UNIVERSITY OF TWENTE.

# Implementation of out-of-office hypertension monitoring in The Netherlands

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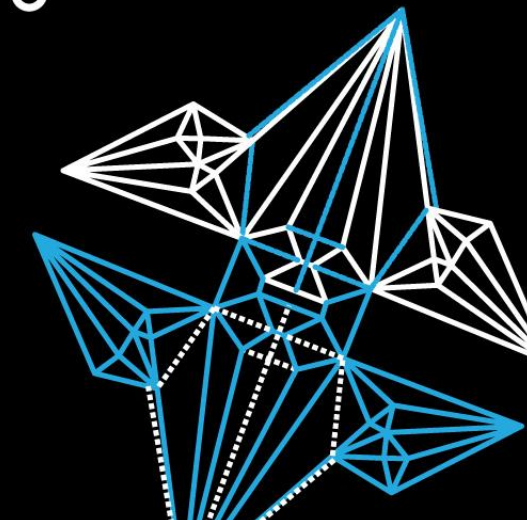


# Background

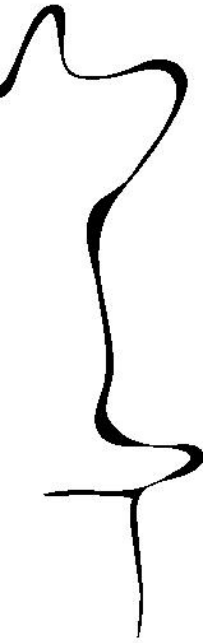
- Out-of-office blood pressure (BP) monitoring is promoted by clinical guidelines for diagnosing and managing hypertension.
- The complementary use of 24-hour ambulatory BP measurement (ABPM) and home BP measurement (HBPM) is advocated by:
  - National Institute for Health and Clinical Excellence;
  - National Heart Foundation (Australia);
  - Japanese Society of Hypertension;
  - European Society of Hypertension.

# Comparison of OBPM, ABPM and HBPM

| | Attribute | OBPM | ABPM | HBPM |
|---|---|---|---|---|
| Health outcomes | Daytime BP | Useful | Very useful | Very useful |
| | Night-time BP and dipping | Not applicable | Very useful | Not applicable |
| | 24-hour BP variability | Not applicable | Very useful | Useful |
| | Long-term BP variability | Useful | Useful | Very useful |
| | White-coat and masked hypertension diagnosis | Not applicable | Very useful | Very useful |
| Non-health outcomes | Direct costs | Very low | High | Low |
| | Patient time and involvement | Very low | Low | High |
| | Professional involvement | Very high | High | Low |
| | Need for & intensity of patient training | Not applicable | Low | High |

Notes: OBPM = office BP measurement, ABPM = 24-hour ambulatory blood pressure measurement, HBPM = home BP measurement

# Dutch cardiovascular risk management (CVRM) guidelines (1)



## Cardiovasculair risicomanagement

Samenvattingskaart M84

### Begrippen

*Hart- en vaatziekten (HVZ)*: hartinfarct, angina pectoris, hartfalen, herseninfarct, transient ischaemic attack (TIA), aneurysma aortae en perifeer arterieel vaatlijden.

*Cardiovasculair risicomanagement*: diagnostiek, behandeling en follow-up van risicofactoren voor HVZ, inclusief leefstijladvisering en begeleiding bij patiënten met een verhoogd risico op ziekte of sterfte door HVZ.

