Εκτίμηση προσήλωσης στη αντιυπερτασική θεραπεία και των παρενεργειών

Ελένη Τριανταφυλλίδη, MD, PhD
Διευθύντρια ΕΣΥ Καρδιολογίας
Υπεύθυνη Αντιυπερτασικού Ιατρείου
Β’ Πανεπιστημιακή Καρδιολογική Κλινική, Νοσοκομείο ΑΤΤΙΚΟΝ
Για τη σημερινή ομιλία δεν έχω να αναφέρω κάποια σύγκρουση συμφερόντων
Figure 2. Rates of Awareness, Treatment, and Control of High Blood Pressure in the United States (1976–2004).

High blood pressure is defined as a reading of 140/90 mm Hg or more for persons between the ages of 18 and 74 years. Despite major improvements in blood-pressure therapies in recent years, some 28% of Americans with hypertension do not know they have the condition, 39% are receiving no therapy, and 65% have insufficient blood-pressure control. Data are from Chobanian et al. and Cutler et al. NHANES denotes National Health and Nutrition Examination Survey.
Apparent and true resistant hypertension: definition, prevalence and outcomes

E Judd and DA Calhoun
Vascular Biology and Hypertension Program, University of Alabama at Birmingham, Birmingham, AL, USA

Compliance with antihypertensive therapy (1)

Low adherence is *extremely common for lifestyle changes* but importantly extends to drug prescriptions, for which it develops quite rapidly:

- after 6 months, more than \( \frac{1}{3} \) and after 1 year about \( \frac{1}{2} \) of the patients may stop their initial treatment;

- on a daily basis, 10% of patients forget to take their drug.

Adherence to treatment can also be improved by simplification of treatment
Compliance with antihypertensive therapy (2)

• Non-adherence has been classified into
  • A. ‘discontinuers’ (patients who discontinue treatment) and
  • B. ‘bad users’ [those who take treatment irregularly because of delays in drug(s) intake or repeated short interruptions of the prescribed therapeutic strategy].

• **Discontinuers** represent a greater problem because their behavior is normally intentional and, once discontinued, treatment resumption is more difficult.

• **Bad users**, however, are at higher risk of becoming discontinuers, and thus their identification is important
Low adherence to treatment is an even more important cause of poor BP control because it involves a large number of patients and its relationship with persistence of elevated BP values and high CV risk has been fully documented.
Medication Adherence and the Risk of Cardiovascular Mortality and Hospitalization Among Patients With Newly Prescribed Antihypertensive Medications
Soyeun Kim, Dong Wook Shin, Jae Moon Yun, Yunji Hwang, Sue K. Park, Young-Jin Ko and BeLong Cho

Hypertension. 2016;67:506-512; originally published online January 25, 2016; doi: 10.1161/HYPERTENSIONAHA.115.06731

Table 3. Association Between Antihypertensive Medication Adherence and Hospitalization for Cardiovascular Disease

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Good Adherence</th>
<th>Intermediate Adherence</th>
<th>Poor Adherence</th>
<th>P Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cohort, n</td>
<td>Cases, n</td>
<td>HR (95% CI)</td>
<td>Cohort, n</td>
</tr>
<tr>
<td>Acute myocardial infarction</td>
<td>12316</td>
<td>111</td>
<td>1.00</td>
<td>10568</td>
</tr>
<tr>
<td>Ischemic heart disease</td>
<td>12316</td>
<td>393</td>
<td>1.00</td>
<td>10568</td>
</tr>
<tr>
<td>Cerebral hemorrhage</td>
<td>12316</td>
<td>90</td>
<td>1.00</td>
<td>10568</td>
</tr>
<tr>
<td>Cerebral infarction</td>
<td>12316</td>
<td>390</td>
<td>1.00</td>
<td>10568</td>
</tr>
<tr>
<td>Stroke</td>
<td>12316</td>
<td>467</td>
<td>1.00</td>
<td>10568</td>
</tr>
</tbody>
</table>

Adjusted for age group, sex, income, Charlson comorbidity score, area of residence, no. of drugs taken, diabetes mellitus, and dyslipidemia. CI indicates confidence interval; and HR, hazard ratio.
Compliance with antihypertensive therapy (4)

Compliance 25-85% depending on series with a mean value 53%

Risk factors for non-compliance:

