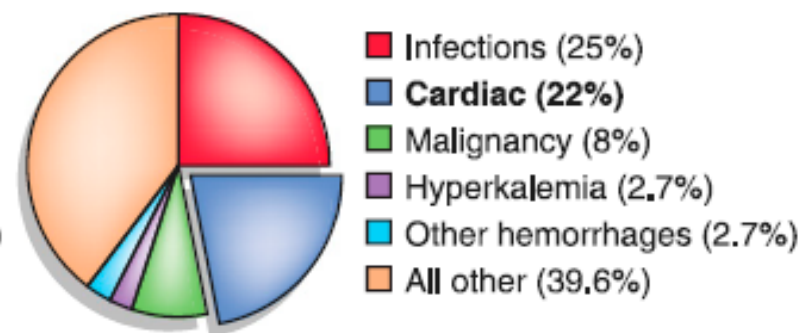
Hemodialysis
0–19 years



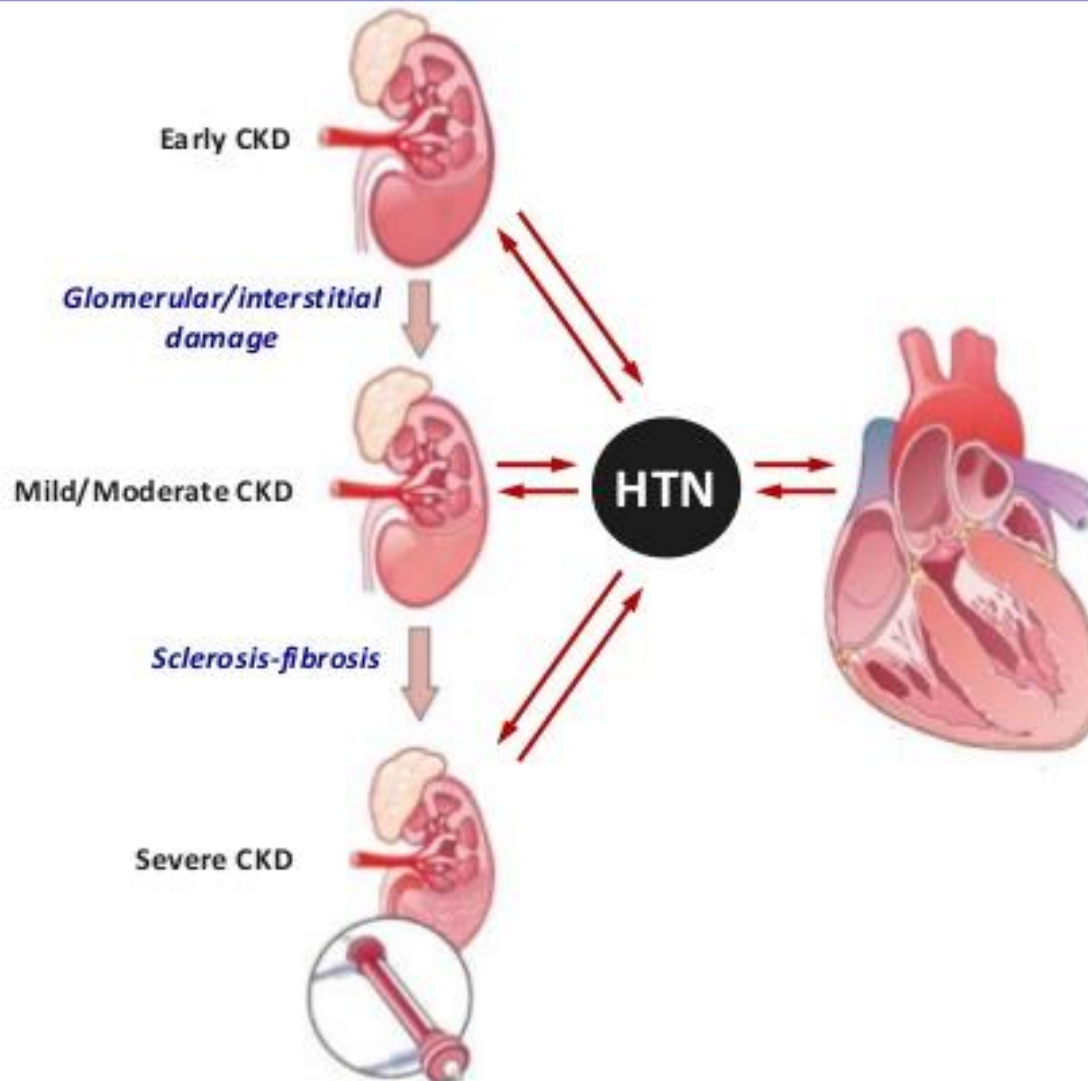
Peritoneal dialysis
0–19 years



Transplant
0–19 years



Hypertension is a **cause**, a **consequence**, and a **symptom** of CKD



Hipertensão e DRC em crianças

Doença renal crônica

→ Crianças com DRC têm alto risco CV e elevada prevalência de HTA

Table 2. BP Status of CKiD Study Participants (N=432)

Characteristic	Mean±SD or % (n)
SBP, mm Hg	107±13
SBP status	
SBP <90th percentile	75% (322)
SBP ≥90th to <95th percentile	11% (49)
SBP ≥95th percentile	14% (61)
Diastolic BP, mm Hg	66±11
Diastolic BP status	
DBP <90th percentile	77% (332)
DBP ≥90th to <95th percentile	9% (41)
DBP ≥95th percentile	14% (59)
Current use of antihypertensive medication	64% (275)
Among children with SBP >90th percentile	68%
Among children with DBP >90th percentile	53%
Self-reported hypertension	47% (201)
Parental history of hypertension	28% (122)

