Welcome!

Thank you for joining the webinar:

The Canadian Diabetes Association's 2013 Clinical Practice Guidelines and the Pharmacist

Rob Roscoe, B.Sc.Pharm., ACPR, CDE, CPT

The webinar will begin shortly.

- Please ensure that your computer speakers are turned on
- If you experience audio problems, please dial 1.800.660.7225 and enter the event passcode 5237877#
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Updating Pharmacy Practice

What we need to know from the recently released 2013 Canadian Diabetes Association Clinical Practice Guidelines (CDA-CPG's)

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OBJECTIVES

- Better understand the role of Disease-based Guidelines.
- Review the changes of the newly released 2013 CDA Clinical Practice Guidelines (CPG) recommendations & how these changes may effect the practice of Pharmacy.
- Illustrate how these changes may effect diabetes management by following a “typical” patient from diagnosis to advanced therapy and comparing this patient to an older family member who has had diabetes diagnosed about 10 years earlier.

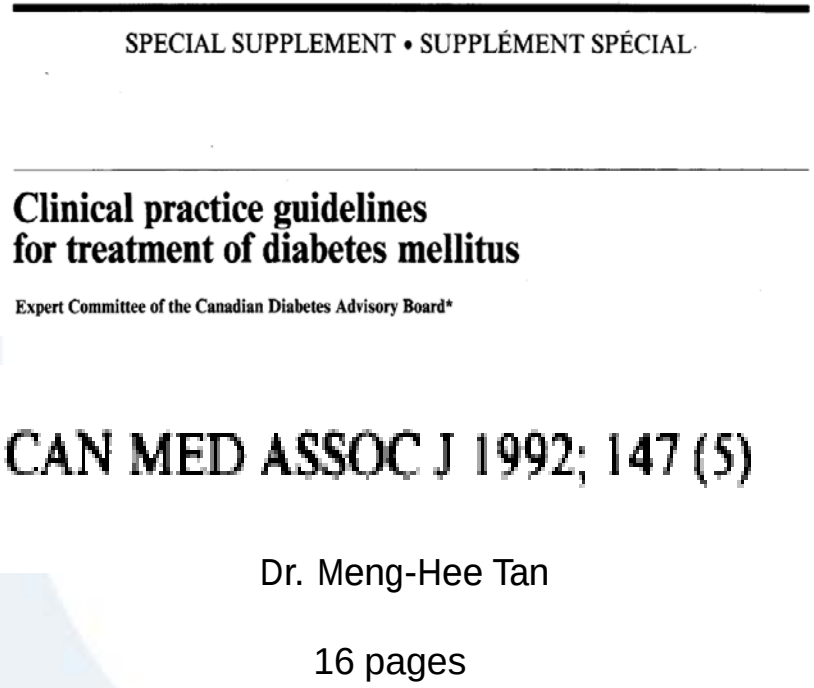
Role of Disease-based Guidelines:

- Looks at multiple aspects of a disease including:
  - Diagnosis, management, special situations, treatment goals, evidence based approach to best manage and approach treatment of the condition.
- Ideal scenario, based on research and evidence. Challenge is to adapt to real world practice.
- Provides guidance on how to approach the global aspects of the Disease (not just treatment).
- By using scheduled updates, ensure current info & amendments are scheduled to be added on a electronic version.

Canadian Diabetes Association Clinical Practice Guideline's Objective (CDA CPG's)

- Provide guidance on the most appropriate management for people with diabetes mellitus
- Enhance diabetes prevention efforts with the goal of reducing the burden of diabetes related complications
- Inform clinical decisions made by health care professionals

Evolution of our CDA CPG's



SPECIAL SUPPLEMENT • SUPPLÉMENT SPÉCIAL

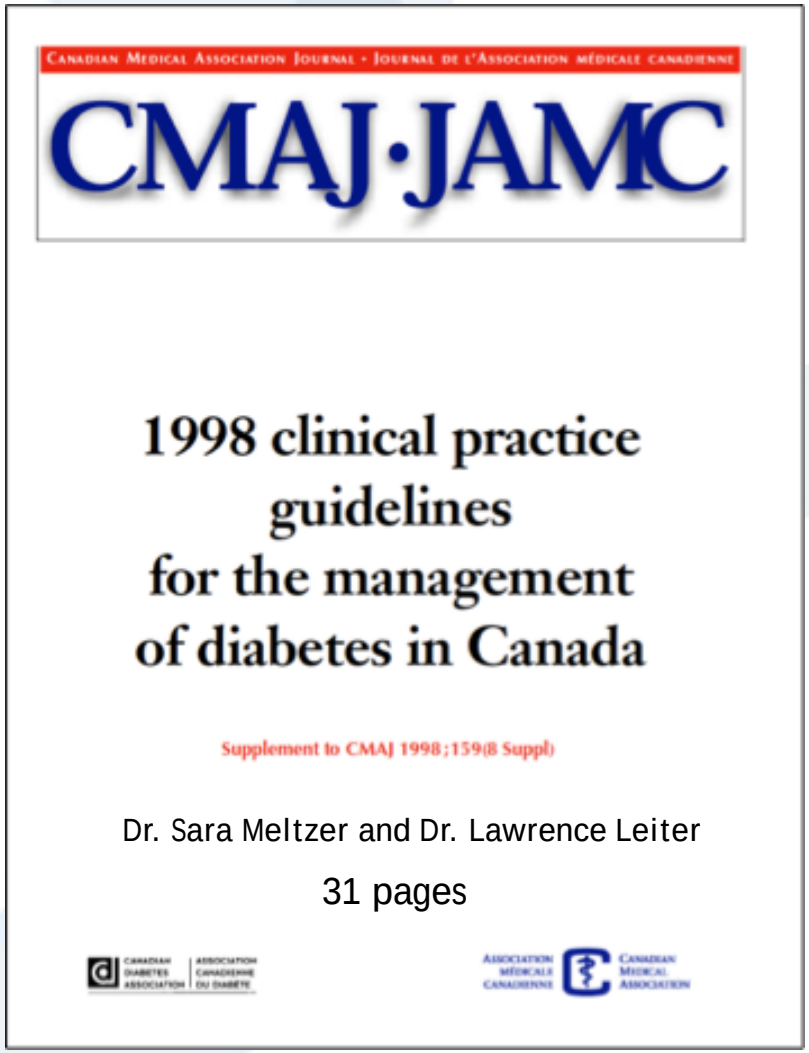
Clinical practice guidelines for treatment of diabetes mellitus

