Use of Beta-blocker Monotherapy in Hypertension:
Situation in a Local General Outpatient Clinic

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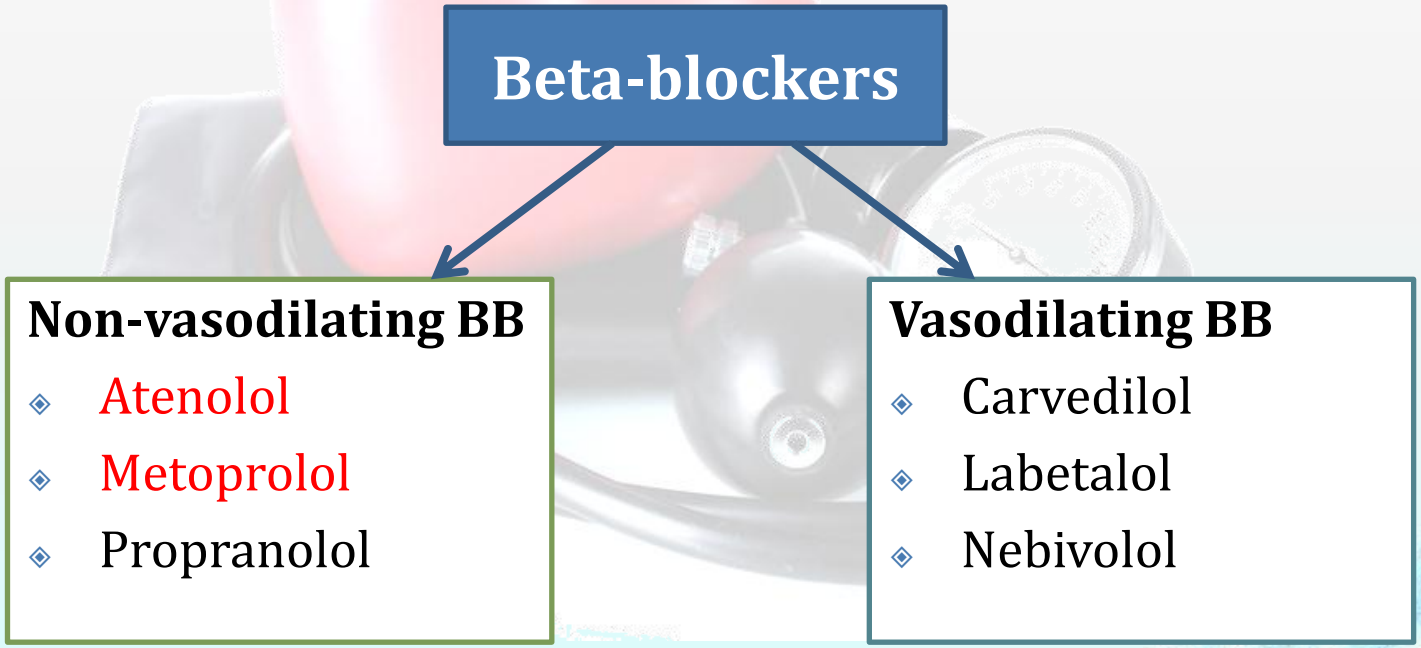
HA Convention 2014

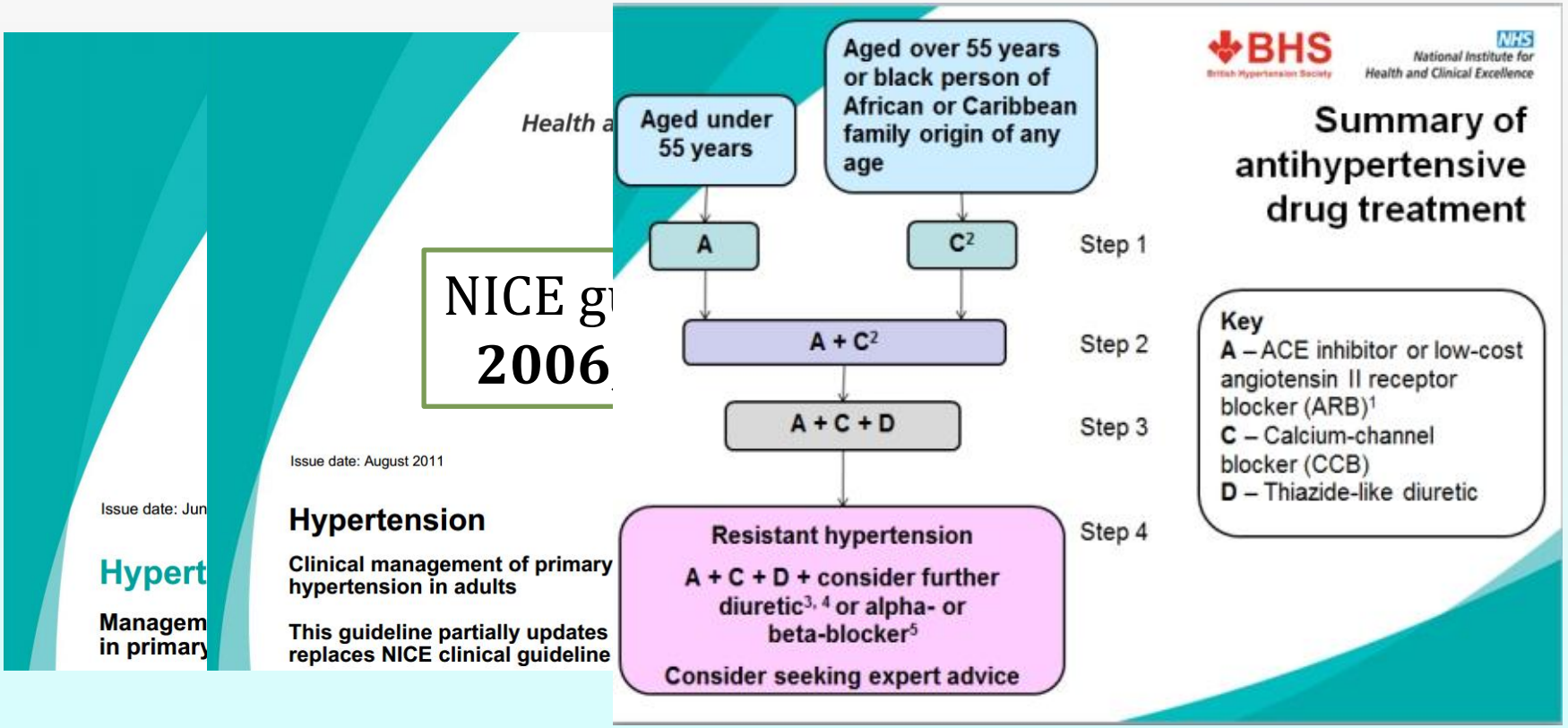
Introduction

- Beta-blockers (BB) have been used for >40 years
- Diverse class with different effects