CKiD study (EUA)

1-16 anos, DRC estadio II-IV

PA clínica

25% HTA → > 30% sem tratamento

MAPA

33% HTA diurna

65% HTA noturna

4% HTA bata branca (= crianças s/DRC)

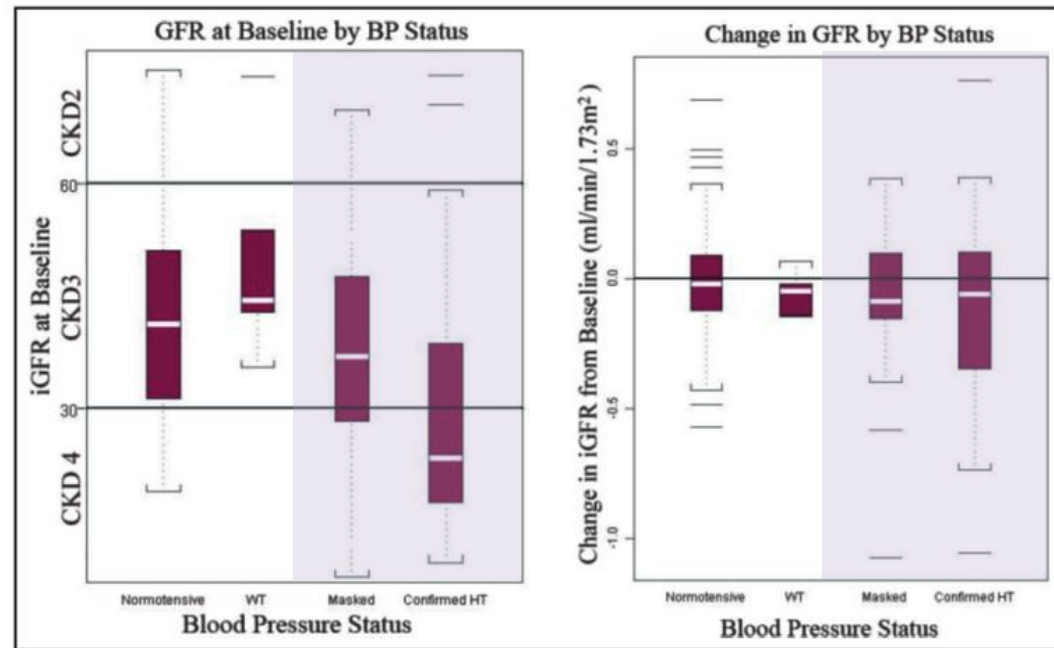
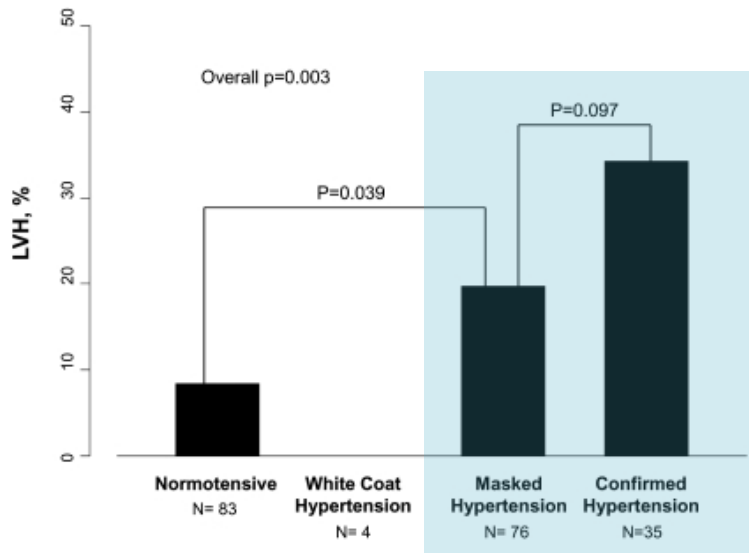
35% HTA mascarada (DRC >>)

Vantagens do MAPA (vs PA clínica)?

Doença renal crónica

→ HTA mascarada é mais frequente em crianças com DRC

CKiD study (EUA)
1-16 anos, DRC estadio II-IV



<< TFG inicial Declínio mais rápido da TFG

Vantagens do MAPA (vs PA clínica)?



1. Melhor acuidade no diagnóstico de HTA
2. **Identificação da perda de *dipping***
3. Melhor valor preditivo de LOA
4. Monitorização do tratamento da HTA

Hipertensão e DRC em crianças

Doença renal crônica

→ Crianças com DRC têm alto risco CV e elevada prevalência de HTA

Table 2. BP Status of CKiD Study Participants (N=432)

Characteristic	Mean±SD or % (n)
SBP, mm Hg	107±13
SBP status	
SBP <90th percentile	75% (322)
SBP ≥90th to <95th percentile	11% (49)
SBP ≥95th percentile	14% (61)
Diastolic BP, mm Hg	66±11
Diastolic BP status	
DBP <90th percentile	77% (332)
DBP ≥90th to <95th percentile	9% (41)
DBP ≥95th percentile	14% (59)
Current use of antihypertensive medication	64% (275)
Among children with SBP >90th percentile	68%
Among children with DBP >90th percentile	53%
Self-reported hypertension	47% (201)
Parental history of hypertension	28% (122)

CKiD study (EUA)