Expert Committee of the Canadian Diabetes Advisory Board*

CAN MED ASSOC J 1992; 147 (5)

Dr. Meng-Hee Tan

16 pages



Canadian Medical Association Journal • Journal de l'Association médicale canadienne

CMAJ·JAMC

1998 clinical practice guidelines for the management of diabetes in Canada

Supplement to CMAJ 1998;159(8 Suppl)

Dr. Sara Meltzer and Dr. Lawrence Leiter

31 pages

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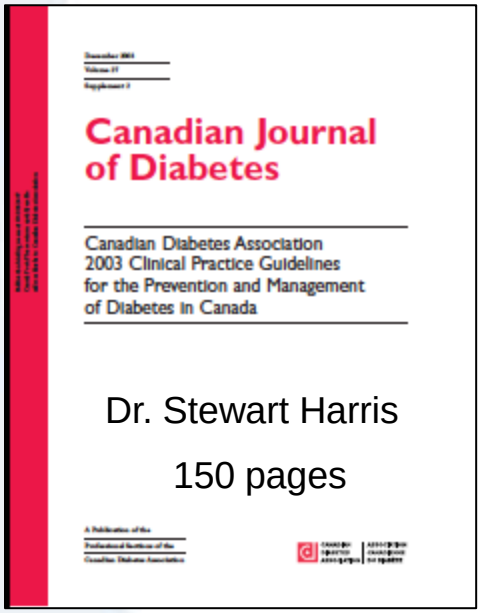
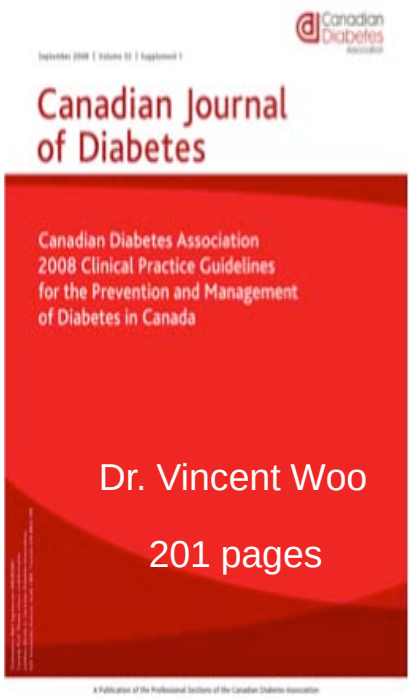
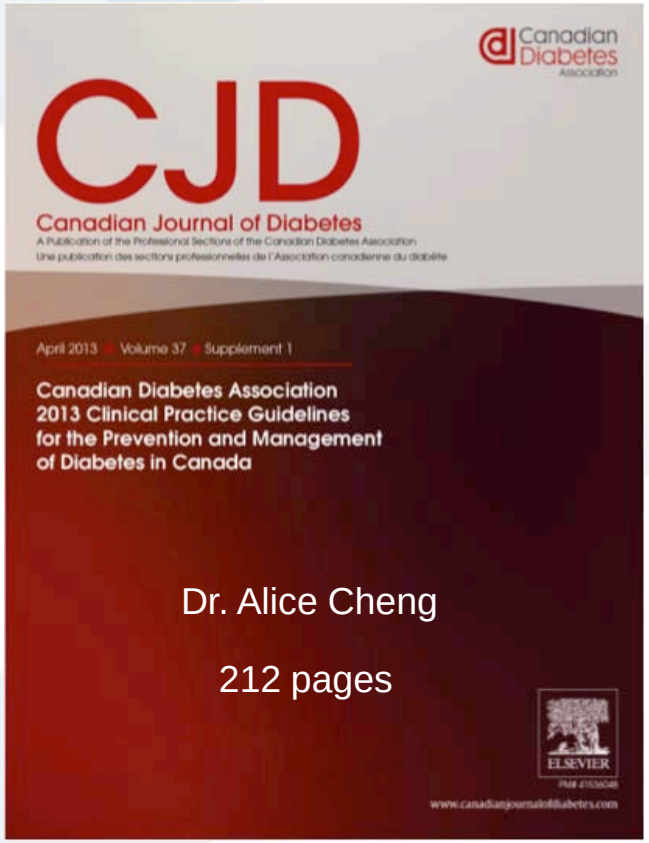
Evolution of our CDA CPG's



2003



2008



2013

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2013 CDA CPG's Overview

- 38 Chapters
- Over 212 pages of information
- New format very interactive
  - Electronic tools for patient education & for practitioners
  - PowerPoint slides developed for each of the chapters AND overall guidelines to help keep message consistent and accurate.
  - Use of appendices (i.e. pricing) allow quicker adjusting and adaptation at least quarterly.