International Guidelines

- BB alone in treating uncomplicated hypertension is NOT recommended



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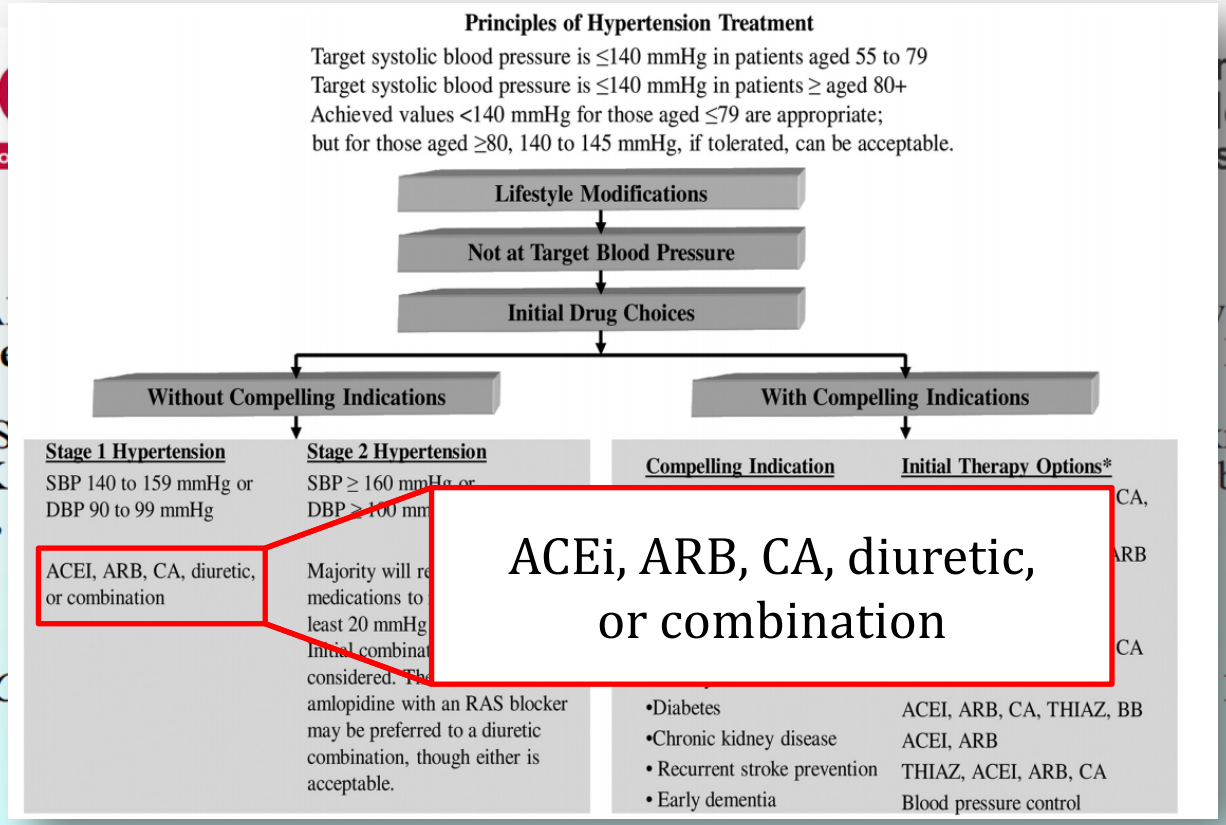

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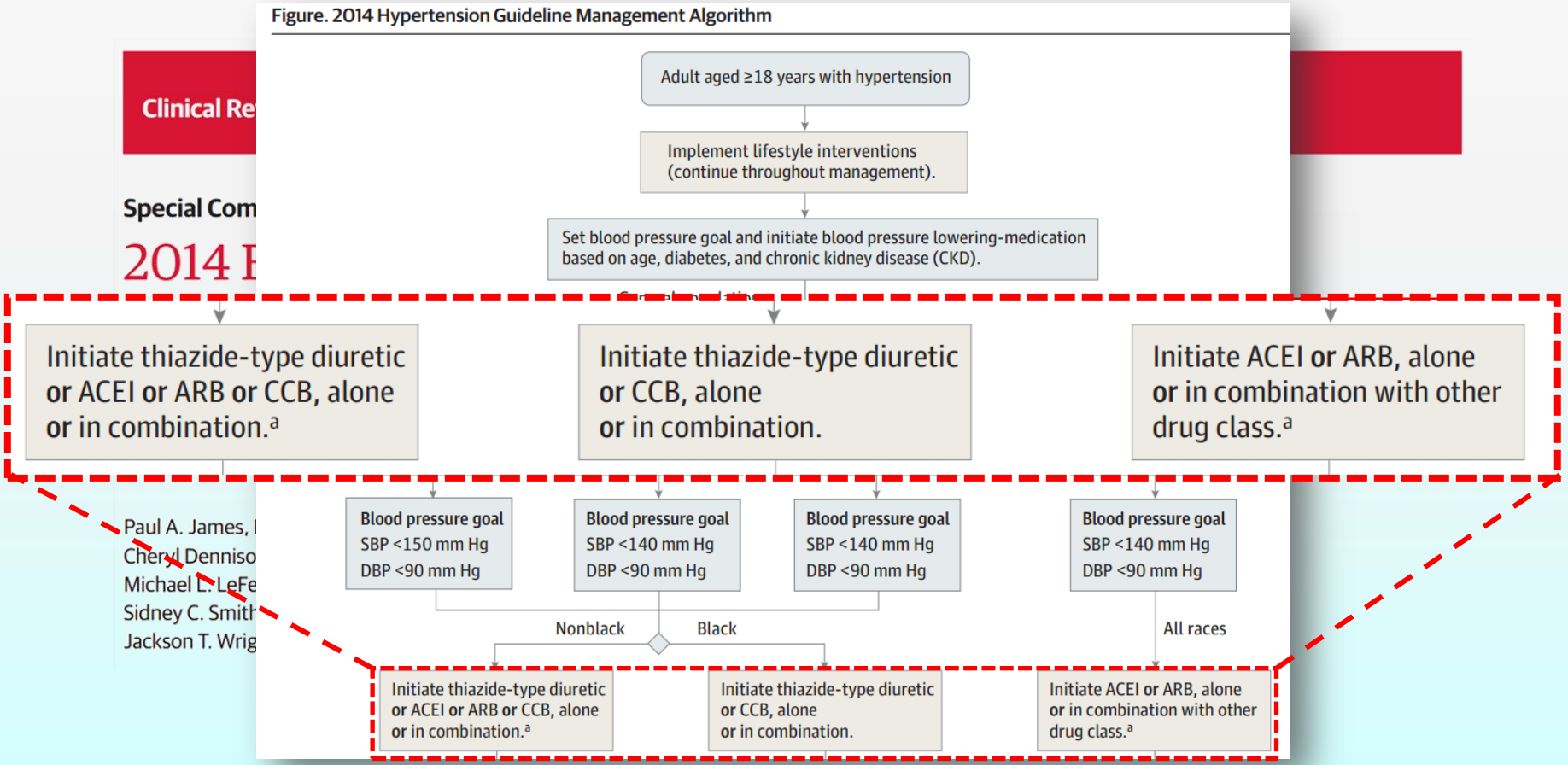


