

Introduction to Hypertension

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Outline

Hypertension at the Seattle VA primary care clinic

What is JNC-8?

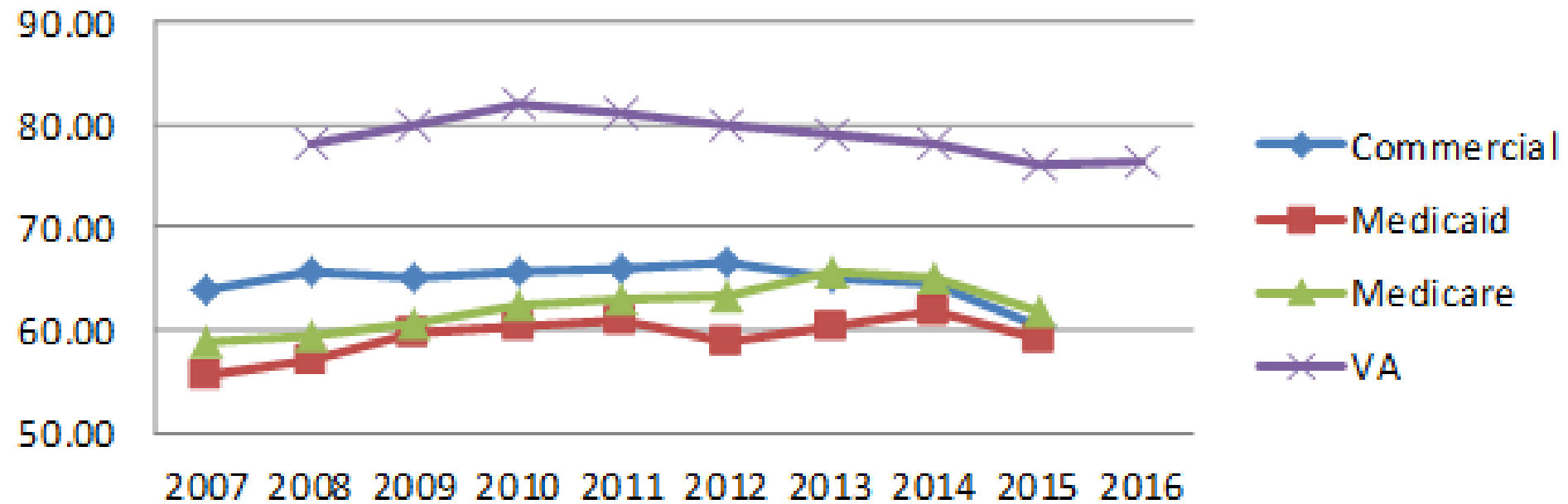
Summary of recommendations

What is “new” in JNC-8?