Changes to Structure in 2013

2013

- Harmonization:
  - Canadian Hypertension Education Panel (CHEP)
  - Society of Obstetrics and Gynecology of Canada (SOGC)
  - Canadian Cardiovascular Society (CCS)
  - C-CHANGE
- Inclusions:
  - Drug cost table included
  - “Practical Tips” box

The 2013 CDA CPG's & the Pharmacist

Let's meet Tom

- Just came from family MD and was given the diagnosis of type 2 diabetes

Medical history

Male, 53 years old
Diagnosed / "was told" he had pre-diabetes 2 years ago
BP: 142/80 mm Hg
BMI: 32 kg/m^2
LDL-C: 2.8 mmol/L
A1C: 7.7%
Pre-breakfast BG average: 8.4 mmol/L
eGFR: 88 mL/min

Medications

Celecoxib 200 mg UID for "arthritis"
Zopiclone 5mg @ hs PRN

Diagnosis of Prediabetes*

2013

Test	Result	Prediabetes Category
Fasting Plasma Glucose (mmol/L)	6.1 - 6.9	Impaired fasting glucose (IFG)
2-hr Plasma Glucose in a 75-g Oral Glucose Tolerance Test (mmol/L)	7.8 – 11.0	Impaired glucose tolerance (IGT)
Glycated Hemoglobin (A1C) (%)	6.0 - 6.4	Prediabetes

* Prediabetes = IFG, IGT or A1C 6.0 - 6.4% → high risk of developing T2DM

Canadian Diabetes Association Clinical Practice Guidelines Expert Committee. Canadian Diabetes Association 2013 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada. Can J Diabetes 2013;37(suppl 1):S1-S212.

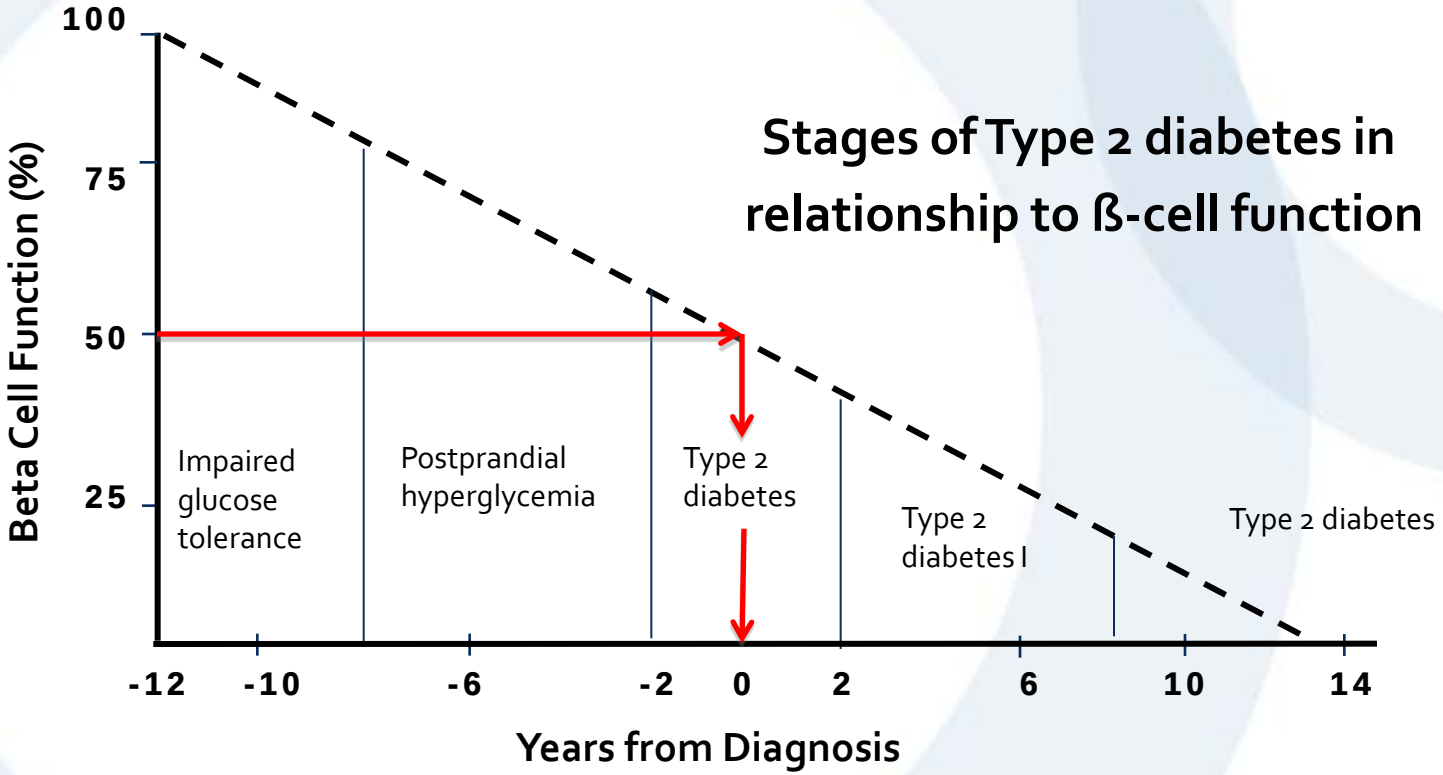
A1C Level and Future Risk of Diabetes: Systematic Review

2013

A1C Category (%)	5-year incidence of diabetes
5.0-5.5	<5 to 9%
5.5-6.0	9 to 25%
6.0-6.5	25 to 50%

Zhang X et al. *Diabetes Care*. 2010;33:1665-1673.

Type 2 Diabetes is a Progressive Disease



- 50% of ß-cell function is already lost at diagnosis
- ß-cell function will continue to decline despite treatment

Lebovitz HE. *Diabetes Review* 1999; 7(3):139-53.
UKPDS Group. *Diabetes* 1995; 44:1249.