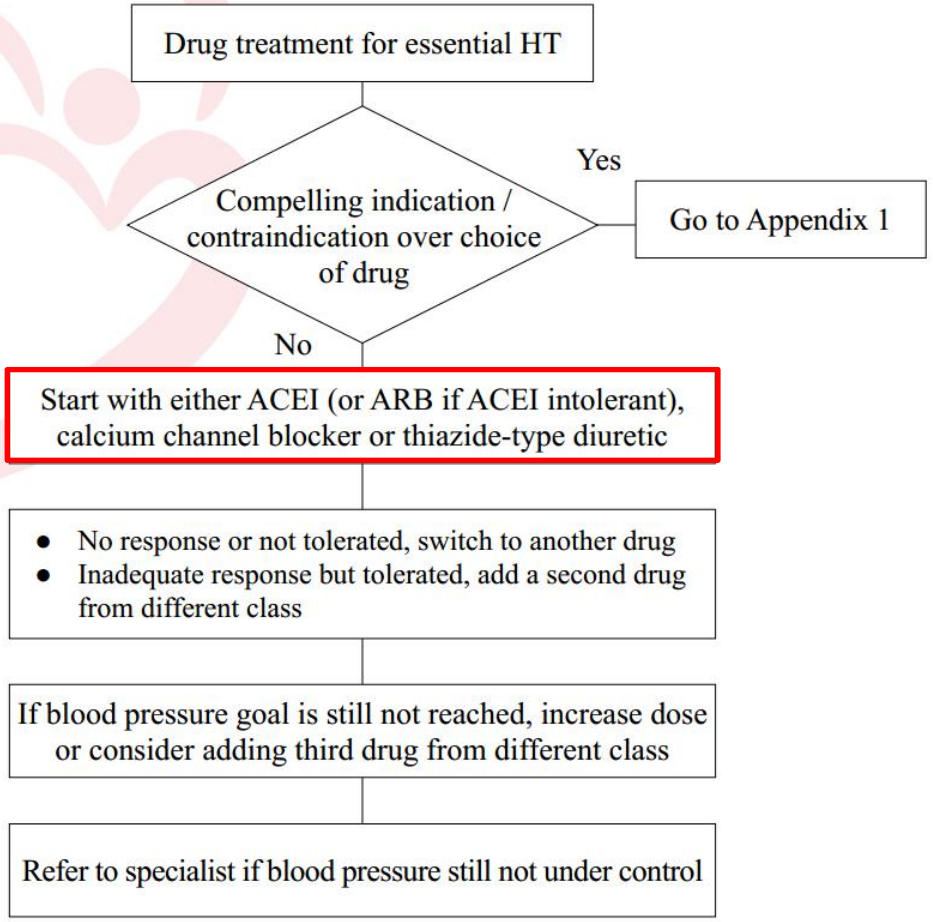
Local Guideline

Hong Kong
for Hyperte
in Prim

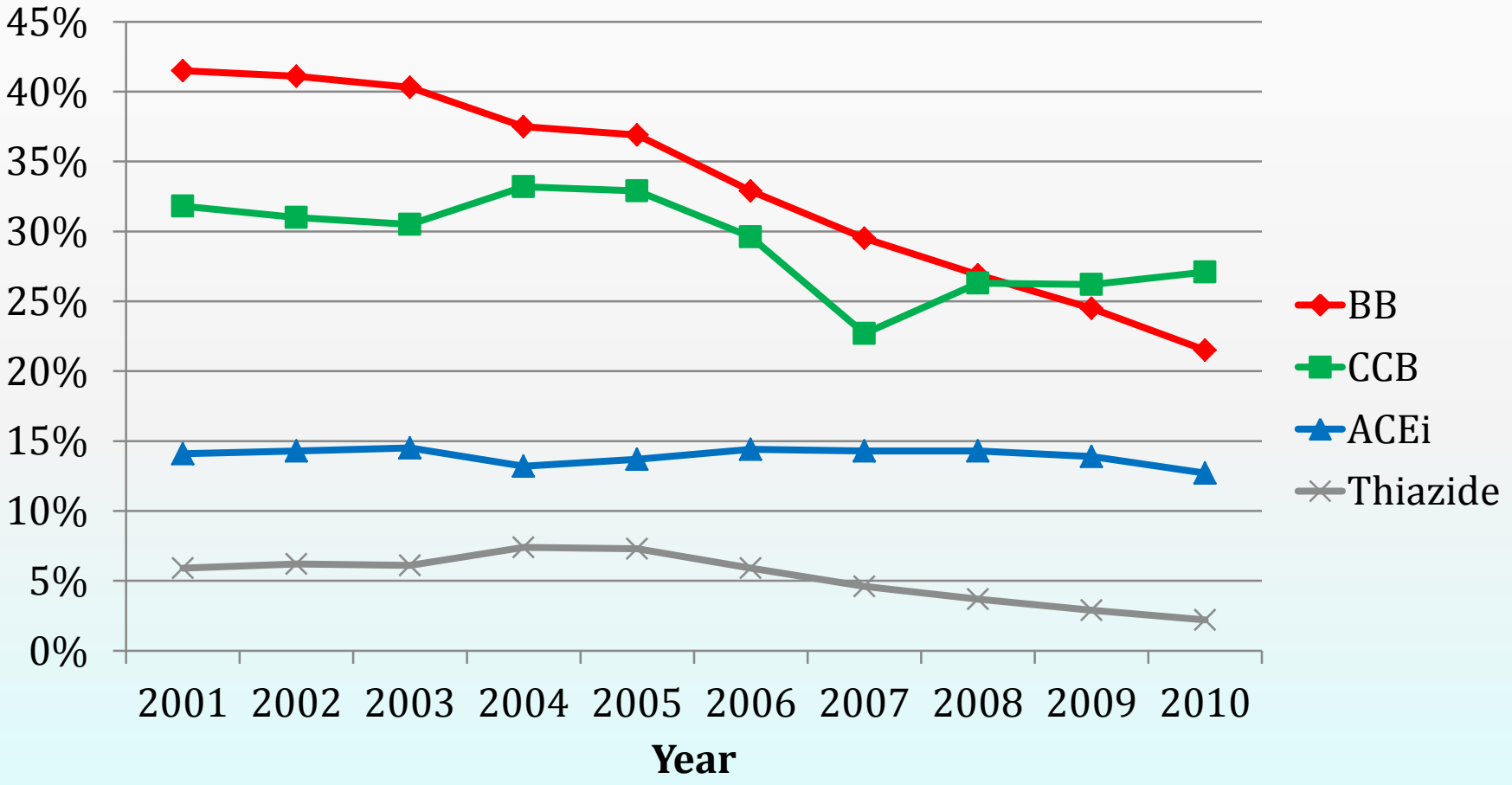
Developed by:
基層醫療概念模式及
預防工作常規專責小組
Task Force on Conceptual Model and
Preventive Protocols

With the professional advice of:
衞生署
Departme

Treatment algorithm



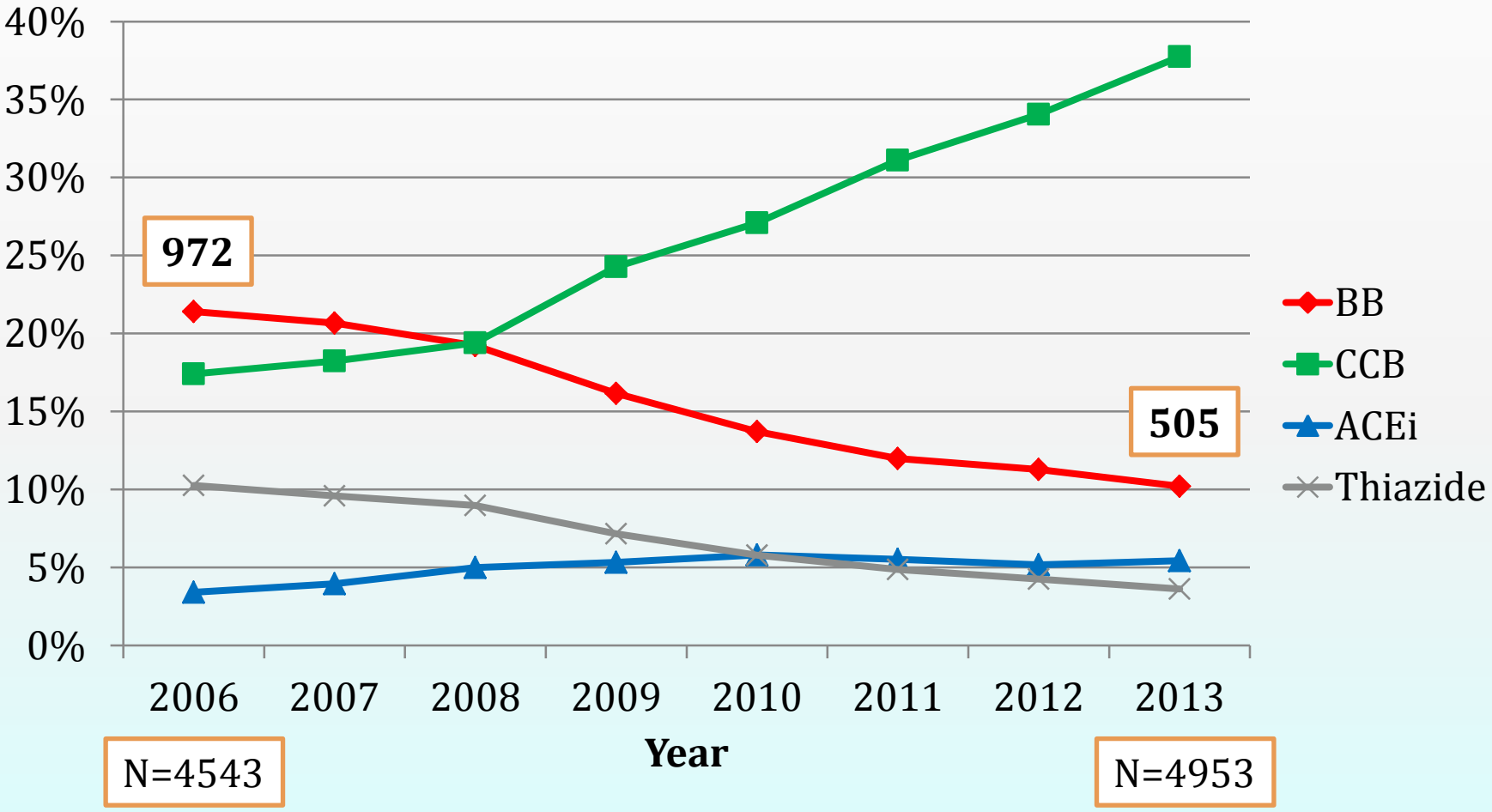
Trend of Anti-hypertensive Use in Hong Kong



Figures: Percentage of prescription episodes

Wong MC, et al. *American journal of hypertension.* Jul 2013;26(7):931-938.