1-16 anos, DRC estadio II-IV

PA clínica

25% HTA → > 30% sem tratamento

MAPA

33% HTA diurna

65% HTA noturna

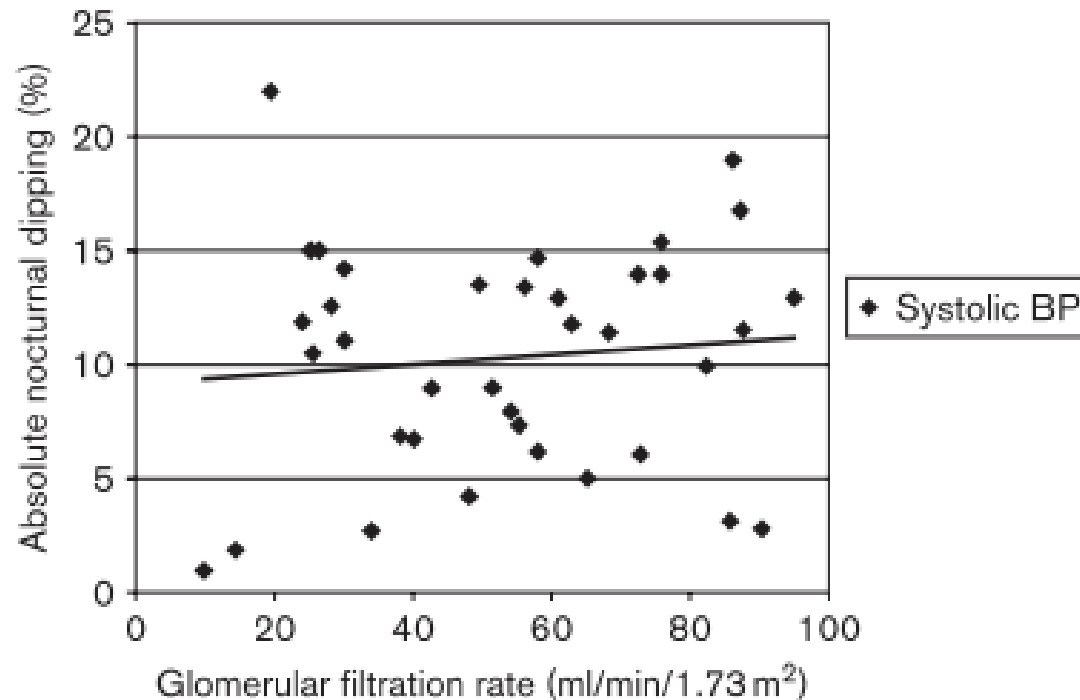
4% HTA bata branca (= crianças s/DRC)

35% HTA mascarada (DRC >>)

Vantagens do MAPA (vs PA clínica)?

Doença renal crónica

→ Perda de *dipping* correlaciona-se inversamente com TFG e progressão mais rápida da DRC



Vantagens do MAPA (vs PA clínica)?

Transplantados

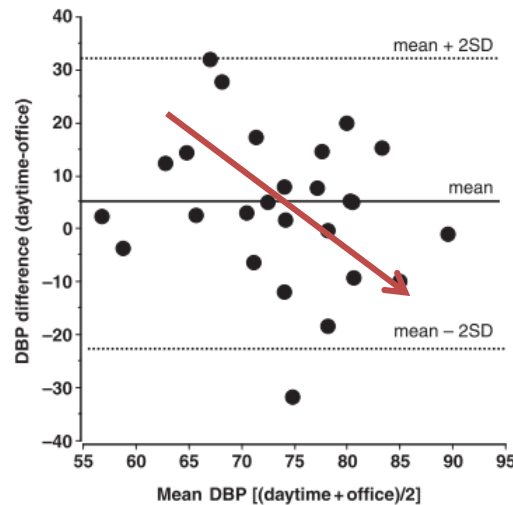
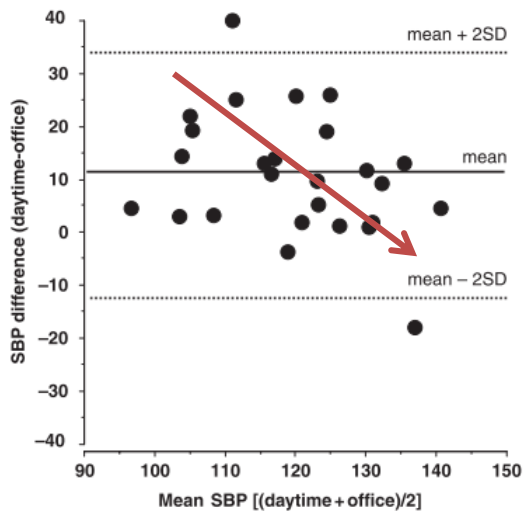
→ Doentes transplantados frequentemente apresentam HTA

Frequente HTA noturna (apenas diagnosticada com MAPA!)

McGlothan KR et al. Pediatr Transpl 2006

MAPA pode mostrar mau controlo de PA mesmo com PA clínica normal

Krmar RT et al, Am J Hypertens 2008



~1/3 de crianças transplantadas com PA clínica normal tinham HTA no MAPA

Ferraris JR et al, Pediatric Transpl 2007

Vantagens do MAPA (vs PA clínica)?



1. Melhor acuidade no diagnóstico de HTA
2. Identificação da perda de dipping
- 3. Melhor valor preditivo de LOA**
4. Monitorização do tratamento da HTA

Vantagens do MAPA (vs PA clínica)?