Diagnosis of Diabetes

2013

FPG ≥7.0 mmol/L

Fasting = no caloric intake for at least 8 hours

or

A1C ≥6.5% (in adults)

Using a standardized, validated assay, in the absence of factors that affect the accuracy of the A1C and not for suspected type 1 diabetes

or

2hPG in a 75-g OGTT ≥11.1 mmol/L

or

Random PG ≥11.1 mmol/L

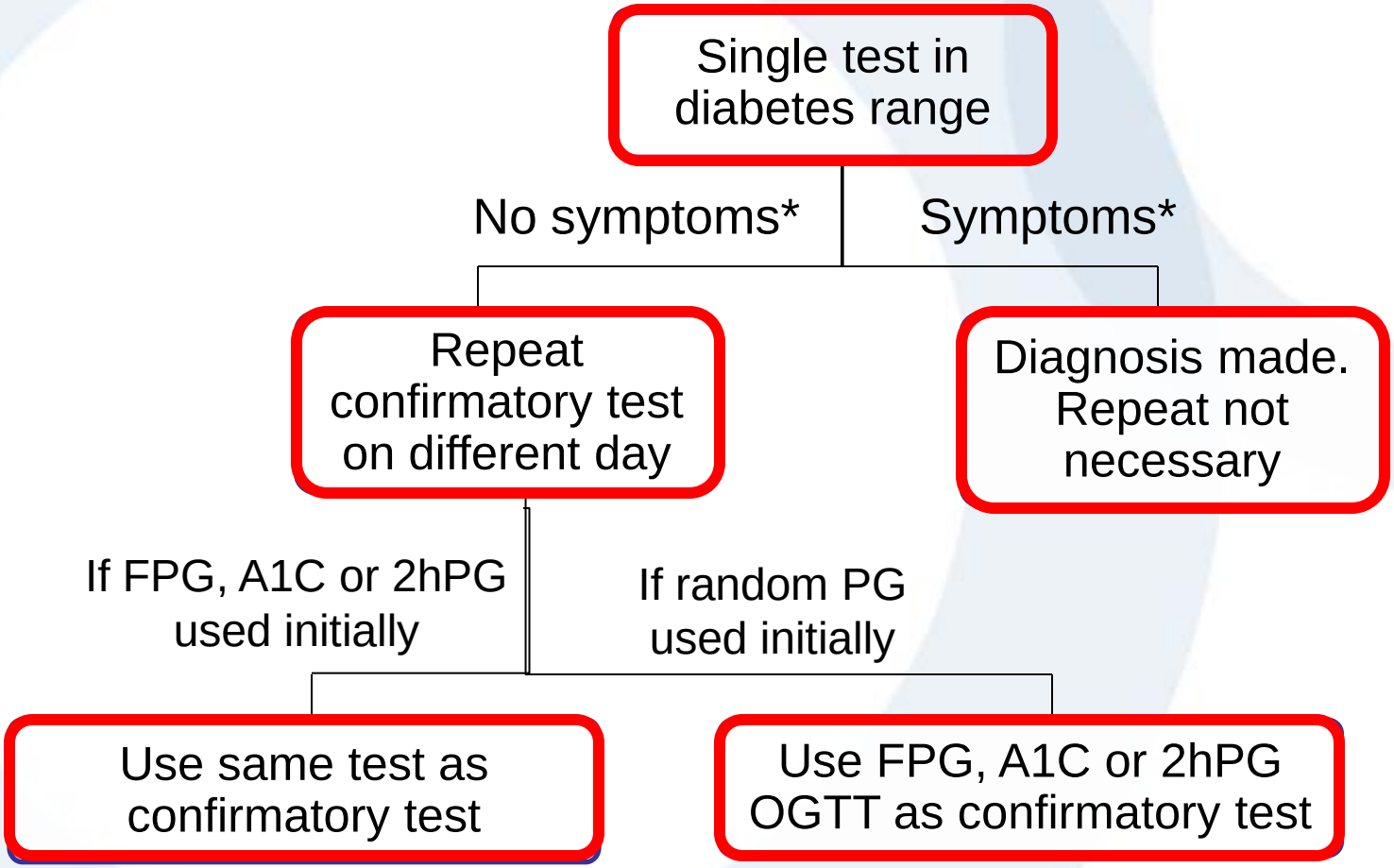
Random= any time of the day, without regard to the interval since the last meal

FPG = fasting plasma glucose; 2hPG = 2-hour plasma glucose; OGTT = oral glucose tolerance test; PG = plasma glucose

Canadian Diabetes Association Clinical Practice Guidelines Expert Committee. Canadian Diabetes Association 2013 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada. Can J Diabetes 2013;37(suppl 1):S1-S212.

Diagnosis of Diabetes

2013



If results of two different tests are available and both are above the diagnostic cutpoints, the diagnosis of diabetes is confirmed.

Back to Tom - Role of new targets in diagnosing and initiating of treatments.

- Tom called his older brother Bill aged 62 who was diagnosed with “borderline” diabetes 10 years ago.
- Bill was surprised at brother Tom’s diagnosis as Bill was told just to keep it under 10 and he would be fine.
- The uptake of guidelines varies between practitioners.
- Diagnostic targets over the years have “tightened up” the numbers used with Tom vs. his older brother Bill.
- If we applied our NEW guidelines to Bill’s situation when he was first diagnosed, how they would now be more aggressive and “tighter”?
- WHAT ARE THESE NEW GOALS?

Targets Checklist

2013

- ✓ **A1C ≤7.0%** for **MOST** people with diabetes
- ✓ **A1C ≤6.5%** for **SOME** people with T2DM
- ✓ **A1C 7.1-8.5%** in people with specific features

Questions to Address

- What should the A1C be for **most** people & why?
- Who should we be more **aggressive** with & why?
- Who should we be **less** aggressive with & why?