Trend of Anti-hypertensive Use in CSW GOPC



Figures: Percentage of HT-only patients (*excluding those had DM*)

Aim of Audit

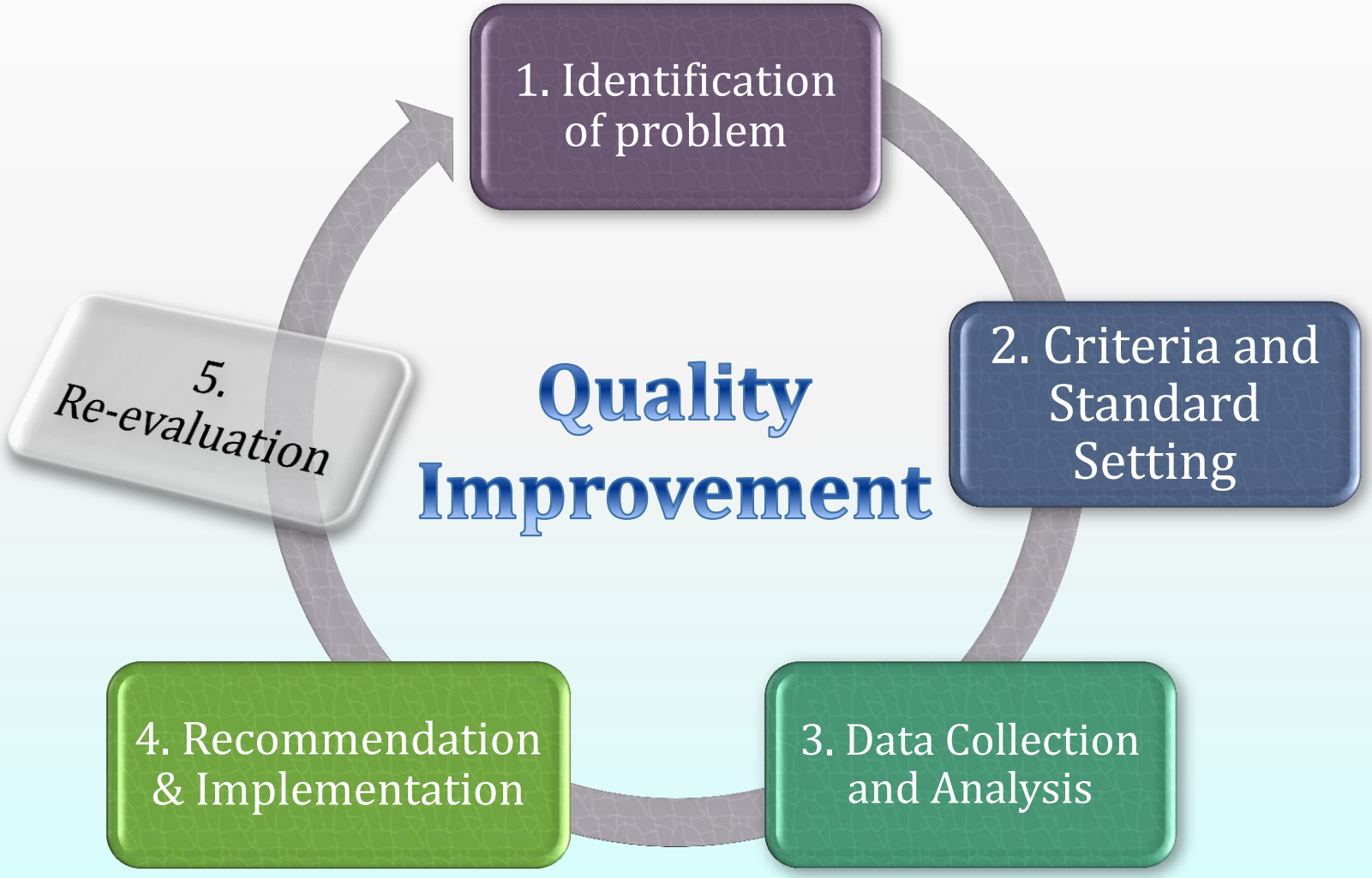
Observation:

- HT patients on BB as a sole anti-hypertensive agent despite the recommendation from clinical practice guideline

Objective:

- To determine the “appropriateness” of using BB monotherapy in HT patients
- To look for factors that affect the doctors’ choice of anti-hypertensives

Audit Cycle

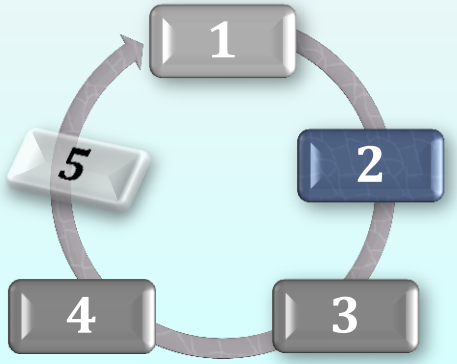

1. Identification of problem
2. Criteria and Standard Setting
3. Data Collection and Analysis
4. Recommendation & Implementation
5. Re-evaluation
Quality Improvement

Define "Appropriateness"

- Any ***one*** of the following:
  - (1) *Intolerance* (or *contraindication*) to 2 or more classes of anti-hypertensives (ACEi/ARB; CCB; Diuretics)
  - (2) BB use justified with *compelling indication*:

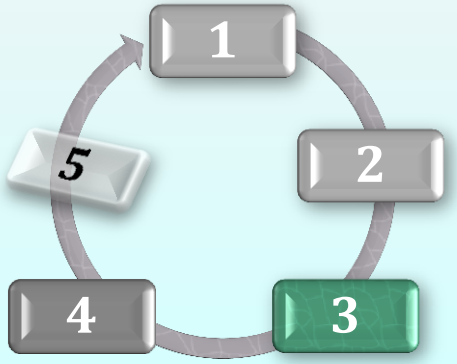
    Prior myocardial infarction, angina, tachyarrhythmia, palpitation, heart failure, migraine, anxiety disorders etc

- Standard: 70%

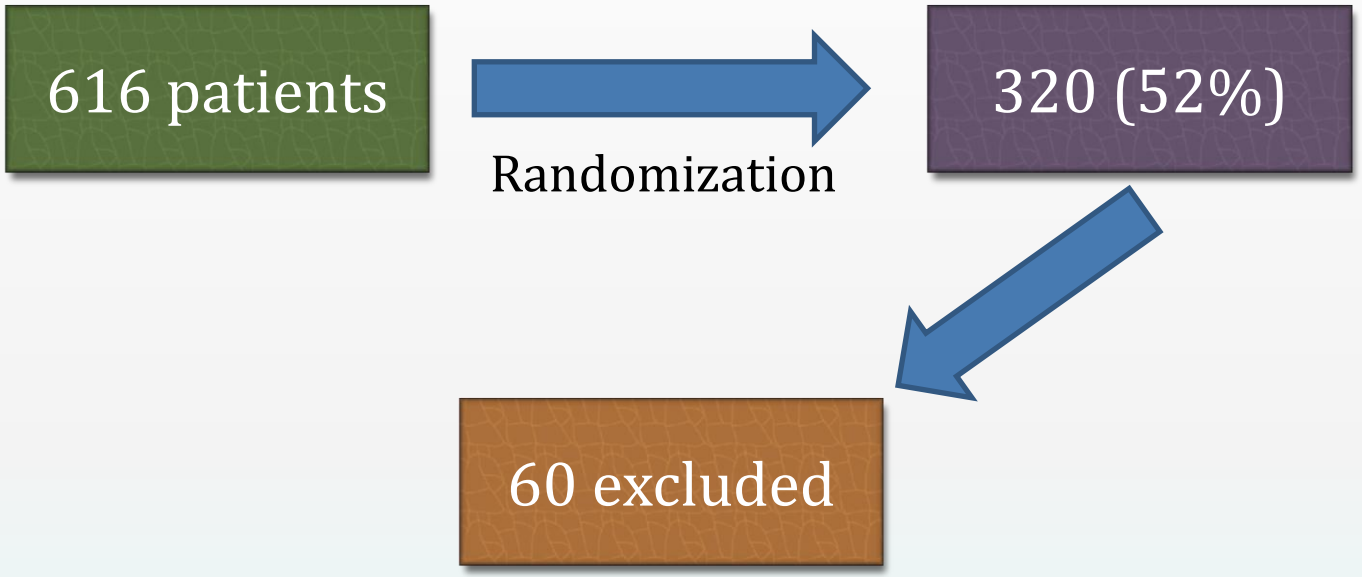


Methodology

- Retrospective review
- ***Data Collection:***
  - HT patients receiving BB as monotherapy in Cheung Sha Wan GOPC retrieved through CDARS
  - Random patients selected for detailed review
    - Case notes, laboratory data and medication history
    - Determine *reasons for initiating BB*, any *compelling indications* and *anti-hypertensive intolerance*