Risco de lesão de órgão-alvo

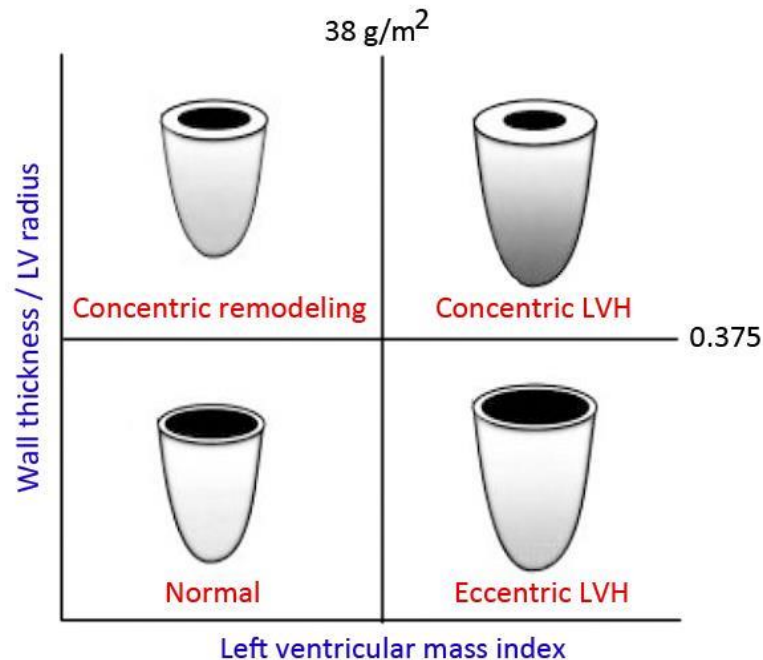
Associação mais forte com valores de MAPA do que de PA clínica

→ Medidas alternativas de risco (LOA)

HVE

Microalbuminúria

cIMT (indicador de aterosclerose)



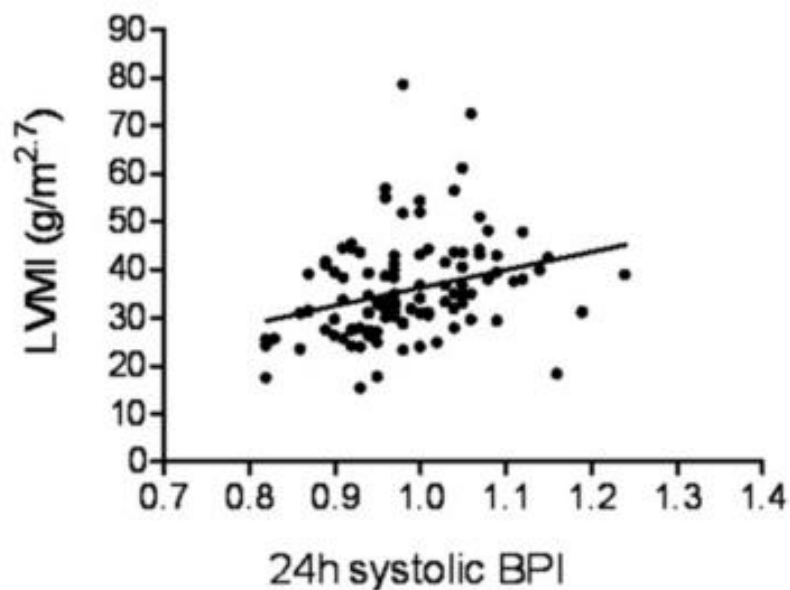
Vantagens do MAPA (vs PA clínica)?

Risco de lesão de órgão-alvo

Associação mais forte com valores de MAPA do que de PA clínica

→ HVE: Tipo de LOA mais frequente e que deve ser sempre monitorizado

Associação de massa ventricular esquerda com carga de PA (e PA noturna)



	Normal Echo (n=27) (19 M/8 F)		LVH (n=10) (9 M/1 F)		
	Mean	SD	Mean	SD	P
Clinic blood pressure, mm Hg					
SBP	137.8	14.9	141.1	12.6	0.53
DBP	77.7	9.0	75.8	7.4	0.55
Ambulatory blood pressure					
24-hour					
SBP, mm Hg	123.4	10.7	133.8	17.7	0.035
DBP, mm Hg	71.8	6.1	73.8	11.1	0.49
SBP Load, %*	46	32	66	27	0.080
DBP Load, %	31	22	34	29	0.74
SBP Index†	0.98	0.08	1.07	0.13	0.027
DBP Index	0.94	0.08	0.96	0.15	0.52

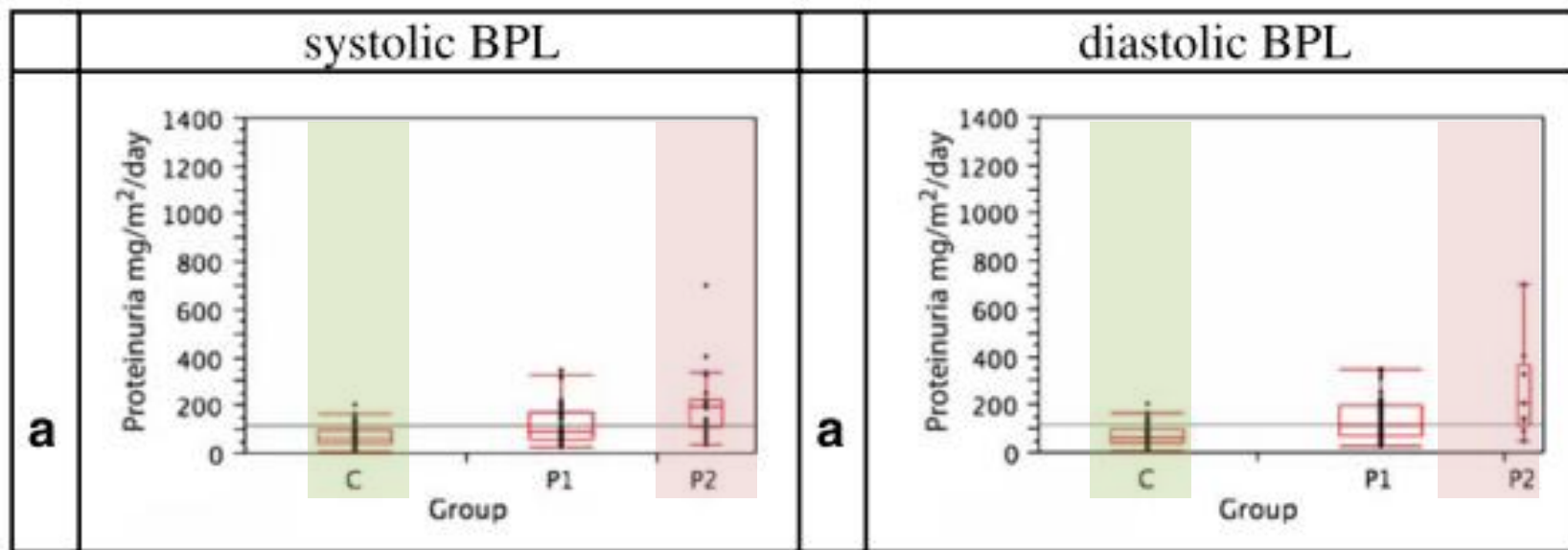
Vantagens do MAPA (vs PA clínica)?