1. young age
2. female sex
3. single persons
4. comorbidities
5. cost for medications
6. drug class
7. lack of symptoms
8. ineffective consultation
Physician’s role in patient’s compliance

Prescription of an appropriate therapeutic regimen is crucial. This might be achieved through:

- avoiding or discussing possible drug-related adverse events,
- using long-acting drugs that require once daily dosage,
- avoiding complex dosing schedules,
- using SPCs whenever possible,
- taking into consideration the effect of treatment on a patient’s budget.
Apparent and true resistant hypertension: definition, prevalence and outcomes

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Table 1
Common Causes of Pseudo Resistant Hypertension

- Improper BP measurement in clinic
- Heavily calcified or arteriosclerotic arteries that are difficult to compress
- White-coat effect
- Poor sleep hygiene (getting up frequently or consistently getting < 6 hours/night)
- Related to antihypertensive medication
  - Inadequate doses
  - Inappropriate combinations
- Physician inertia (failure to change or increase dose regimens when not at goal)
- Poor patient adherence
  - Failure to reduce sodium intake to < 2400 mg/day
  - Side effects of medication, leading to discontinuation
  - Complicated dosing schedules
  - Poor relations between doctor and patient
  - Inadequate patient education
  - Memory or psychiatric problems
  - Cost of medication
  - Ingestion of NSAIDs or herbal products that raise BP
# Lifestyle Modifications To Prevent and Manage Hypertension

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Modification</th>
<th>Approximate SBP Reduction (Range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight reduction</td>
<td>Maintain normal body weight (body mass index 18.5–24.9 kg/m²).</td>
<td>5–20 mm Hg/10 kg</td>
</tr>
<tr>
<td>Adopt DASH eating plan</td>
<td>Consume a diet rich in fruits, vegetables, and low-fat dairy products with a reduced content of saturated and total fat.</td>
<td>6–14 mm Hg</td>
</tr>
<tr>
<td>Dietary sodium reduction</td>
<td>Reduce dietary sodium intake to no more than 100 mmol per day (2.4 g sodium or 6 g sodium chloride).</td>
<td>3–8 mm Hg</td>
</tr>
<tr>
<td>Physical activity</td>
<td>Engage in regular aerobic physical activity such as brisk walking (at least 30 minutes per day, most days of the week).</td>
<td>4–9 mm Hg</td>
</tr>
<tr>
<td>Moderation of alcohol consumption</td>
<td>Limit consumption to no more than 2 drinks (eg, 24 oz beer, 10 oz wine, or 3 oz 80-proof whiskey) per day in most men and to no more than 1 drink per day in women and lighter-weight persons.</td>
<td>2–4 mm Hg</td>
</tr>
</tbody>
</table>

**SMOKING CESSATION**

DASH indicates Dietary Approaches to Stop Hypertension.

*For overall cardiovascular risk reduction, stop smoking.*
Compliance with antihypertensive therapy

Drug treatment level

Simplification of drug regimen (combination therapy, polypill?)

Table 17: Methods to improve adherence to physicians' recommendations

<table>
<thead>
<tr>
<th>Patient level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information combined with motivational strategies (see Section 5.1.6 on smoking cessation).</td>
</tr>
<tr>
<td>Group sessions.</td>
</tr>
<tr>
<td>Self-monitoring of blood pressure.</td>
</tr>
<tr>
<td>Self-management with simple patient-guided systems.</td>
</tr>
<tr>
<td>Complex interventions.</td>
</tr>
</tbody>
</table>

Drug treatment level

Simplification of the drug regimen.

Reminder packaging.

Health system level

Intensified care (monitoring, telephone follow-up, reminders, home visits, telemonitoring of home blood pressure, social support, computer-aided counselling and packaging).

Interventions directly involving pharmacists.

Reimbursement strategies to improve general practitioners' involvement in evaluation and treatment of hypertension.