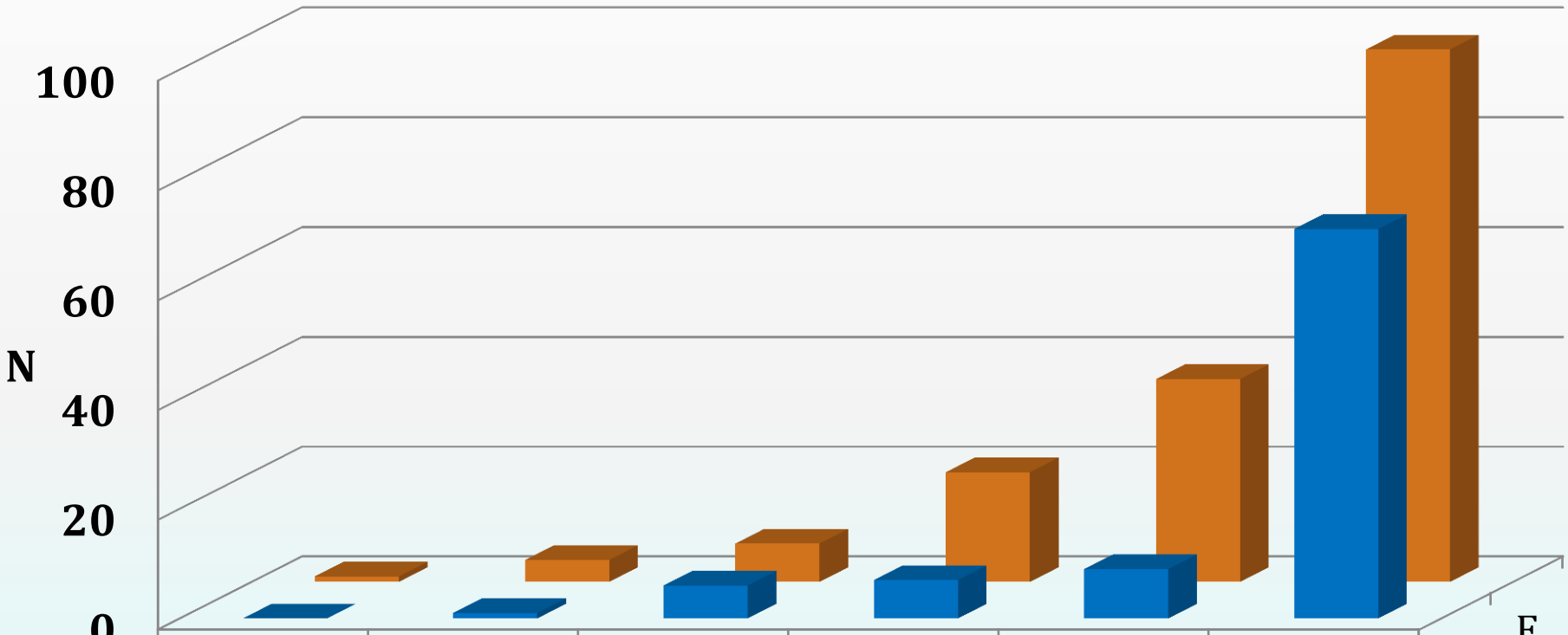
Results



Exclusion Criteria:

1. No recent blood tests (within 15 months)
2. Concurrent use of other anti-HT
3. Less than 3 regular follow-up in our clinic