Risco de lesão de órgão-alvo

Associação mais forte com valores de MAPA do que de PA clínica

→ Microalbuminúria: associação com carga de PA e PA noturna



P1 – Pré-hipertensos com carga tensional <math><40\%</math>

P2 – Pré-hipertensos com carga tensional >40%

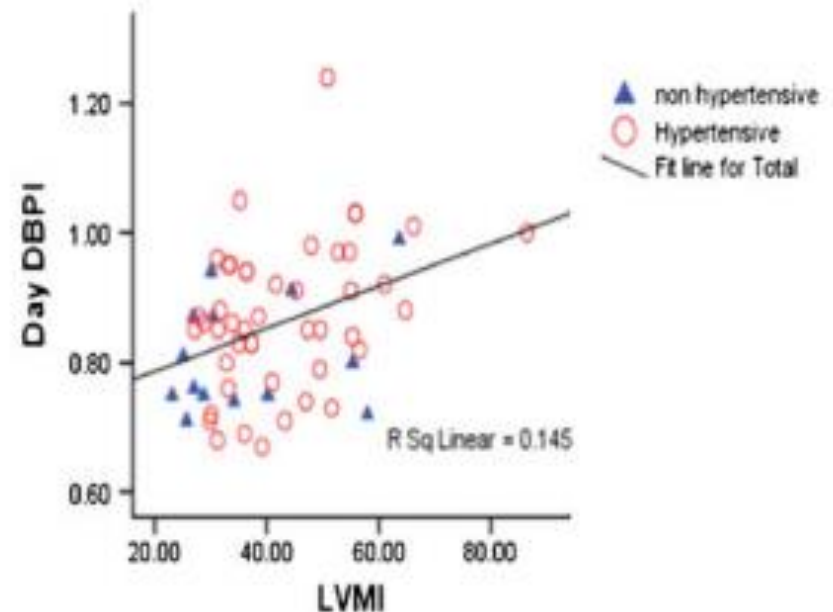
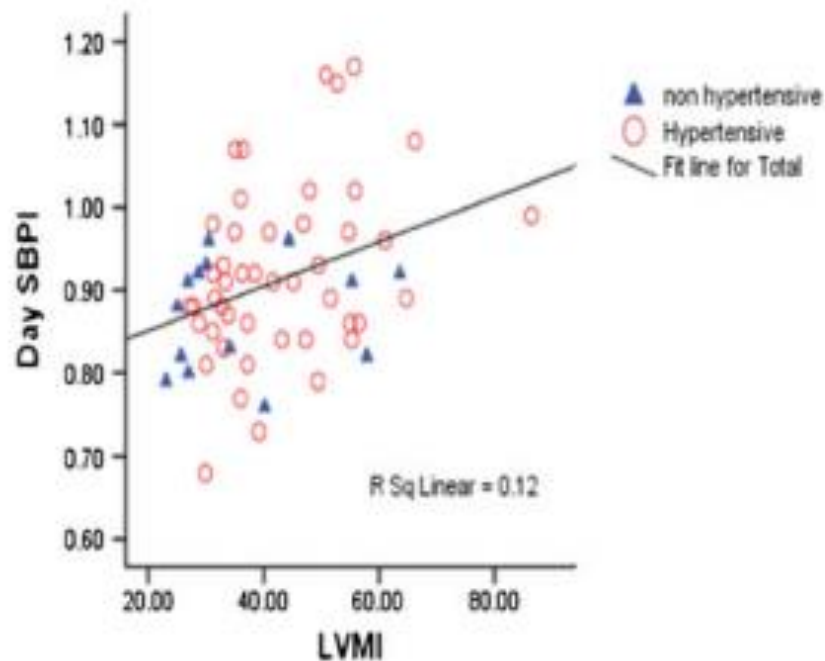
Vantagens do MAPA (vs PA clínica)?