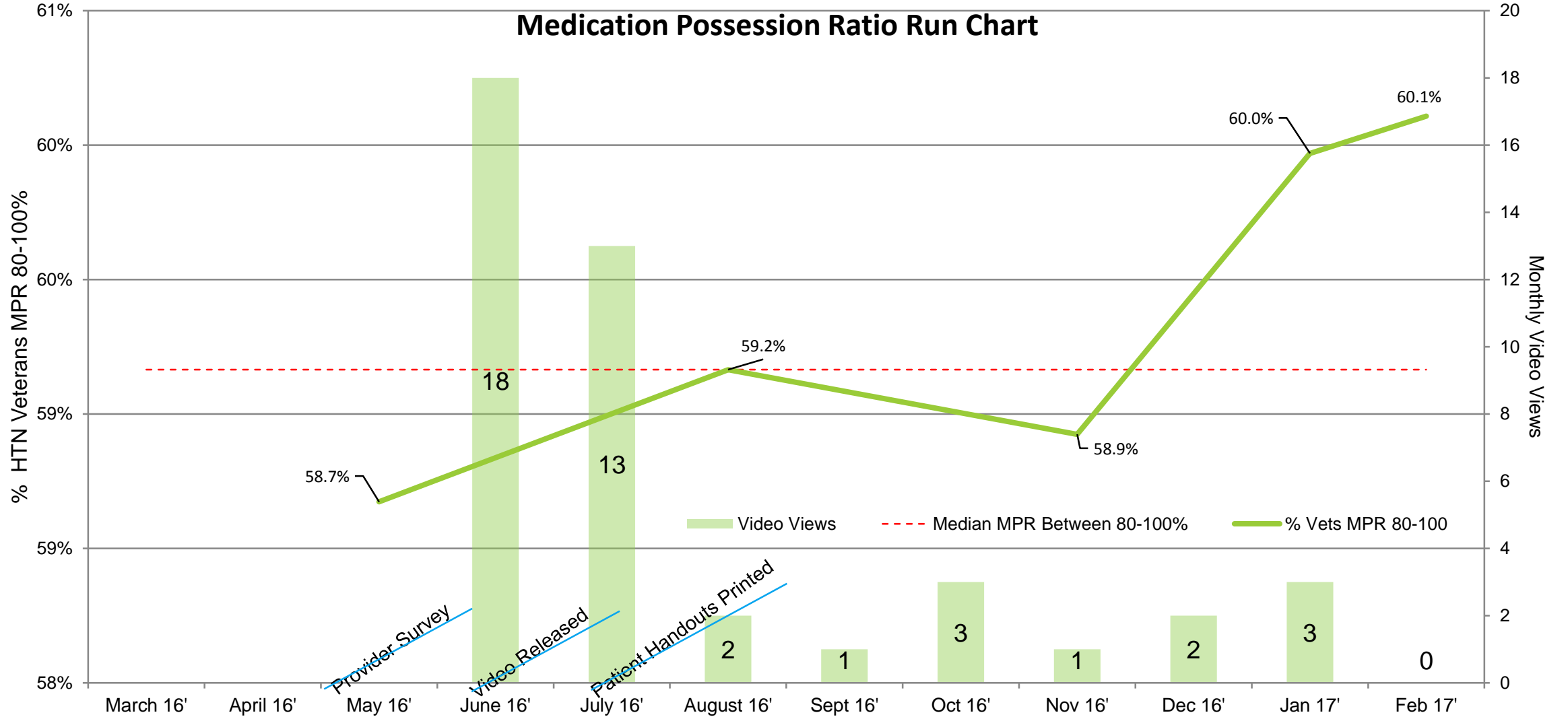
Case-based application of guidelines

Caveats and going forward

Blood Pressure Control (<140/90 mm Hg)



Medication Possession Ratio Run Chart



What is JNC-8?

Eighth Joint National Committee (JNC-8)¹ published results of evidence review in 2014, updating consensus guidelines for hypertension management

Previously JNC-7 guidelines had been most recent (published in 2003)

Only RCTs included (no observational studies, meta-analyses, or systematic reviews), looking at:

- Overall mortality, CVD-related mortality, and CKD-mortality
- MI, heart failure, hospitalization from heart failure, and stroke
- Coronary (and other) revascularization
- ESRD, doubling of creatinine, halving of GFR

Set of 9 recommendations issued

¹ Paul, J.A., Oparil S., & Carter B.L. 2014 evidence-based guidelines for the management of high blood pressure in adults. *JAMA*. 2014;311(5):507-520. doi: 10.1001/jama.2013.284427

The Bottom Line on JNC-8*

If you are 60 or over, your goal is less than 150/90.

If you are under 60, your goal is less than 140/90.

If you have diabetes at *any age*, your goal is less than 140/90.

If you have kidney disease and/or proteinuria at *any age*, your goal is less than 140/90.

Initial treatment and add-ons should come from these 4 classes: thiazides, CCBs, ACEIs, or ARBs for the general nonblack population.

Initial treatment should include either a thiazide or a CCB in the general black population.

Initial treatment should include an ACEI or ARB in those with CKD and/or proteinuria.

* caveats and details apply

What is new in JNC-8?

In general, more tolerance for higher BPs:

- Threshold for those >60 is higher
- Threshold for those with CKD and diabetes is higher

Beta-blockers no longer considered first-line anti-hypertensives

Thiazides no longer considered *the* first-line drug; now 4 different classes share that status

No specific discussion of prehypertension, resistant or secondary hypertension, and lifestyle interventions within the document

Case 1

65 year old man is here for annual follow-up. BP in office today is 155/87 (assume no white coat HTN). BMI is 24, walks daily, no processed foods / added sodium in food. Does not drink or smoke. No other major health problems. Only medication is occasional acetaminophen for knee pain. What is the next step?

Case 1

Initiate pharmacologic therapy.

Recommendation 1 from JNC-8 says *initiate* therapy at SBP 150 (grade A) and/or DBP 90 (grade E) for those *age 60 and older*.

- Not officially adopted at the VA. Metrics from Primary Care Almanac and other sources still use 140/90 for all patients.

What should you treat this patient with?

Case 1

Recommendation 6 says: Use the “big 4” classes of antihypertensive:

- Thiazide diuretics (may be superior for heart failure prevention)
- Calcium channel blockers
- ACE inhibitors
- Angiotensin-receptor blockers

Beta-blockers are no longer first-line; one study found increased stroke risk with BBs compared to ARBs.