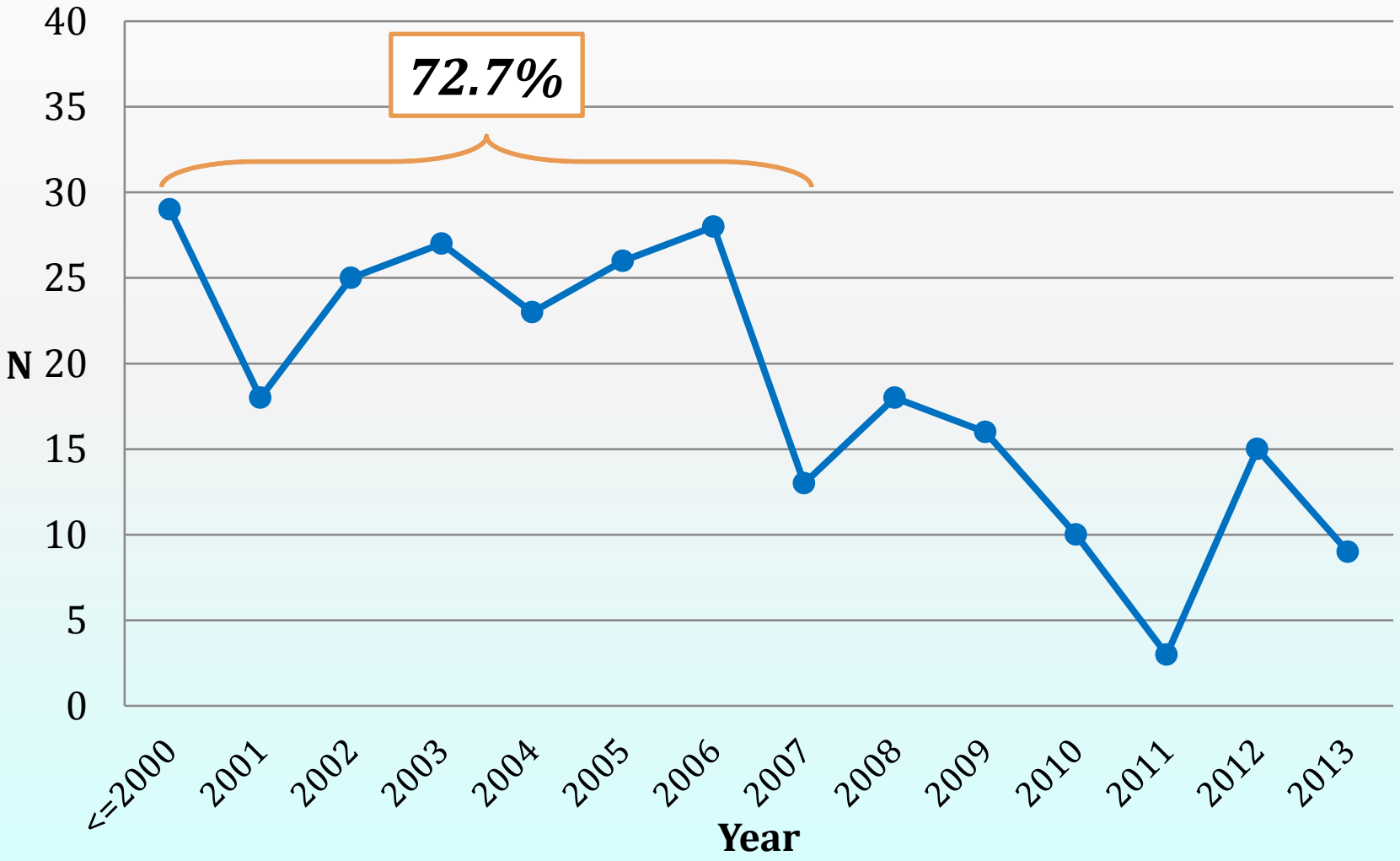
Demographics



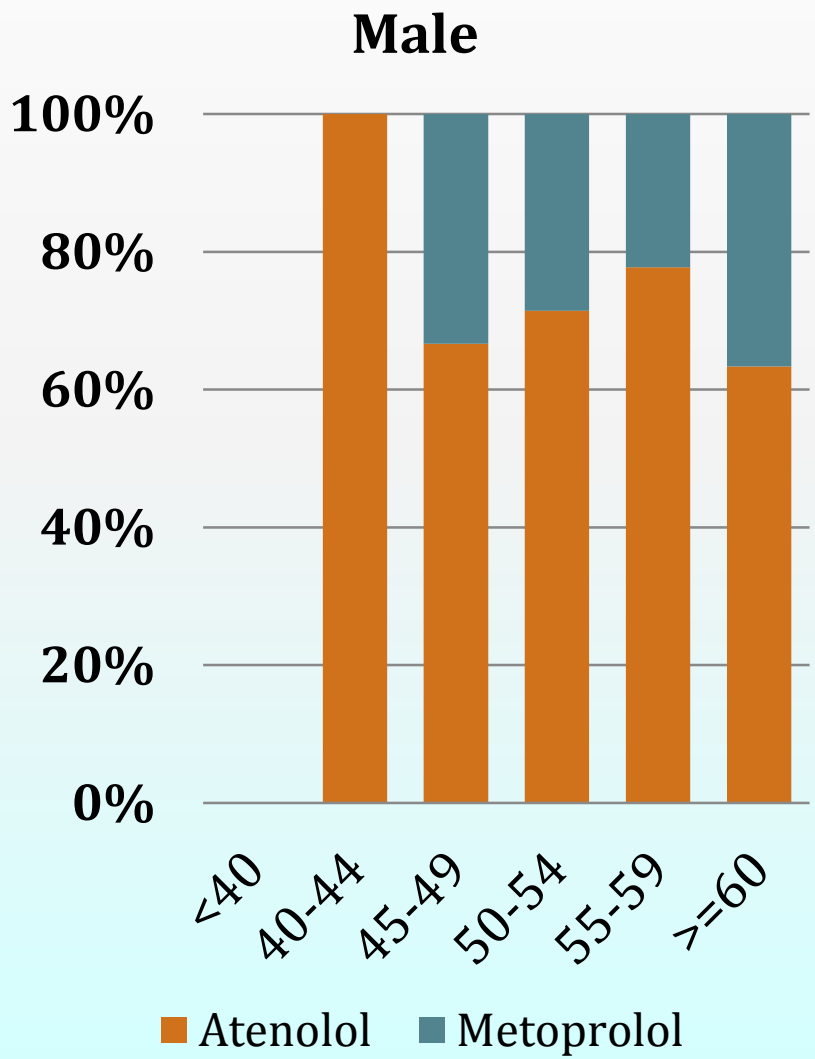
	<40	40-44	45-49	50-54	55-59	>=60
M	0	1	6	7	9	71
F	1	4	7	20	37	97