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2013 ESH/ESC Guidelines for the management of arterial hypertension
(7) **Start treatment in most patients with two drugs, not one**: Monotherapy is usually inadequate therapy for most people with hypertension, especially now that the BP treatment targets for many patients, are lower than in previous guidelines. **Initial therapy with a combination of two drugs** should now be considered usual care for hypertension. The **only exception would** be in a limited number of patients with a lower baseline BP close to their recommended target, who might achieve that target with a single drug, or in some frailer old or very old patients, in whom more gentle reduction of BP may be desirable.
A single pill strategy to treat hypertension: Poor adherence to BP-lowering medication is directly related to the number of pills and is a major factor contributing to poor BP control rates. Single pill combination therapy is now the preferred strategy for initial two-drug combination treatment of hypertension and for three drug combination therapy when required. This will control the BP in most patients with a single pill and should improve BP control rates.
### SBP targets in some hypertensive subgroups

<table>
<thead>
<tr>
<th>Subgroup</th>
<th>Class/level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age &lt; 65 years</td>
<td>120 to &lt;130 mmHg (recommended) IA</td>
</tr>
<tr>
<td>Age ≥ 65 years</td>
<td>130 to &lt;140 mmHg (recommended) IA*</td>
</tr>
<tr>
<td>Diabetes</td>
<td>130 mmHg or lower** (recommended) IA</td>
</tr>
<tr>
<td>CAD</td>
<td>130 mmHg or lower (recommended) IA</td>
</tr>
<tr>
<td>CKD</td>
<td>130 to &lt;140 mmHg (recommended) IA</td>
</tr>
<tr>
<td>Post-stroke/TIA</td>
<td>120 to &lt;130 mmHg (to be considered) IIaB</td>
</tr>
</tbody>
</table>

* Close monitoring of adverse events / ** if tolerated

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1\textsuperscript{st} group 120-130 mmHg: age<65, post stroke, DM, CAD
2\textsuperscript{nd} group 130-140 mmHg: age>65, CKD
Compliance with antihypertensive therapy (6)

- Despite the clear-cut benefits of BP treatment in trials, most treated patients do not achieve recommended BP targets in real life.

- The lower BP targets recommended in these Guidelines will mean that BP control rates will be even worse unless action is taken to ensure that patients are more likely to adhere to logical combination of treatment.
Compliance with antihypertensive therapy (7)

• Poor adherence is strongly and inversely correlated with the number of pills prescribed.

• Early recognition of a lack of adherence might reduce the number of costly investigations and procedures (including interventional treatment), and avoid the prescription of unnecessary drugs.
Strengths of the study

1. Pseudo-hypertension exclusion
2. Secondary hypertension exclusion
3. Witnessed medication
4. 24h ABPM
Graph shows office systolic blood pressure (SBP) and diastolic blood pressure (DBP) at 3-month and 6-month follow-up for renal sympathetic denervation (RDN) and drug-adjusted groups (*P=0.002, **P=0.004 between groups).
Effects of blood-pressure-lowering treatment in hypertension: 9. Discontinuations for adverse events attributed to different classes of antihypertensive drugs: meta-analyses of randomized trials

Costas Thomopoulos\textsuperscript{a}, Gianfranco Parati\textsuperscript{b, c}, and Alberto Zanchetti\textsuperscript{d, e}
Journal of Hypertension 2016, 34:1921–1932

<table>
<thead>
<tr>
<th>Comaprison</th>
<th>Outcomes</th>
<th>D</th>
<th>BB</th>
<th>CA</th>
<th>ACEI</th>
<th>ARB</th>
</tr>
</thead>
<tbody>
<tr>
<td>vs placebo</td>
<td>Stroke + CHD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adverse events</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vs all drugs (ARB excepted)</td>
<td>Stroke + CHD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adverse events</td>
<td></td>
<td></td>
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</tbody>
</table>

FIGURE 9 Benefits and burdens of various classes of antihypertensive drugs when compared with placebo (two upper rows) or with all other classes (angiotensin receptor blockers excepted). Effects considered are on the composite of stroke and coronary heart disease and on treatment discontinuations for adverse events.

Conclusion: Reduction of cardiovascular events by all classes of BP-lowering drugs is accompanied by increased treatment discontinuations for adverse events, except when ARBs are used.

Risk of adverse events leading to treatment discontinuations is proportional to the number of drugs prescribed for cardiovascular prevention, including not only BP-lowering drugs, but also lipid-lowering, antiplatelet and antidiabetic agents.
Adherence detection

The most accurate methods that can be recommended, despite their limitations, are the:

• Detection of prescribed drugs in blood or urine samples
• Directly observed treatment, followed by BP measurement over subsequent hours via HBPM or ABPM,
• Questionnaires which frequently overestimate drug adherence.