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Why ≤ 7%?

Macro and Microvascular Benefits?

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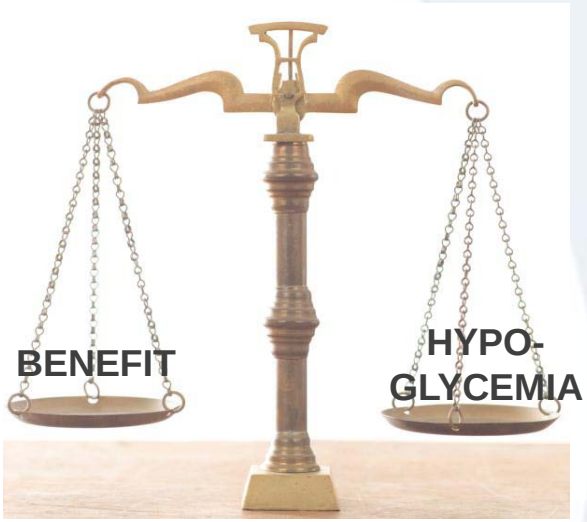
A1c ≤ 7.0%

- Large trials support this number with reduced complications.
- It can be safely achieved in MOST people with diabetes.

A1c ≤ 6.5%

For those patients who it is safe , this goal may be encouraged



Hypoglycemia can be associated with increase risk of falls(elderly) , cognitive decline, and detrimental effects on vasculature

An **A1C ≤6.5%** may be targeted in **some** patients with **type 2 diabetes** to further lower the risk of nephropathy [Grade A, Level 1] and retinopathy [Grade A, Level 1], but this must be **balanced** against the risk of hypoglycemia [Grade A, Level 1].

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When would A1C 7.1-8.5% be acceptable?

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Consider A1C 7.1–8.5% if …

2013

- Limited life expectancy
- High level of functional dependency

- Extensive coronary artery disease at high risk of ischemic events
- Multiple co-morbidities
- History of recurrent severe hypoglycemia
- Hypoglycemia unawareness
- Longstanding diabetes for whom is it difficult to achieve an A1C ≤ 7%, despite effective doses of multiple anti-hyperglycemic agents, including intensified basal-bolus insulin therapy

Diabetes in the Elderly Checklist

2013

- ✓ **ASSESS** for level of functional dependency (frailty)
- ✓ **INDIVIDUALIZE** glycemic targets based on the above (A1C ≤8.5% for **frail** elderly) but if otherwise healthy, use the **same** targets as younger people
- ✓ **AVOID** hypoglycemia in cognitive impairment
- ✓ **SELECT** antihyperglycemic therapy carefully
  - ✓ Caution with sulfonylureas or thiazolidinediones
  - ✓ Basal analogues instead of NPH or human 30/70 insulin
  - ✓ Premixed insulins instead of mixing insulins separately
- ✓ **GIVE regular diets** instead of "diabetic diets" or nutritional formulas in nursing homes

2013

Clinical Frailty Scale

1 Very Fit – People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.

2 Well – People who have no active disease symptoms but are less fit than category 1. Often, they exercise or are very active occasionally, e.g. seasonally.

3 Managing Well – People whose medical problems are well controlled, but are not regularly active beyond routine walking.

4 Vulnerable – While not dependent on others for daily help, often symptoms limit activities. A common complaint is being "slowed up", and/or being tired during the day.

5 Mildly Frail – These people often have more evident slowing, and need help in high order IADLs (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.

6 Moderately Frail – People need help with all outside activities and with keeping house. Inside, they often have problems with stairs and need help with bathing and might need minimal assistance (cuing, standby) with dressing.

7 Severely Frail – Completely dependent for personal care, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~ 6 months).

8 Very Severely Frail – Completely dependent, approaching the end of life. Typically, they could not recover even from a minor illness.

9 Terminally Ill – Approaching the end of life. This category applies to people with a life expectancy <6 months, who are not otherwise evidently frail.

Scoring frailty in people with dementia

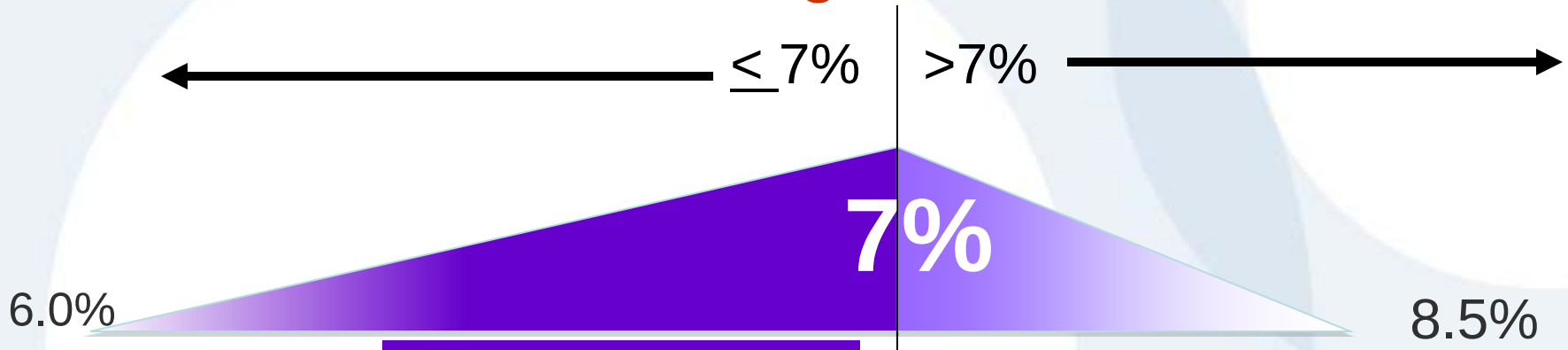
The degree of frailty corresponds to the degree of dementia. Common **symptoms in mild dementia** include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

In **moderate dementia,** recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

In **severe dementia,** they cannot do personal care without help.