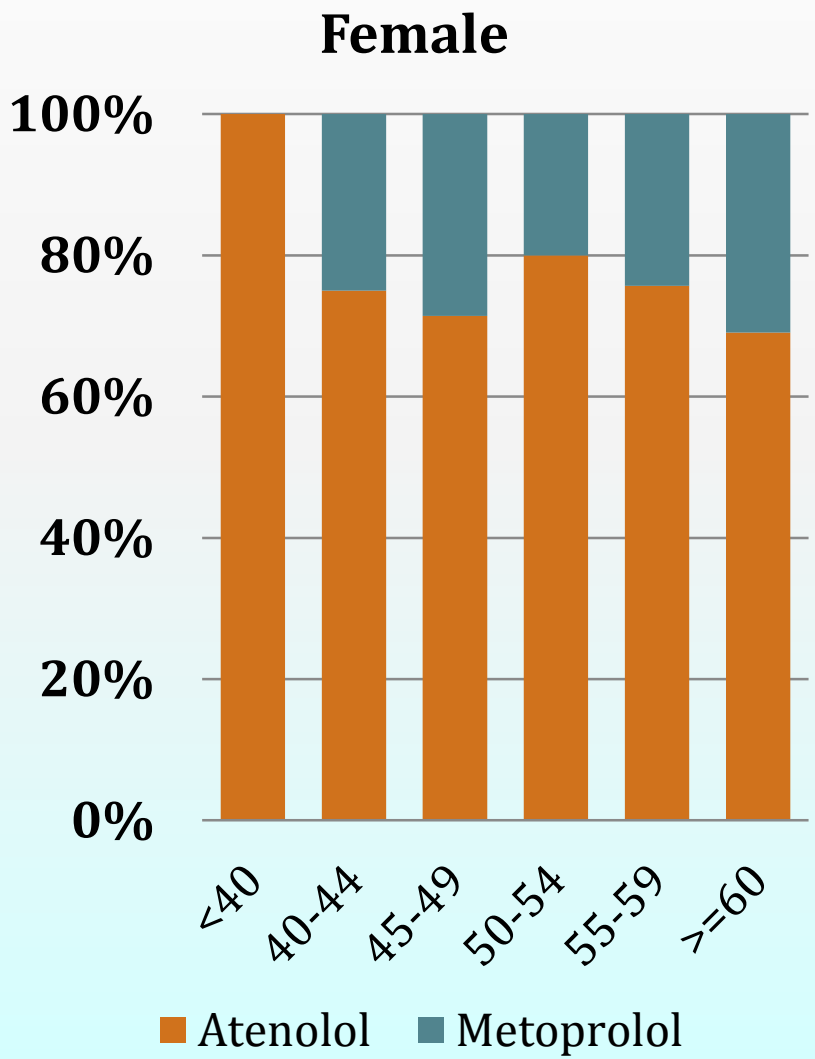
Age

Time of Initiating BB

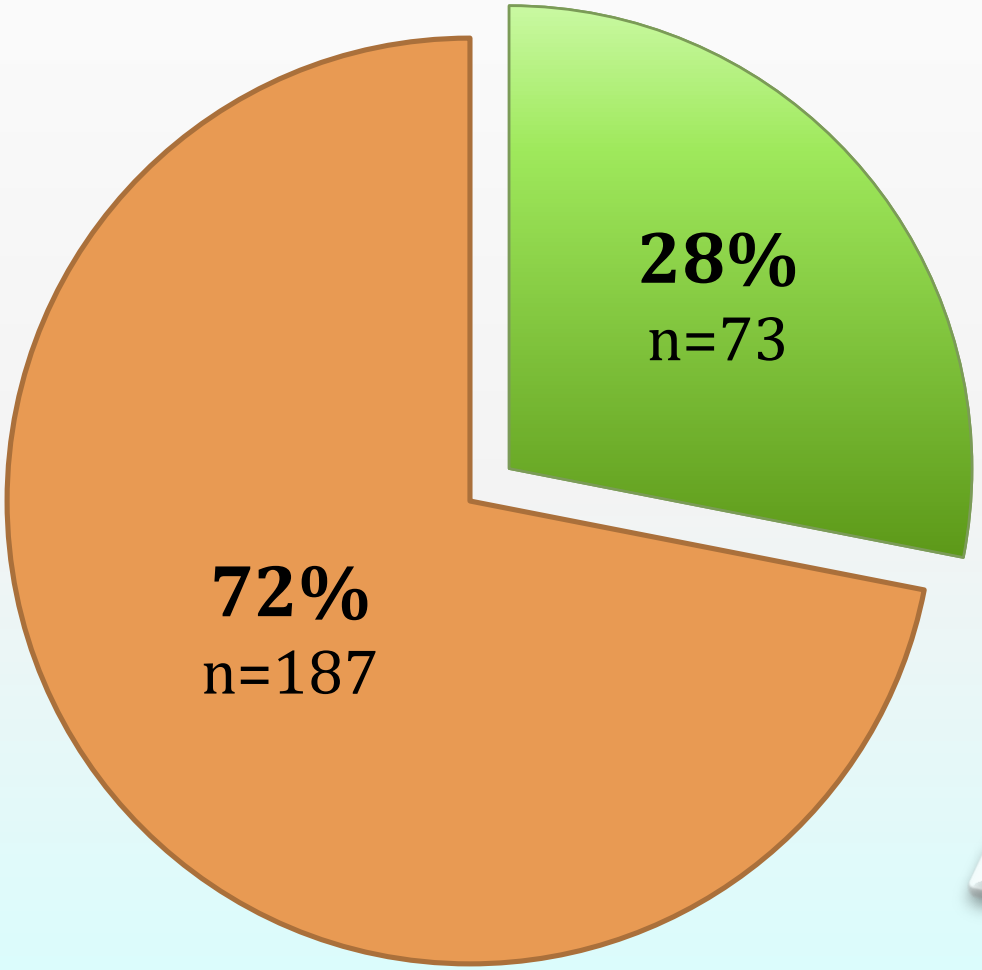


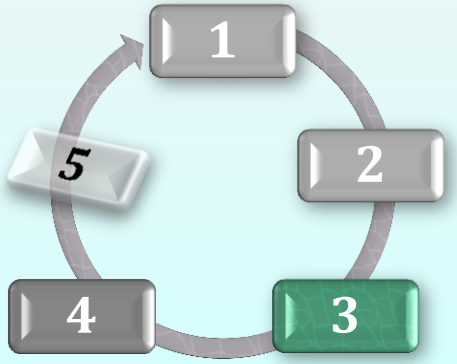
Atenolol vs Metoprolol





Appropriateness





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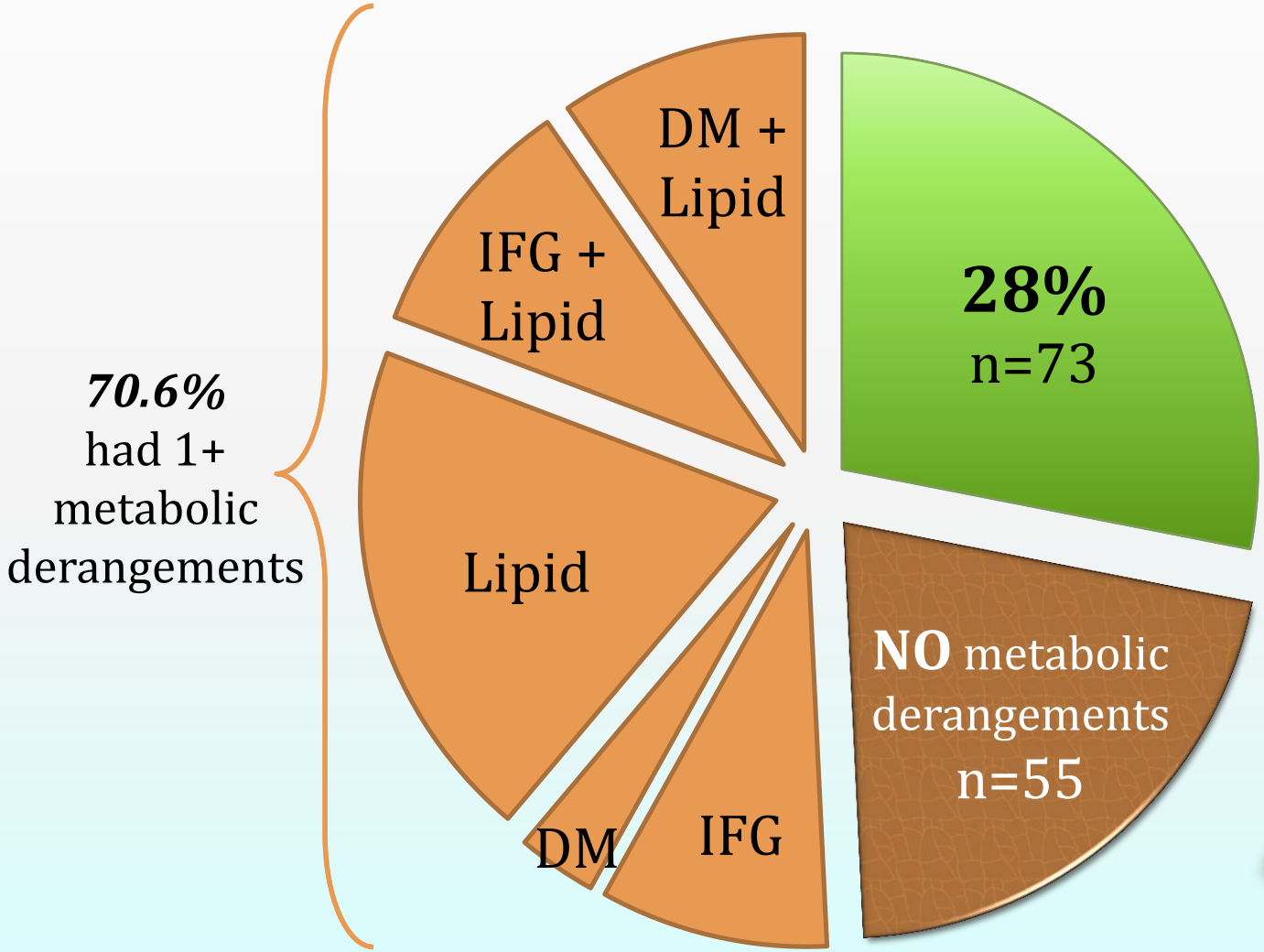
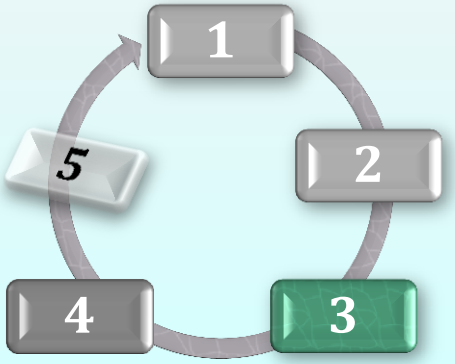
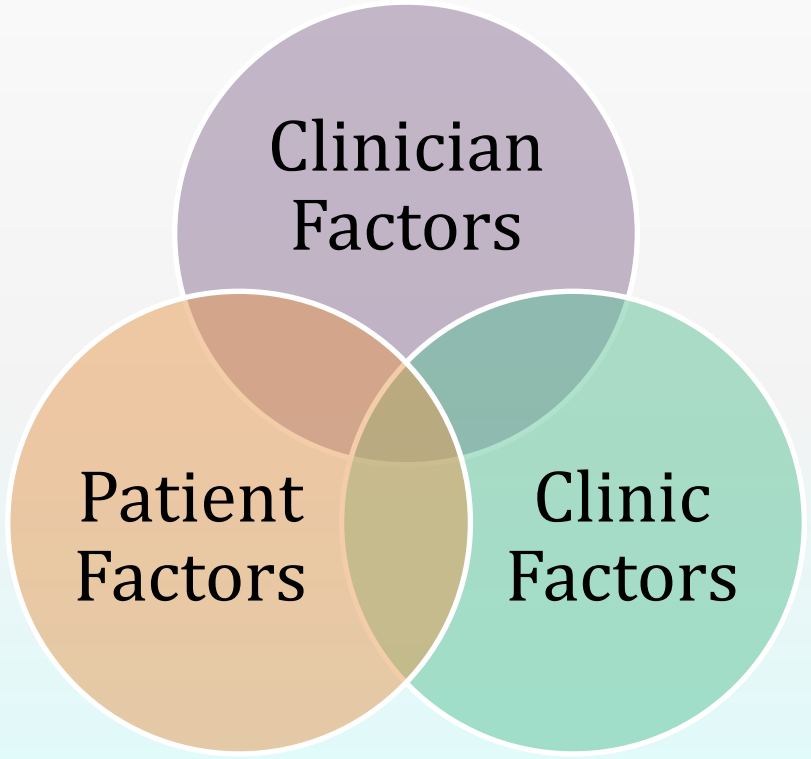




Reasons for Low Appropriateness

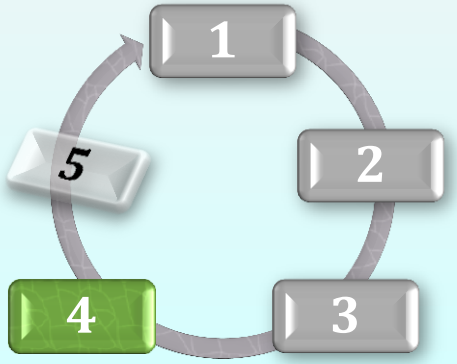
- Concept of "**Therapeutic Inertia**"
  - Failure of healthcare providers to initiate to intensify therapy when indicated
  - Recognition of the problem, but failure to act
- Small clinic-level survey



Clinician Factors

- Increase in complexity of patient – time factor
  - *Service development – RAMP/FMSC
- Unawareness of latest guidelines
  - *Education courses/seminars
- Record keeping (reasons for initiating BB)
  - *Clinical notes audit, reminder system
- No laboratory tests needed for monitoring

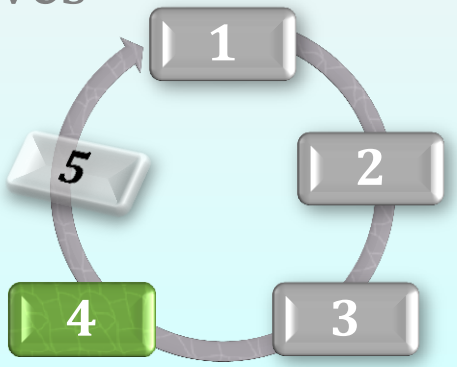
**Proposed Strategies*



Patient and Clinic Factors

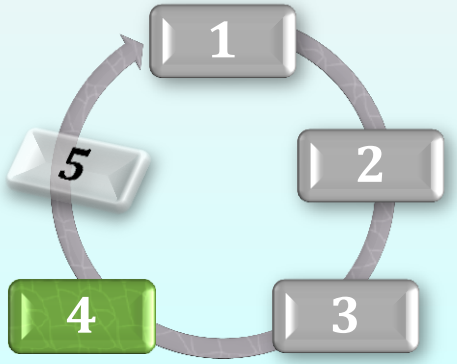
- Reluctant to change
- Insufficient knowledge for change
  - *Education by doctor/nurse
- Convenient dosing of BB
  - *Use other anti-hypertensives with daily dose
- Perceived side-effects less than other classes

- Atenolol is cheapest among all antihypertensives



The Way Forward

- Larger scale research on appropriateness of BB use
- Identification of barriers – Patient factors
- Effective strategies for therapeutic inertia (especially those already on BB but not clinically indicated)



Conclusion

- Service gap identified
  - Inappropriate use of BB may lead to suboptimal glycemic and lipid control

- Increase in clinicians' awareness when prescribing BB for uncomplicated HT
  (especially when repeating prescriptions)

Acknowledgement

- Dr. Tsui Hoi Yee
- Dr. Yiu Ming Pong
- Dr. Luk Wan
- Dr. Yiu Yuk Kwan

Thank You!