Little high-quality evidence examining other classes (loops, alpha-2 agonists, aldosterone antagonists, etc.).

In general, focus is on BP control, not on the specific agent.

Case 1

But wait – did I forget to mention your patient is African American?

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But wait – did I forget to mention your patient is African American?

Recommendation 7 says to use either a thiazide-diuretic (grade B) or a CCB (grade C) in black patients.

- African American patients who were given ACEIs had worse outcomes in the ALLHAT trial

Case 1

A year passes uneventfully. At your patient's next follow-up visit, you see that his kidney function has been gradually declining over the years. You diagnose him with CKD. His GFR is now 50. In-office BP is 146/88 today.

How does this change management of his hypertension?

Case 1

Recommendation 4: In adult patients *younger than 70* and with a GFR <60, or any patient with albuminuria, the goal is 140 / 90 (grade E).

What medication(s) is/are now “first-line” for this patient?

Case 1

Recommendation 4: In adult patients *younger than 70* and with a GFR <60, or any patient with albuminuria, the goal is 140 / 90 (grade E).

What medication(s) is/are now “first-line” for this patient?

Recommendation 8: ACEIs and ARBs are first-line (initial or add-on) for patients with CKD and proteinuria, *regardless of race*, due to increased risk of ESRD (grade B).

- For black patients with CKD and no proteinuria, expert consensus did not make a strong recommendation. Therapy can come from any of the “big 4,” including an ACEI/ARB.

Case 2

You are seeing a new 67 year old woman as an intake. She has type 2 diabetes which is well-controlled. Her only medications are metformin and atorvastatin. Her BP in office today is 148/86.

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Hooray, she's over 60 years old, we don't have to touch her blood pressure!

Wait....



Case 2

Recommendation 5: the goal for *all adults* with diabetes is 140/90 (grade E).

Even though our new patient is in her 60s, we should treat her blood pressure.

What should we use?

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Recommendation 5: the goal for *all adults* with diabetes is 140/90 (grade E).

Even though our new patient is in her 60s, we should treat her blood pressure.

What should we use?

Back to recommendation 6: use any of the “big 4”. The reviewed trials *did not* show specific CVD or CVA benefits for any particular agent in patients with diabetes!

What about the “old old”?

There is benefit in blood pressure in people over 80!

HYVAT trial² compared indapamide (with perindopril added as needed) with placebo in adults at least 80 years old with SBPs at least 160

- Goal BP was 150/80 (more stringent than JNC-8)
- Over 2 years, found significant reduction in fatal stroke (6.5% vs. 10.7%) and death from any cause (59.6 per 1000 in active arm vs. 47.2 per 1000 in placebo arm)

SHEP trial³ compared chlorthalidone (adding either atenolol or reserpine if needed) to placebo among older adults (mean age 72)

- Goal BP was below SBP of 160 (mean attained was 143/68 in treated, vs. 155/72 in placebo)
- Significant decrease in total stroke over 5 years: 5.5% in active arm vs. 8.2% in placebo arm
- Study did not only include 80+, but these benefits remained in the 80+ age group subgroup analysis

Obvious disclaimer: not every 80+ year old hypertensive needs blood pressure management, but it *can* be beneficial in those who are good candidates.

² Beckett, N. et al. Treatment of hypertension in patients 80 years of age or older. *New England Journal of Medicine*. 2008;358:1887-98. doi: 10.1056/NEJMoa0801369

³ Kostis, J.B., et al. Prevention of heart failure by antihypertensive drug treatment in older persons with isolated systolic hypertension. *JAMA*. 1997;278:212-216.

Not all Recommendations are Equal

Different JNC-8 recommendations have varying levels of evidence

6 of the 9 recommendations are grade E, meaning “expert consensus”!

For example:

- Goal of 150/90 in those older than 60 (recommendation 1) is grade A
- Goal of 140/90 in those with CKD (recommendation 4) is grade E

More to come!

A simple Google for “JNC-8 controversy” returns much food for thought.

Differing Guidelines and Newer Evidence

Table 6 of the JNC-8 document illustrates comparison of different guidelines

Research published after release of JNC-8 continues to complicate the picture

- Most recently: SPRINT trial in 2016
 - Compared intensive goal (SBP <120) to standard treatment (SBP <140) in adults >50 years old with high CVD risk over 3.3 years of f/u; ended early after interim analysis found reduced all-cause mortality (3.3% vs. 4.5%) and fewer primary outcome events (5.2% vs. 6.8%)
 - Criticisms: questionable applicability (CVA and DM excluded), more adverse events like AKI in intensive group, more unusual BP measuring technique