Moorhouse P, Rockwood K.
J R Coll Physicians Edinb 2012;42:333-340.

Considerations for Individualizing Targets



A target A1c ≤ 6.5% may be considered in some patients with type 2 diabetes to further lower the risk of nephropathy and retinopathy

Most patients with type 1 and type 2 diabetes

CONSIDER IF:

- Limited life expectancy
- High level of functional dependency
- Extensive vascular disease
- Multiple co-morbidities
- Recurrent severe hypoglycemia
- Hypoglycemia unawareness
- Longstanding diabetes for whom it is difficult to achieve A1C ≤7.0% despite effective doses of multiple antihyperglycemic agents including intensified basal-bolus insulin therapy

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Canadian Diabetes Association Clinical Practice Guidelines Expert Committee. Canadian Diabetes Association 2013 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada. Can J Diabetes 2013;37(suppl 1):S1-S212.

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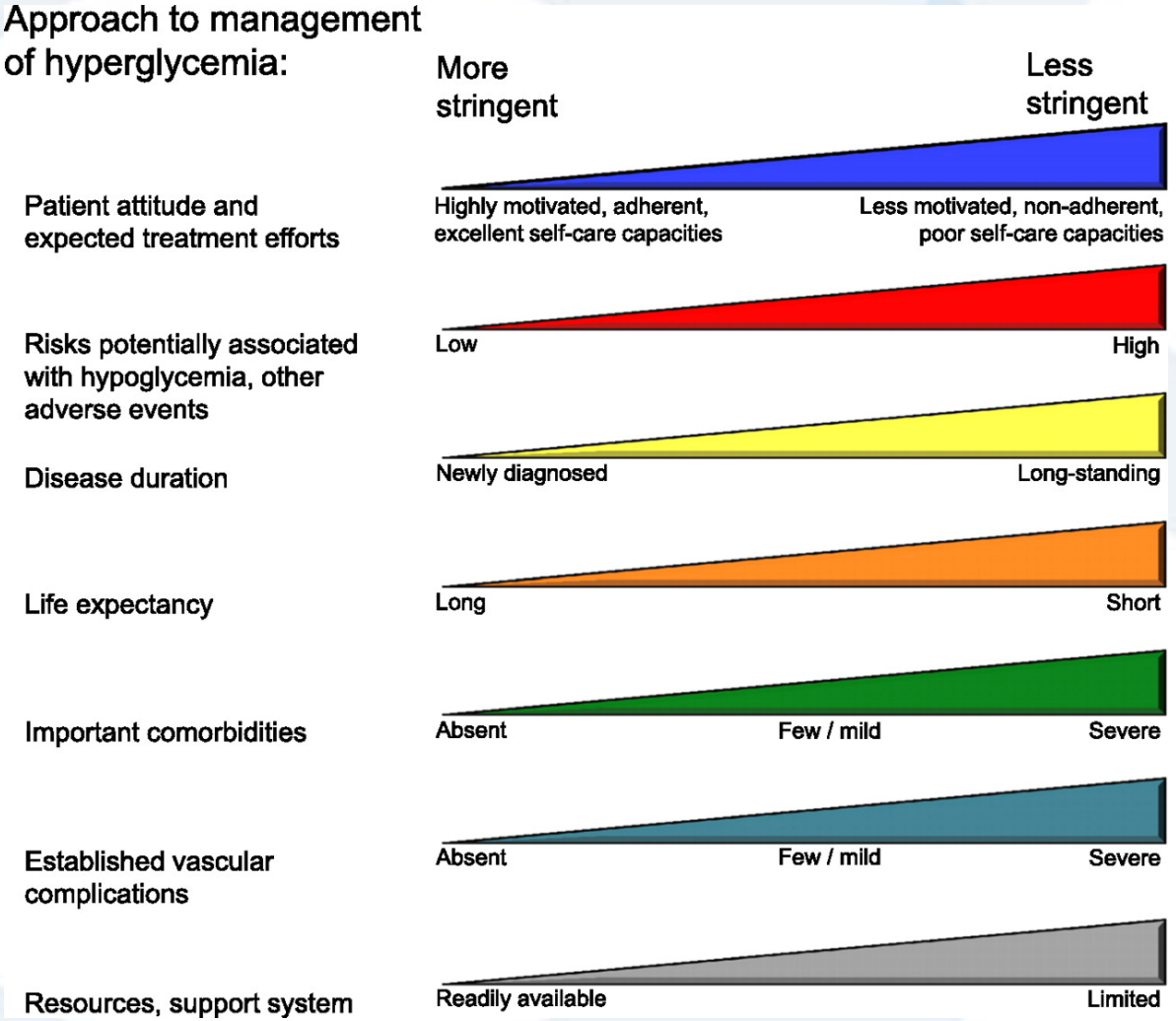
Depiction of the elements of decision making used to determine appropriate efforts to achieve glycemic targets.



Inzucchi S E et al. Dia Care 2012;35:1364-1379

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American Diabetes Association.

Canadian Pharmacists Association | Association des Pharmaciens du Canada

Self-Monitoring of Blood Glucose (SMBG)

What should we tell patients to do?