The assessment of adherence should be improved with the development of cheaper and more reliable methods of detection that are easily applicable in daily practice.
<table>
<thead>
<tr>
<th>Patient level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-monitoring of BP (including telemonitoring)</td>
</tr>
<tr>
<td>Group sessions</td>
</tr>
<tr>
<td>Instruction combined with motivational strategies</td>
</tr>
<tr>
<td>Self-management with simple patient-guided systems</td>
</tr>
<tr>
<td>Use of reminders</td>
</tr>
<tr>
<td>Obtain family, social, or nurse support</td>
</tr>
<tr>
<td>Provision of drugs at worksite</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Physician level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide information on the risks of hypertension and the benefits of treatment, as well as agreeing a treatment strategy to achieve and maintain BP control using lifestyle measures and a single-pill-based treatment strategy when possible (information material, programmed learning, and computer-aided counselling)</td>
</tr>
<tr>
<td>Empowerment of the patient</td>
</tr>
<tr>
<td>Feedback on behavioural and clinical improvements</td>
</tr>
<tr>
<td>Assessment and resolution of individual barriers to adherence</td>
</tr>
<tr>
<td>Collaboration with other healthcare providers, especially nurses and pharmacists</td>
</tr>
<tr>
<td>Interventions that may improve drug adherence in hypertension</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Drug treatment level</strong></td>
</tr>
<tr>
<td>Simplification of the drug regimen favouring the use of SPC therapy</td>
</tr>
<tr>
<td>Reminder packaging</td>
</tr>
<tr>
<td><strong>Health system level</strong></td>
</tr>
<tr>
<td>Supporting the development of monitoring systems (telephone follow-up, home visits, and telemonitoring of home BP)</td>
</tr>
<tr>
<td>Financially supporting the collaboration between healthcare providers (e.g. pharmacists and nurses)</td>
</tr>
<tr>
<td>Reimbursement of SPC pills</td>
</tr>
<tr>
<td>Development of national databases, including prescription data, available for physicians and pharmacists</td>
</tr>
<tr>
<td>Accessibility to drugs</td>
</tr>
</tbody>
</table>
Adherence improvement

Patient adherence to therapy can be improved by several interventions like those:

- linking drug intake with habits, use of reminders
- self-monitoring of BP using pill boxes and other special packaging,
- giving adherence feedback to patients,
- motivational interviewing, group sessions
- use of telemetry for transmission of recorded home values, maintaining contact between patients and physicians

Involvement of other healthcare providers like the pharmacists and nurses

Using multiple components has a greater effect on adherence, as the effect size of each intervention is generally modest.
MedSmart / MedSmart PLUS Dosage Rings

Item# 993347

Regular price: $20.00  Sale price: $15.00

Availability: Usually ships the same business day

Qty: 1  ADD TO CART

Spare Medication Tray Index / Dosage rings for MedSmart Automatic Pill Dispenser.

This set contains 7 rings, including 2 for 3x per day and 2 for 4x per day. The ring for 5x per day and 6x per day are the same.
ALARM WATCHES

1. e-pill CADEX VibraPlus - 8 Alarm Vibrating Reminder Watch
   - Regular price: $139.95
   - Sale price: $99.95

2. e-pill CADEX V8 Alarm Watch
   - Regular price: $139.95
   - Sale price: $99.95

3. e-pill CADEX 12 Alarm Watch - Silver
   - Regular price: $250.00
   - Sale price: $139.95

4. e-pill CADEX 12 Alarm Watch - Black
   - Regular price: $250.00
   - Sale price: $139.95
Patient Compliance and Medication Adherence Rate 95%

Improved Patient Compliance from 78% to 95%
Lowered Blood Pressure

Electronic Medication Compliance Aid.
95% Patient Compliance and Medication Adherence. Timepiece Cap / Prescript TimeCap / e-pill Multi-Alarm TimeCap. Clinical Study Published Journal of Clinical Pharmacology
Patient’s compliance: Take home message

Barriers to optimal adherence may be linked with physician attitudes, patient beliefs and behaviour, the complexity and tolerability of drug therapies, the healthcare system, and several other factors.

Therefore, the assessment of adherence should always be conducted in a no-blame approach, and should favor an open discussion to identify the specific barriers limiting the patient’s ability to follow the therapeutic recommendations.

Individualized solutions should be found while patients should be encouraged to take responsibility for their own CV health.