

Managing BP to Goal in Adults with Diabetes

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70% of type 2 diabetes die of a
heart attack or stroke

Reduce heart attack and stroke
mortality by:

- BP control
- LDL control
- Stop Smoking
- Aspirin Use if already have CHD

Intensive glucose control with multiple
meds in older sicker people may
INCREASE MORTALITY

Reality Check

- What % of those with type 2 diabetes die of a heart attack or a stroke?

Reality Check

- Name 4 strategies that reduce heart attack and stroke mortality in type 2 diabetes.
- Name one strategy that may increase mortality in older sicker patients with type 2 diabetes

MN Diabetes Care (2007)

GOAL	ACHIEVED
A1c <8%	75%
LDL < 100 mg/dl	58%
Aspirin Use	89%
Non-Smoker	84%
BP < 130/80	53%

Obstacle to Better Care

Medication Non-Adherence

95% of Providers Agree:
"My diabetes patients just won't do the things I tell them to do."

Adherence in HT Patients

- 20% had medication possession ratios of < 80%
- Another 25% never fill a first script, or get the first refill
- Keep a "sympathetic" (non-paternalistic) eye out for medication adherence issues

Obstacle to Better Care

Clinical Inertia

- When patients with DM have 2 consecutive visits with high BP, the likelihood of treatment intensification is ??????????

**Rate of BP
Clinical Inertia:
70-80%**

**Hypothesis: The Secret to
Improved BP Control Is→**

**Stop Blaming
the Patient**

Care Improvement Strategies

**1. Understand the Patient
(address non-adherence)**

**2. Take Clinically Indicated
and Appropriate Actions
(address clinical inertia)**

Glucose Goals

- Older sicker patients A1c < 8%
- Young and healthy A1c < 7%
- Accountability Measure A1c < 8%

Risks of Glucose Control Meds

- Hypoglycemia
 - If skip a meal
 - If confused or demented
 - If take too much med inadvertently
- Weight Gain
- Polypharmacy
- Cost

Best Glucose-Control Medication

- Metformin
 - max effective dose is 1000 mg po BID
- DO NOT USE METFORMIN IF:
 - Serum creatinine is ≥ 1.4 or 1.5 mg/dl
 - Patient has CHF or COPD
- May cause gastric upset or lethal "lactic acidosis"

LDL-Cholesterol Goals

- Most DM over 40 yrs old should use a statin (simvastatin, atorvastatin)
- LDL < 100 mg/dl (everybody)
- LDL < 70 mg/dl if have CHD
- Statins are pretty safe, but may make muscles hurt
- Generic simvastatin is very cheap

BP Goals In Adults with Diabetes

- BP < 130 / 80 mm Hg is the goal
- The SBP (first number) is the main item of interest
- BP < 140/90 is not SO bad
- BP \geq 140/90 is pretty bad

Evidence for BP goal

- UKPDS: SBP 145 better than SBP 154 mm Hg
- ADVANCE: SBP 135 is better than 144
- Goal SBP < 130, but SBP < 140 OK for some, especially frail elderly
- BP < 90/50 or pulse < 50/min may be a cause for concern esp if patient is dizzy—check with doc or nurse

Evidence: ADVANCE

Clinical Impact	SBP: 135 vs 144	A1c: 6.5% vs. 7.4%
Total Mortality	+++	0
CV Mortality	+++	0
CV Events	0	0

Steno-2 Study: Gaede NEJM 2003, 2008, D.C. 2008

- Achieved A1c 7.7%, LDL 78 mg/dl, BP 132/76
- 53% drop in CV events in trial
- 60% drop in Micro complications
- 20% drop in total mortality in f/u
- Mean gain of 1.66 QALY in intensive group
- Euro 2538/QALY gained (very good)
- Cost saving using generics in primary care

Steno-2 Implications

- Multifactorial care including only modest A1c control (7.7%) is setting of good BP and LDL control is a powerful and resource efficient diabetes care strategy
- This supports the notion of a comprehensive diabetes quality measure: A1c, BP, LDL, ASA, smoking

Step Care BP Dx in Diabetes

1. **Lisinopril 10-20 mg QD (ACE, ARB)**
2. **HCTZ 12.5-25 mg QD (diuretic)**
3. **Amlodipine 2.5-10 mg QD**
4. **Metoprolol XL 50-100 mg QD**
5. **Adjust doses upward**

Other Agents

- Reserpine 0.1 – 2.5 mg po QD
- Hydralazine 25-100 mg po QD
- Clonidine 0.1-0.4 mg po QD

Stage 2 Hypertension

- If patient is more than 20/10 mm Hg above goal ($\geq 150/90$)
- Start drug therapy with 2 agents at the same time
- ACE + HCTZ

What Will It Take to Reach Goal

- Mid-range dose of most BP drugs will get you about 10 mm Hg drop in SBP
- DASH diet will get you about 10 mm Hg drop in SBP
- Often need 3+ drugs to control BP in DM patients

Safety Monitoring

- K⁺ : diuretics, ACE, ARB
- Creatinine : ACE, ARB
- BP < 90/50 or pulse < 50/min may be a cause for concern esp if patient is dizzy—check with doc or nurse

BP Drug Side Effects

- Dizzy (check pulse > 50, orthostatic BP drop)
- Edema in Feet (BB, CCB)
- Erectile Dysfunction
- Dry Persistent Cough (ACE, sometimes ARB)

Avoid Big Mistakes

- Do not give diuretics to patients taking lithium → death
- Avoid combo of non-dihydropyridone CCB (amlodipine, etc) with B-Blocker → bradycardia, heart block
- Do not abruptly stop B-Blockers if on high doses
- See handout for drug risks and side effects

Lifestyle and Hypertension

- Sodium (baked, fast food, canned)
- Alcohol
- NSAID Use (ibuprofen)
- DASH Diet
- Weight Management
- Physical Activity
- Stress Management (Kabat-Zinn)

Limits to Treatment Intensification

- It is a Free Country (< 10% refuse)
- Med Side Effects, Hypotension, Falls
 - BP Meds have Good Long-Term Safety
- Competing Demands are Legitimate
- "Not my Patient"
- Accurate BP Measurement is issue

Use Generic Meds

Domain	Generic (Med Letter)	Branded (DC 31:1688)
BP	\$360	\$1,238
LDL (statin)	\$120	\$1,543

Intensive BP Control in DM is Cost-Saving to Payer

Domain	Cost/QALY Gained
A1c < 7%	\$48,000 to \$120,000
A1c < 8%	Less
BP < 130/80	Cost Saving Cost Saving Cost Saving Cost Saving Cost-Saving
LDL < 100	
Tobacco	
Aspirin	

DM: Treatment Priorities in MN By Importance, Start at Top

- Smoking
- BP
- Lipids
- A1c
- Aspirin

Adherence is a Problem

- Ask "Everybody misses their meds sometimes. How often do you miss your meds?"
- Over 25% of new meds stopped by pt within one year
- FIND OUT WHY: side effects, cost, not sure what med is for, not sure if it helps anything important, take too many pills (use combo tablets)

Minimize Non-Adherence

- Include patient in Rx decisions
- Name the drug
- Say what it is for & benefits
- Say how much & when to take
- Say what major side effects may be
- Monitor for failure to fill or first refill
- Stop useless meds, use combo tabs

New Approaches

- MTM Disease management for HT
- Point of Care Decision Support
- Home BP Monitoring (usually is about 5 mm Hg lower than at office)
- Pipe in Home BP data to EMR

More Information

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Thank you for your time & attention

Good Luck to us all on this important shared journey towards better diabetes and hypertension care!