Regular SMBG is Required for:

A. REGULAR SMBG IS REQUIRED if the person with diabetes is:

SITUATION	SMBG RECOMMENDATION
Using multiple daily injections of insulin (≥ 4 times per day)	SMBG ≥ 4 times per day (see page 2 – QID – [basal-bolus/MDI])
Using an insulin pump	
Using insulin < 4 times per day	SMBG at least as often as insulin is being given (see page 2 – premixed or basal insulin only)
Pregnant (or planning a pregnancy), whether using insulin or not	SMBG individualized and may involve SMBG ≥ 4 times per day
Hospitalized or acutely ill	
Starting a new medication known to cause hyperglycemia (e.g. steroids)	SMBG individualized and may involve SMBG ≥ 2 times per day
Experiencing an illness known to cause hyperglycemia (e.g. infection)	

Increased frequency of SMBG may be required:

B. INCREASED FREQUENCY OF SMBG MAY BE REQUIRED if the person with diabetes is:

SITUATION	SMBG RECOMMENDATION
Using drugs known to cause hypoglycemia (e.g. sulfonylureas, meglitinides)	SMBG at times when symptoms of hypoglycemia occur or at times when hypoglycemia has previously occurred
Has an occupation that requires strict avoidance of hypoglycemia	SMBG as often as is required by employer
Not meeting glycemic targets	SMBG ≥ 2 times per day, to assist in lifestyle and/or medication changes until such time as glycemic targets are met
Newly diagnosed with diabetes (< 6 months)	SMBG ≥ 1 time per day (at different times of day) to learn the effects of various meals, exercise and/or medications on blood glucose
Treated with lifestyle and/or oral agents AND is meeting glycemic targets	Some people with diabetes might benefit from very infrequent checking (SMBG once or twice per week) to ensure that glycemic targets are being met between A1C tests

Daily SMBG is not usually required if patient:

C. DAILY SMBG IS NOT USUALLY REQUIRED if the person with diabetes:

Is treated only with lifestyle AND is meeting glycemic targets
Has pre-diabetes

Canadian Diabetes Association

Self-Monitoring of Blood Glucose (SMBG) Recommendation Tool for Healthcare Providers

Basic SMBG requirements (must be met)

The person with diabetes (or a family member/caregiver) must have the knowledge and skills to use a home blood glucose monitor and to record the results in an organized fashion.

The person with diabetes and/or members of the healthcare team must be willing to review and act upon the SMBG results in addition to the A1C results.

A. REGULAR SMBG IS REQUIRED if the person with diabetes is:

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C. DAILY SMBG IS NOT USUALLY REQUIRED if the person with diabetes:

Is treated only with lifestyle AND is meeting glycemic targets
Has pre-diabetes

Suggested SMBG Patterns for Patients Using Insulin

Basal Insulin Only – NPH or long-acting insulin analog, typically given at bedtime. *SMBG at least as often as insulin is being given.* Optional, less frequent SMBG can be done at other times of day to ensure glycemic stability throughout the day.

	BREAKFAST		LUNCH		SUPPER		BEDTIME	NIGHT
	before	after	before	after	before	after		
Insulin							NPH/long (basal)	
SMBG pattern	SMBG test							
Adjustment	Basal insulin ↑ if BG high ↓ if BG low							

Premixed – typically given pre-breakfast and pre-supper. *SMBG at least as often as insulin is being given.* SMBG QID until glycemic targets are met; SMBG BID (alternating times) is usually sufficient once glycemic targets are met.

	BREAKFAST		LUNCH		SUPPER		BEDTIME	NIGHT
	before	after	before	after	before	after		
Insulin	premixed				premixed			
SMBG pattern 1: Starting	SMBG test		SMBG test		SMBG test		SMBG test	
SMBG pattern 2: Stable Alternating daily	SMBG test				SMBG test			
			SMBG test				SMBG test	
Adjustment	Pre-supper insulin ↑ if BG high ↓ if BG low		Pre-breakfast insulin ↑ if BG high ↓ if BG low		Pre-breakfast insulin ↑ if BG high ↓ if BG low		Pre-supper insulin ↑ if BG high ↓ if BG low	

QID (basal-bolus/MDI) – typically given as a rapid-acting analog or regular insulin (bolus) before each meal and NPH or long-acting analog (basal) typically given at bedtime. SMBG should be QID, pre-meal and bedtime, in order to assess previous dose and to adjust next dose. Some patients find that post-prandial checking can also be helpful.

	BREAKFAST		LUNCH		SUPPER		BEDTIME	NIGHT
	before	after	before	after	before	after		
Insulin	rapid/ regular (bolus)		rapid/ regular (bolus)		rapid/ regular (bolus)		NPH/long (basal)	
SMBG pattern 1: Starting or Stable	SMBG test		SMBG test		SMBG test		SMBG test	
SMBG pattern 2: Stable, Focus on post-meal BG	SMBG test	SMBG test		SMBG test		SMBG test		
SMBG pattern 3: Intensive management	SMBG test	SMBG test	SMBG test	SMBG test	SMBG test	SMBG test	SMBG test	SMBG test
Adjustment	Basal insulin ↑ if BG high ↓ if BG low	Pre-breakfast insulin ↑ if BG high ↓ if BG low	Pre-lunch insulin ↑ if BG high ↓ if BG low		Pre-supper insulin ↑ if BG high ↓ if BG low		Basal insulin ↓ if BG low	

MDI = multiple daily injections

No funding sources were used by the CDA for the development or launch of this document on SMBG.

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Back to Tom's therapy

- Next steps upon his diagnosis-What should we be doing?
- Reviewed with Tom "Just the Basics" and related when and how to monitor to identify and clarify dietary issues
- Asked Tom to do a "Profile" of SMBG to enable a conversation around most appropriate therapy
- Metformin was started on diagnosis, Legacy effect!, dose was 250 mg BID increasing to 500 mg BID if tolerated over the next week or so (which he did)
- Tom's profile has improved but (may) still needed additional medication. Where do we start? How aggressive, what expectations should Tom have, & how to engage his interest and make him a collaborator in his own therapy. (Make sure he is aware of Progressive nature)

Medications for Glycemia
How do we choose?