BACKUP SLIDES FOR Q&A

Evidence: Non-Vasodilating BB

- Decrease in insulin sensitivity by 14-33%
- Increase in glucose concentration with the use of atenolol or metoprolol alone
- Increased 28% risk of development of DM in HT patients (*ARIC study*)
- Atenolol-based therapy was predictive for the development of DM, also resulted in worse clinical outcome in CV mortality, all-cause mortality and development of DM compared to amlodipine (*ASCOT-BPLA*)
- Majority of clinical studies indicate non-vasodilating BB tend towards having a negative effect on lipid parameters, especially TG and HDL

Current medical research and opinion. Mar 2010;26(3):615-629.

Patient Identification

- 616 patients identified using CDARS
  - Patients received atenolol or metoprolol without other classes of antihypertensive were included
  - Attendance date: 1/6/2013-30/9/2013
    - Rationale: Maximum follow-up period in GOPC: 12-14 weeks
    - Patient will receive at least 1 consultation within the 4-month period

- <u>Exclusion Criteria</u>
  - No recent blood tests within ***15 months*** (some delay of ordering investigation to actual blood taking anticipated)
  - Concurrent use of other SFI antihypertensives ***not recognized by CDARS***
  - Less than ***3 follow-up episodes*** (exclude those FU case in other clinics or SOPD)

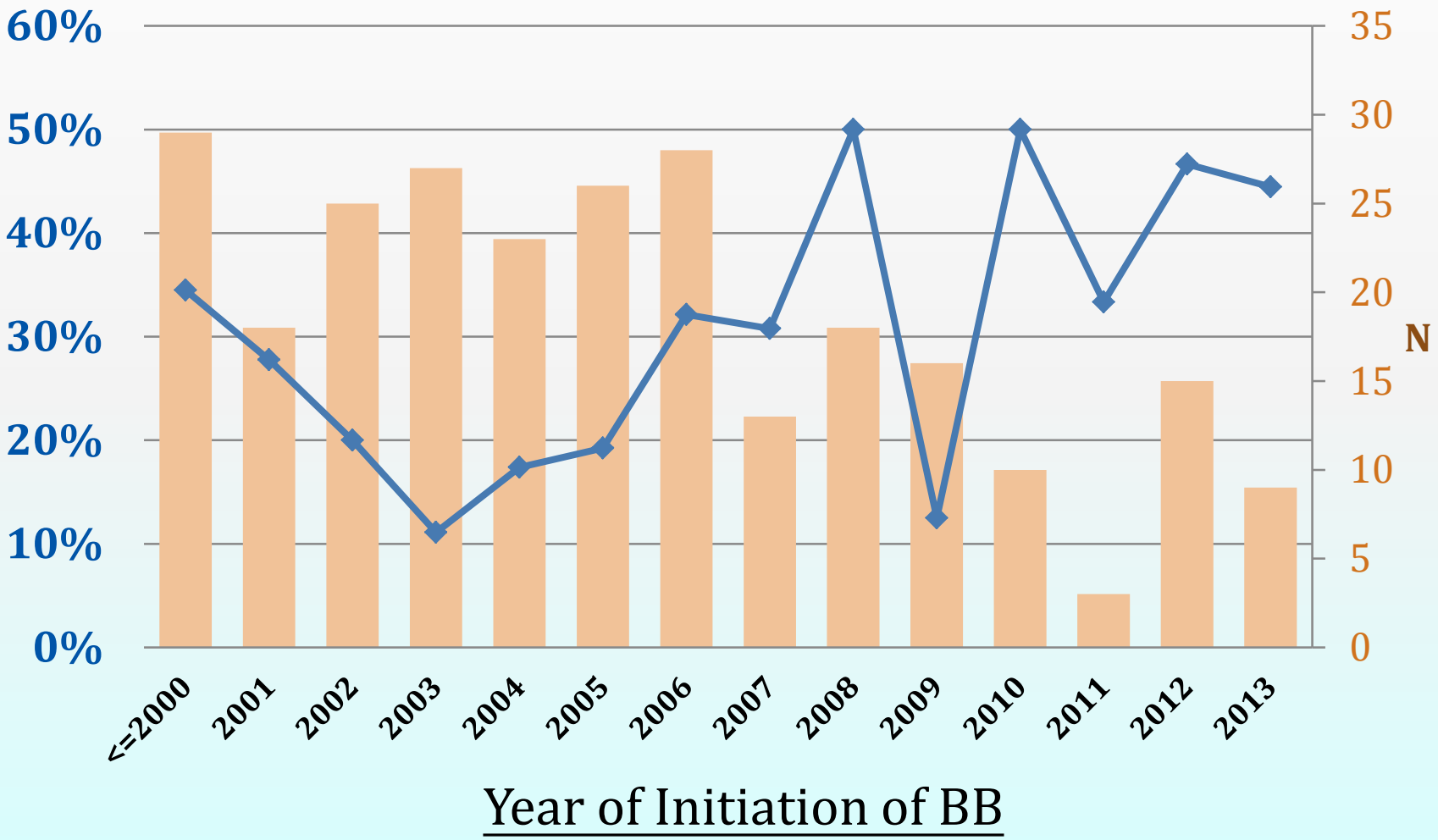
CSW GOPC Patient Headcounts

Year	BB	CCB	ACEi	Diuretics	Total
2006	972 (21%)	791 (17%)	155 (3%)	466 (10%)	**4543**
2007	961 (21%)	848 (18%)	184 (4%)	446 (10%)	**4652**
2008	902 (19%)	910 (19%)	234 (5%)	421 (9%)	**4691**
2009	774 (16%)	1163 (24%)	255 (5%)	343 (7%)	**4790**
2010	657 (14%)	1299 (27%)	278 (6%)	277 (6%)	**4795**
2011	567(12%)	1472 (31%)	261 (6%)	230 (5%)	**4733**
2012	534 (11%)	1613 (34%)	245 (5%)	201 (4%)	**4738**
2013	505 (10%)	1870 (38%)	269 (5%)	179 (4%)	**4953**

Medication Cost

Medications	Daily Cost (as at 31.3.2014)
Atenolol 50mg daily	**$0.0570**
Metoprolol 50mg BD	$0.1952
Norvasc 5mg daily	$0.1282
Adalat Retard 20mg BD	$0.2466
Zestril 10mg daily	$0.1282
Enalapril 10mg daily	$0.1798
Valsartan 80mg daily	$1.2623
HCTZ 50mg daily	$0.1588
Indapamide 2.5mg daily	$0.1870
Moduretic 1 tab daily	$0.1645

Appropriateness by Year



Questionnaire Survey

- 7 doctors in our clinic participated
- Most doctors use JNC7 (*2003*) for reference when prescribing antihypertensives (86%)
- All doctors unanimously choose CCB, ACEi/ARB and thiazide diuretics as their 1st, 2nd and 3rd choices of drugs for patients with newly diagnosed uncomplicated HT respectively
- For self-rated knowledge to various hypertension guidelines, most doctors rated "***average***" ***or below*** to most up-to-date international and local guidelines

Perceived Barriers

- Top reasons for difficulty to adhere to clinical guidelines:
  - Insufficient time to discuss with patients (86%)
  - Insufficient time to find out the reasons why they were first initiated BB in clinical records (71%)
  - Inertia to change the anti-hypertensives when patients did not have any complaints (71%)
  - Expected difficulty to explain the rationale for changing drugs to patients (43%)