● Transplantados

→ Doentes transplantados frequentemente apresentam HTA

Valores de MAPA correlacionam-se com massa VE

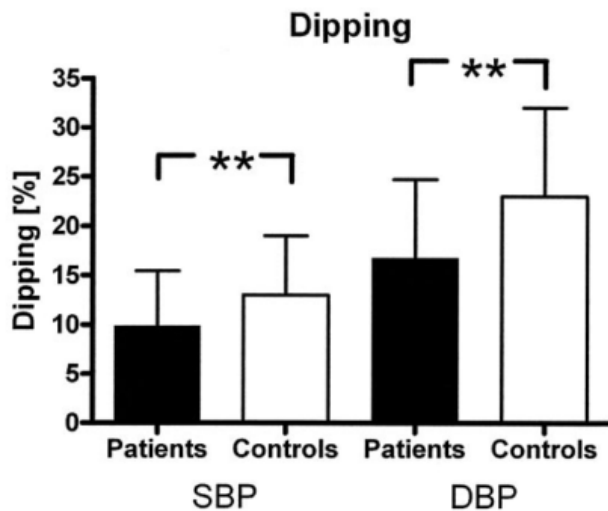
Basiratnia M et al, Pediatr Nephrol 2011



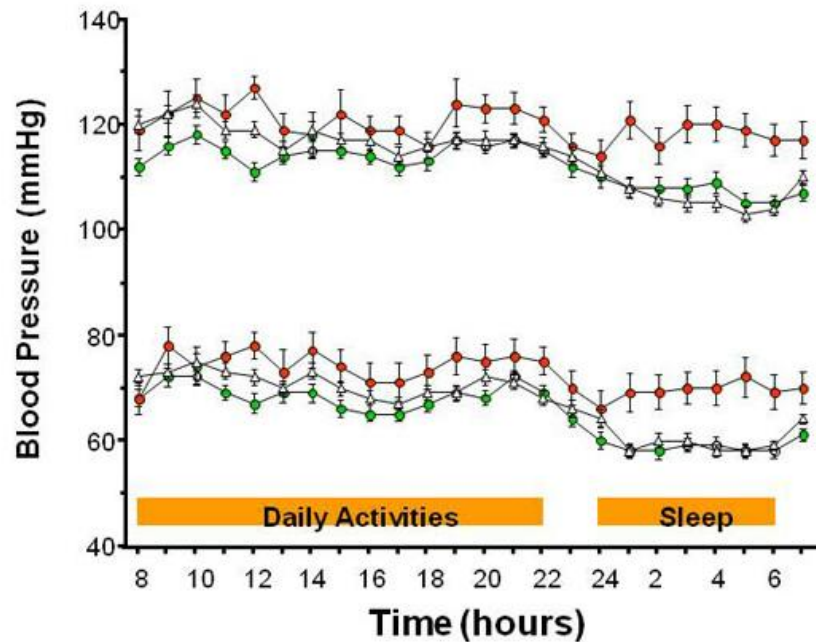
Vantagens do MAPA (vs PA clínica)?

Diabetes mellitus

- Crianças com DM1 frequentemente apresentam HTA noturna, HTA BB ou HTA mascarada
- Mau controlo glicémico contribui para PA mais elevada e perda de *dipping*



Non dipping
Diabéticos



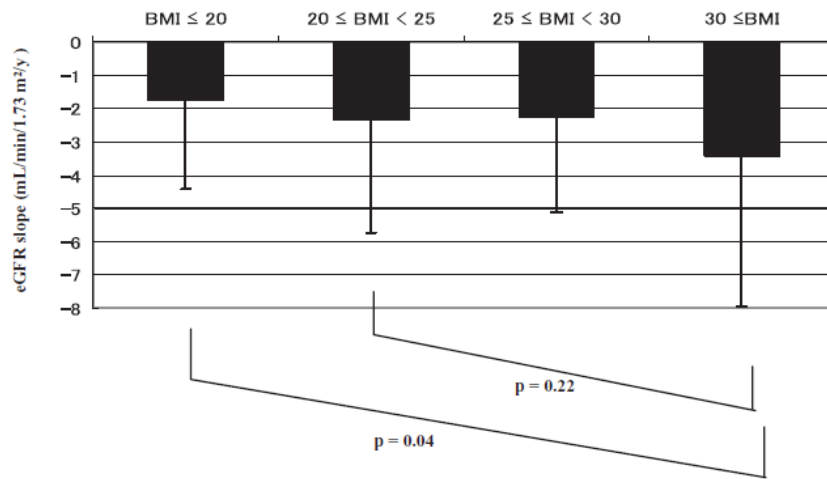
● microalbuminurics (n=11) ● normalbuminurics (n=34) △ Controls (n=45)

Vantagens do MAPA (vs PA clínica)?