### Aanvullende diagnostiek

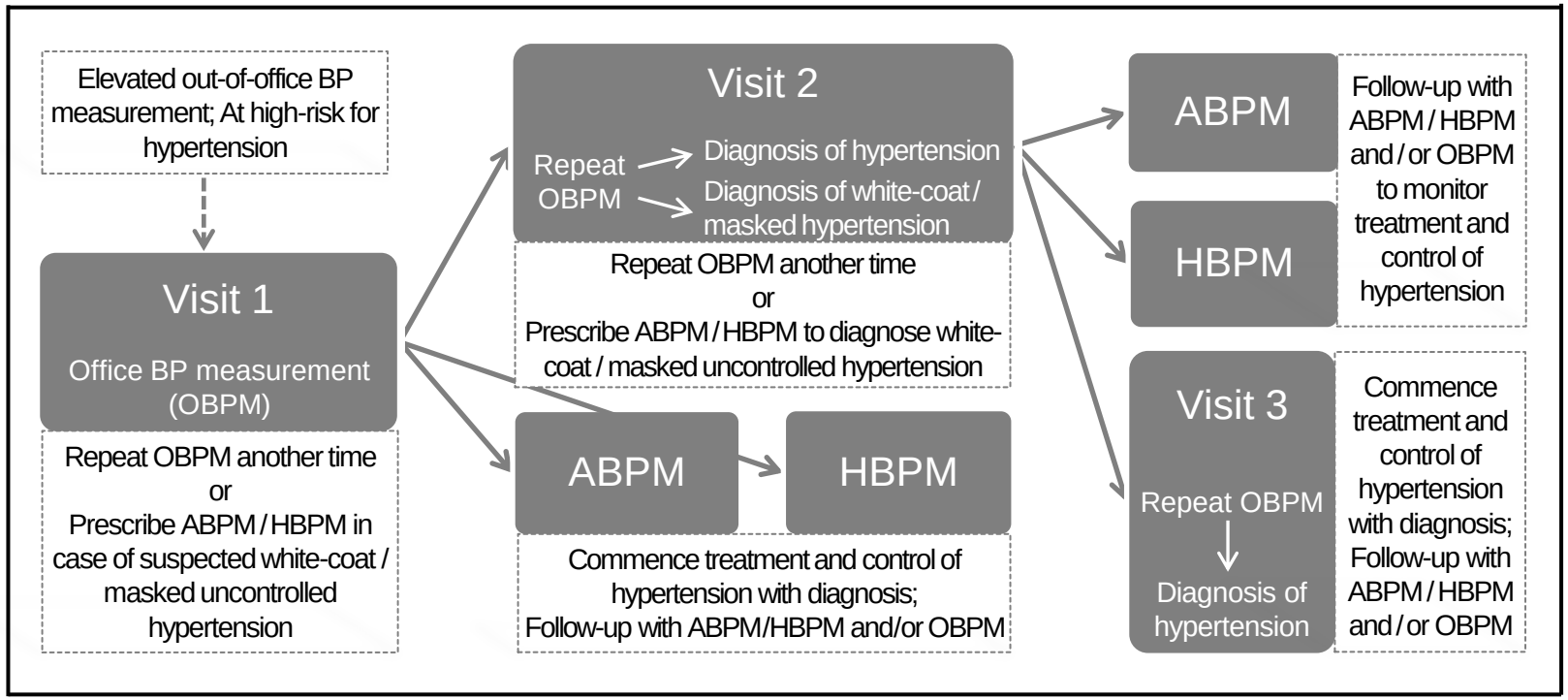
- voor risicoschatting: nuchter glucose, TC/HDL-ratio, serumcreatinine
- bij start en controle behandeling: serumcreatinine, (micro)albumine (urine), serumkalium, LDL, triglyceriden
- optioneel: ambulante- of thuisbloeddrukmeting, polsslag, ECG, CK, transaminasen

Source: https://www.nhg.org/standaarden/samenvatting/cardiovasculair-risicomanagement#Inleiding

# CVRM guidelines (2)

*Thuisbloeddrukmetingen vergeleken met ambulante bloeddrukmetingen.* Ambulante en thuismetingen tonen een vergelijkbare reproduceerbaarheid, die beter is dan die van spreekkamermetingen (Brueren 1997; Denolle 1995; Palatini 1994; Stergiou 2002). De resultaten van thuismeting correleren goed met de gemiddelde 24-uursbloeddruk (Verberk 2006). Thuisbloeddrukmeting is doelmatiger dan ambulante bloeddrukmeting, gezien de relatief hoge kosten van de ambulante bloeddrukmeter, de noodzaak voor de betrokkenheid van getraind personeel en de mogelijke beperking die het apparaat heeft op de dagelijkse bezigheden van de patiënt. Het wordt dan ook aanbevolen ambulante bloeddrukmeting te reserveren voor specifieke doeleinden (zie protocol 24-uurs ambulante bloeddrukmeting) (Mancia 2007; Mancia 2009; O'Brien 2003).

# Use of OBPM, ABPM and HBPM according to Dutch (CVRM) guidelines




Notes: OBPM = office BP measurement, ABPM = 24-hour ambulatory blood pressure measurement, HBPM = home BP measurement; CVRM = Cardiovascular Risk Management

# Aims

1. What factors influenced the acceptance of out-of-office hypertension monitoring among patients and physicians in the Netherlands?
2. Which factors played a role in the actual use of out-of-office hypertension monitoring methods by patients vis-à-vis the prescription of these by physicians?
3. How did the use of out-of-office hypertension monitoring methods relate to clinical practice guidelines?