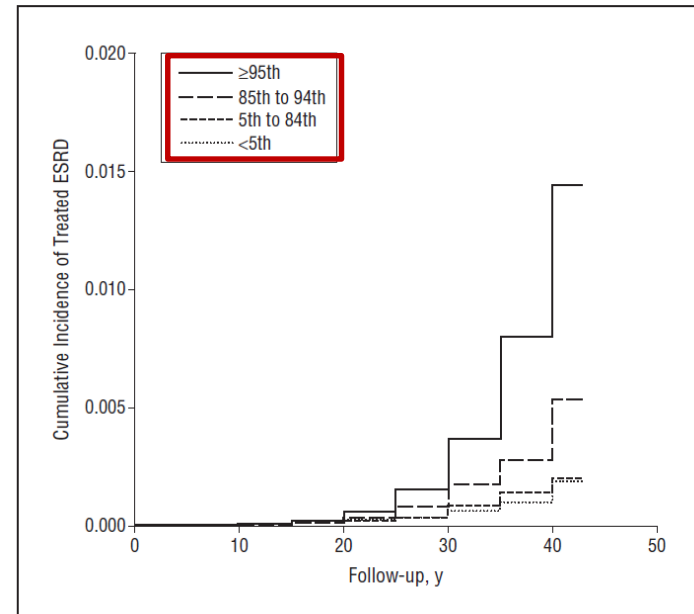
Obesidade

→ Identificada como importante factor de risco para progressão de lesão renal

→ Evidência de que pode causar dano renal em crianças previamente saudáveis



Yoshida T et al, Intern Med 2008



Vivante A et al, Arch Intern Med 2012

Adolescentes obesos têm maior risco de desenvolver DRC de qualquer causa

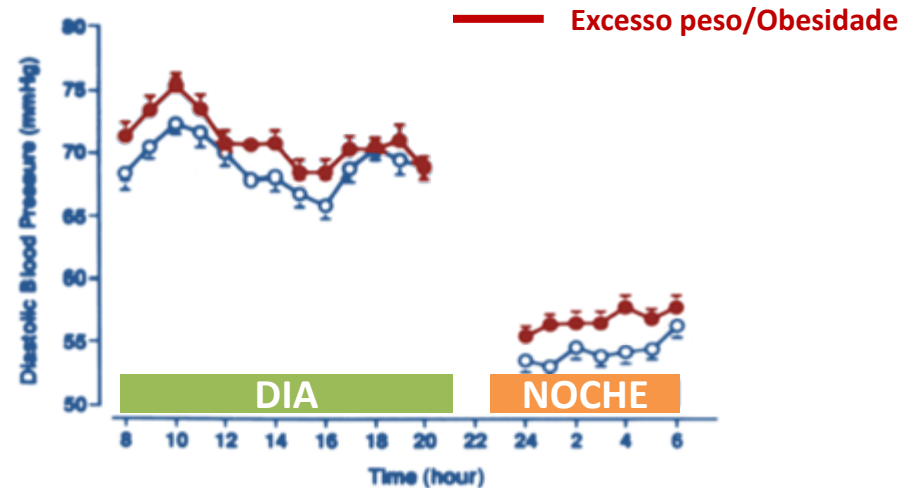
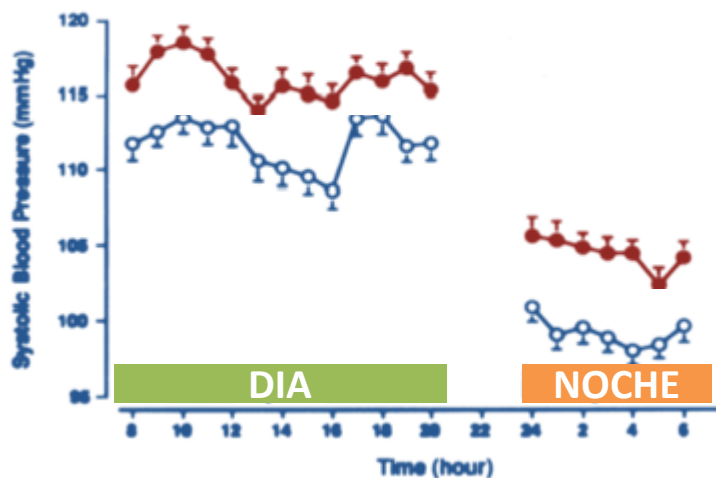
Vantagens do MAPA (vs PA clínica)?

Obesidade

→ Em crianças obesas há vários mecanismos que causam elevação da PA

→ Condições relacionadas (IR, SAOS, ...) também causam elevação da PA

Perda de dipping pode ser uma das primeiras manifestações



Vantagens do MAPA (vs PA clínica)?



1. Melhor acuidade no diagnóstico de HTA
2. Identificação da perda de dipping
3. Melhor valor preditivo de LOA
4. **Monitorização do tratamento da HTA**

Vantagens do MAPA (vs PA clínica)?

● Avaliar a eficácia do tratamento

- Confirmar controlo de PA com tratamento em curso
- Avaliar suspeitas de HTA resistente ao tratamento
- Determinar associação de sintomas com hipotensão pela medicação



Vantagens do MAPA (vs PA clínica)?