# Analytical framework

| Underlying conceptual model | Factor influencing acceptance, use | Sample question |
|---|---|---|
| Technology acceptance model (Davis, 1989) | Attitude | How satisfied are you with ABPM/HBPM? Why/Why not? |
| | Perceived usefulness | What are the advantages and disadvantages of ABPM/HBPM? |
| | Perceived ease of use | Describe your most recent experience in using ABPM/HBPM. |
| Theory of planned behavior (Ajzen, 1991) | Self-efficacy | How confident are you in using ABPM/HBPM? Why/Why not? |
| | Social norm | What do you know about the use of ABPM/HBPM by colleagues? |
| Personal computing utilization (Thomson et al., 1991) | Enabling conditions | How familiar are you with the CVRM guidelines as they concern ABPM/HBPM? |

# Methods

Small focus group discussions (FGDs) were carried out on patients' and physicians' acceptance of and experience with out-of-office BP monitoring

# Results (1)

- No patient was prescribed, had heard of or experienced HBPM.
  - Physicians expressed very positive attitude to ABPM and chose the method for their patients.
  - Aside from being useful, patients thought that HBPM would be easier to use and more effective.
- For patients who did not tolerate ABPM well, their attitude to ABPM was less positive after use.
  - Physicians did not waiver in their positive beliefs about and prescription of ABPM.

# Results (2)

- Physicians had reservations about (all of) their patients' self-efficacy in properly using ABPM.
  - Patients thought that use of ABPM was straight-forward and a few said that they self-measure using their own sphygmomanometers.
- Physicians mentioned that while the guidelines advice ABPM (over OBPM) its use is optional.
- The interaction of factors that determined acceptance and use was found to be dynamic among patients but not for physicians.

# Determinants of acceptance and use of ABPM

| Factor | Impact on Patients | Impact on Physicians | Context |
|---|---|---|---|
| Perceived usefulness | ++ | ++ | Technological |
| Perceived ease of use | ++ | ++ | |
| Self-efficacy | ++ | + | Individual |
| Attitude | ++ | ++ | |
| Social norm | - | + | Environmental |
| Enabling conditions | ++ | ++ | |

Notes: ABPM = 24-hour ambulatory blood pressure measurement;
- Factor is a not a facilitator
+ Factor is a minor facilitator
++ Factor is a major facilitator

# Limits

- Our FGDs did not include any GPs who prescribed HBPM and patients with experience in HBPM.
  - We took our findings to be suggestive of the non-acceptance of HBPM among physicians as not just limited to our sample.
- We may have selected participants more positive about out-of-office BP monitoring.
  - The acceptance and use of ABPM (and non-prescription of HBPM) based on our four FGDs indicated a point of saturation.

# Bottom line

- There is markedly different acceptance and use of out-of-office BP monitoring methods in the Netherlands.
  - For patients, the acceptance of out-of-office BP monitoring appears to be contingent on their physician's adoption of ABPM and HBPM.
- The implementation of ABPM and HBPM is complex.
  - In advancing out-of-office BP monitoring recommendations may need to be coherent & clear.

# Illustrative quotes from patients and physicians

| Factor | Patients | Physicians |
|---|---|---|
| Perceived usefulness | "With the ABPM, I have something that goes beyond a snapshot of my blood pressure." | "I do have a very good impression – a positive impression of ABPM in terms of reliability. |
| Perceived ease of use | "I went through the instructions on the use of the ABPM device and, I said to myself: 'Is that all to it?'." | "The poor sleepers found ABPM objectionable." |
| Self-efficacy | "When the device did not seem to work, I immediately attributed it to the device. " | "People are often messing with batteries. I have batteries ready to give out to those who need them." |
| Attitude | "You have that thing (i.e. the device) not for nothing." | "I think ABPM is the best method we have. There is nothing better." |
| Social norm | "My father had high blood pressure and never had ABPM." | "I know that my colleagues use ABPM, but I do not know when and why." |
| Enabling conditions | "My doctor said: 'I would do it if I were you.' I had no reason to say: 'No I will not do it.'." | "According to the guidelines, you do not have to do HBPM or ABPM." |

Notes: ABPM = 24-hour ambulatory blood pressure measurement, HBPM = home BP measurement