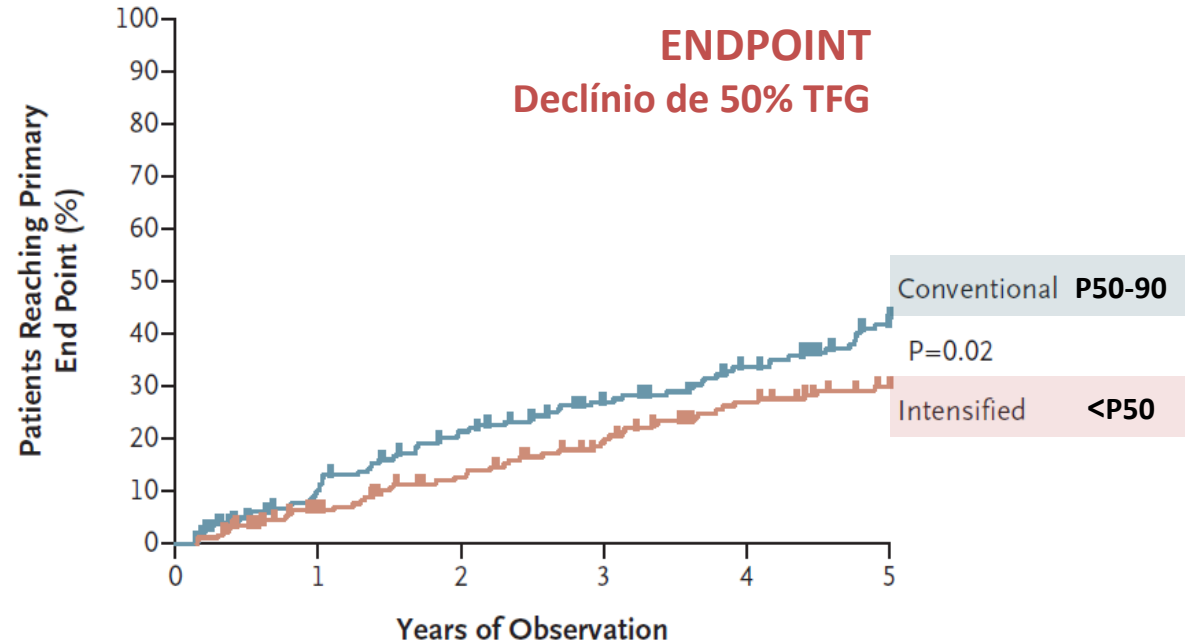
Doença renal crónica

→ Existe associação entre controlo de PA e declínio da TFG

ESCAPE TRIAL (Europa)

3-18 anos, DRC estadio II-IV

Sob tx com IECA



Vantagens do MAPA (vs PA clínica)?

Doença renal crónica

Pediatr Nephrol
DOI 10.1007/s00467-015-3077-7

EDUCATIONAL REVIEW

Evidence-based guidelines for the management of hypertension in children with chronic kidney disease

Janis M. Dionne

Table 5 Comparison of guideline recommendations for blood pressure management in children with chronic kidney disease

	4th Task Force (2004) [12]	K/DOQI (2004) [15]	ESH (2009) [13]	KDIGO (2012) [16]
Method of BP measurement	Clinic BP/auscultation	Clinic BP/auscultation	24-h ABPM	Clinic BP/auscultation
Normal reference	4th Task Force Report	1996 Update on the Task Force Report	German Normalized ABPM Values	4th Task Force Report
BP for initiation of treatment	–	–	–	>90th percentile
Target BP on treatment	<90th percentile	<90th percentile or <130/80 mmHg	<75th percentile MAP or <50th percentile if proteinuric	≤50th percentile
First-line medication	ACE inhibitor or ARB	ACE inhibitor or ARB	ACE inhibitor or ARB	ARB or ACE inhibitor

BP blood pressure, ABPM ambulatory blood pressure monitoring, MAP mean arterial pressure, ACE angiotensin-converting enzyme, ARB angiotensin receptor blocker

Vantagens do MAPA (vs PA clínica)?

CONDIÇÕES CLÍNICAS

HTA secundária	<i>Pode indicar maior probabilidade de causas secundárias</i>
Risco elevado de HTA	<i>Pode ajudar a identificar alterações precoces (p.e. perda de dipping)</i>
HTA bata branca / HTA mascarada	<i>Único método de diagnóstico destes tipos de HTA</i>
Pré-hipertensão	<i>Permite confirmar o diagnóstico</i>
Obesidade	<i>Permite excluir HTA BB/mascarada (++) SAOS, síndrome metabólico...)</i>
Risco de LOA	<i>Ajuda a determinar controlo de PA e decidir investigação</i>
Diabetes mellitus	<i>Melhor controlo de PA reduz significativamente a albuminúria</i>
Transplantados	<i>Permite identificar situações de HTA mascarada e HTA nocturna</i>
Doença renal	<i>Controlo estrito da PA diminui a progressão da doença renal</i>
Avaliar eficácia de tratamento	<i>Confirmar controlo ou avaliar resistência ao tratamento</i>

Table 2. Conditions in Which ABPM May Be Particularly Helpful*

Condition	Relevance of ABPM
Secondary hypertension	Elevated load, abnormal dipping and variability
Chronic kidney disease	Prevalence of hypertension, masked hypertension, association with target-organ changes and disease progression
Types 1 and 2 diabetes mellitus	Abnormal circadian variation, association with microalbuminuria and vascular changes
Obesity	Masked hypertension, correlation between BMI and hypertension severity, abnormal dipping, association with target-organ damage
Sleep apnea	Hypertension severity, abnormal circadian variation
Genetic syndromes Neurofibromatosis type 1 Turner syndrome Williams syndrome	Abnormal BP patterns indicating secondary cause of hypertension, especially renal artery stenosis and aortic coarctation
Treated patients with hypertension	Response to antihypertensive medications and/or lifestyle changes
Hypertension research	Reduction in subject number in drug trials

ABPM indicates ambulatory blood pressure monitoring; BMI, body mass index; and BP, blood pressure.

Mensagens finais

- **Estima-se que o MAPA, devido à grande prevalência de HTA BB, possa permitir poupar anualmente cerca de \$2.4 milhões por cada 1000 crianças correctamente diagnosticadas**

Swartz SJ et al, Pediatr 2008

- **O MAPA é o único método que permite o diagnóstico de HTA BB/HTA mascarada e HTA nocturna**

- Situações frequentes, especialmente em grupos de risco (DRC, diabetes, transplantados, etc)

- **MAPA permite melhor diagnóstico e melhor seguimento de crianças com HTA**

- Melhor correlação com LOA e permite melhores ajustes terapêuticos

- **Mas... São necesarios mais estudos em crianças...**

- Validar dispositivos de MAPA (comparar com valores PA medição auscultatória)

- Tabelas de referência mais representativas

CURSO DE NEFROLOGIA PEDIÁTRICA

A CRIANÇA COM DOENÇA NEFRO-UROLÓGICA

Sociedade Portuguesa de Nefrologia Pediátrica

26 e 27 2017
JANEIRO LISBOA



Monitorização ambulatória da pressão arterial

Liane Correia Costa

Serviço de Nefrologia Pediátrica

Centro Materno-Infantil do Norte

Centro Hospitalar e Universitário do Porto

27 de Janeiro de 2017



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