Highlights of Major Changes

2013

Pharmacologic Management of type 2 diabetes

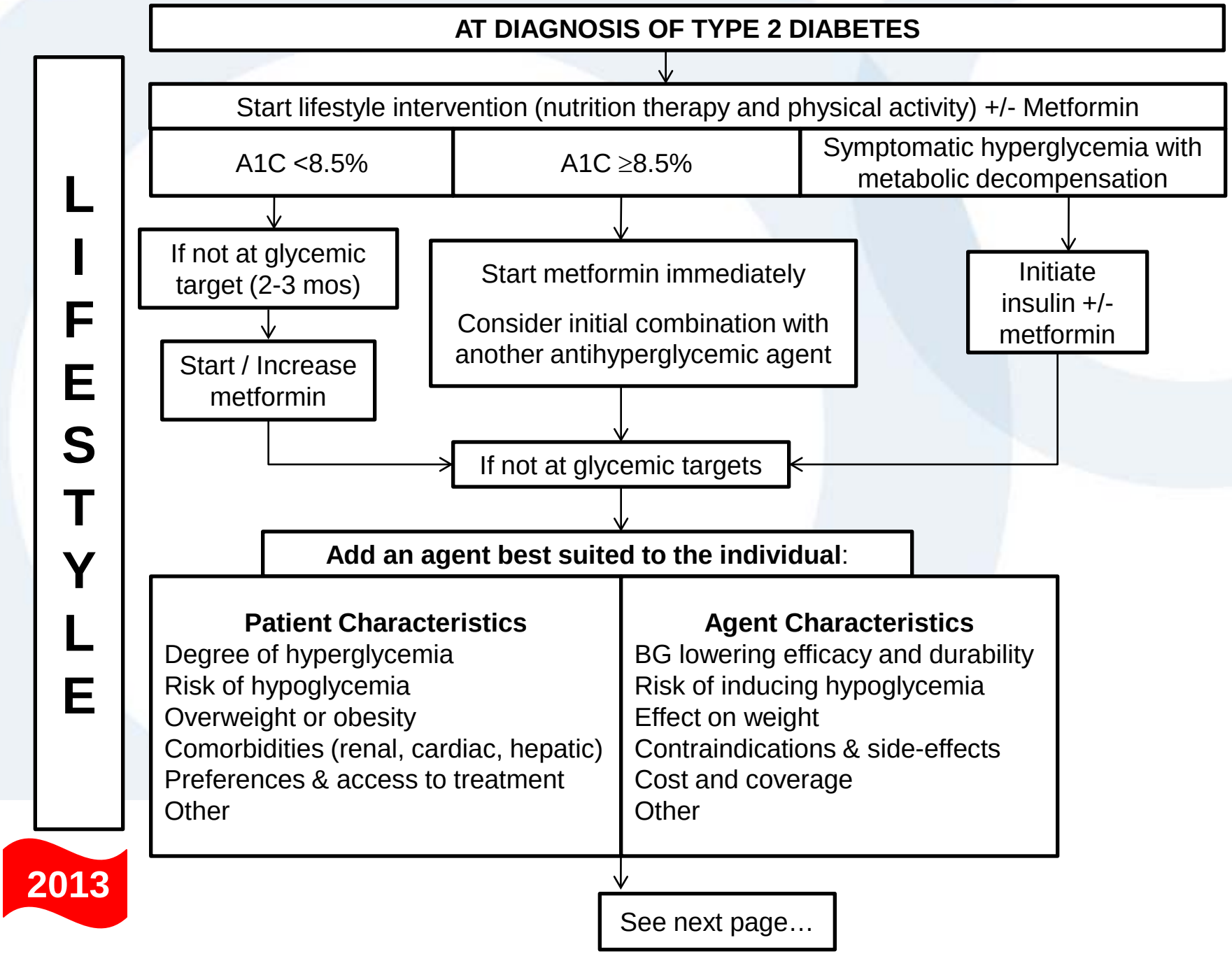
- Achieve target A1C **within 3-6 months of diagnosis**
- **New algorithm** for the pharmacologic management of T2DM with emphasis on **individualization** of agent choice
- **Metformin** may be **used at the time of diagnosis**
- **A1C ≥8.5%** at the time of diagnosis should receive **immediate pharmacologic therapy** and consideration for **use of ≥ 2 antihyperglycemic therapies** and/or **insulin**
- Inclusion of **Cost Table** for antihyperglycemic therapies

2013

Get to Target Within

3-6 MONTHS

of Diagnosis


AT DIAGNOSIS OF TYPE 2 DIABETES
Start lifestyle intervention (nutrition therapy and physical activity) +/- Metformin
A1C <8.5%
A1C ≥8.5%
Symptomatic hyperglycemia with metabolic decompensation
If not at glycemic target (2-3 mos)
Start / Increase metformin
Start metformin immediately
Consider initial combination with another antihyperglycemic agent
Initiate insulin +/- metformin
If not at glycemic targets
Add an agent best suited to the individual:
Patient Characteristics
Degree of hyperglycemia
Risk of hypoglycemia
Overweight or obesity
Comorbidities (renal, cardiac, hepatic)
Preferences & access to treatment
Other
Agent Characteristics
BG lowering efficacy and durability
Risk of inducing hypoglycemia
Effect on weight
Contraindications & side-effects
Cost and coverage
Other
See next page…
LIFESTYLE
2013

From prior page…

LIFESTYLE

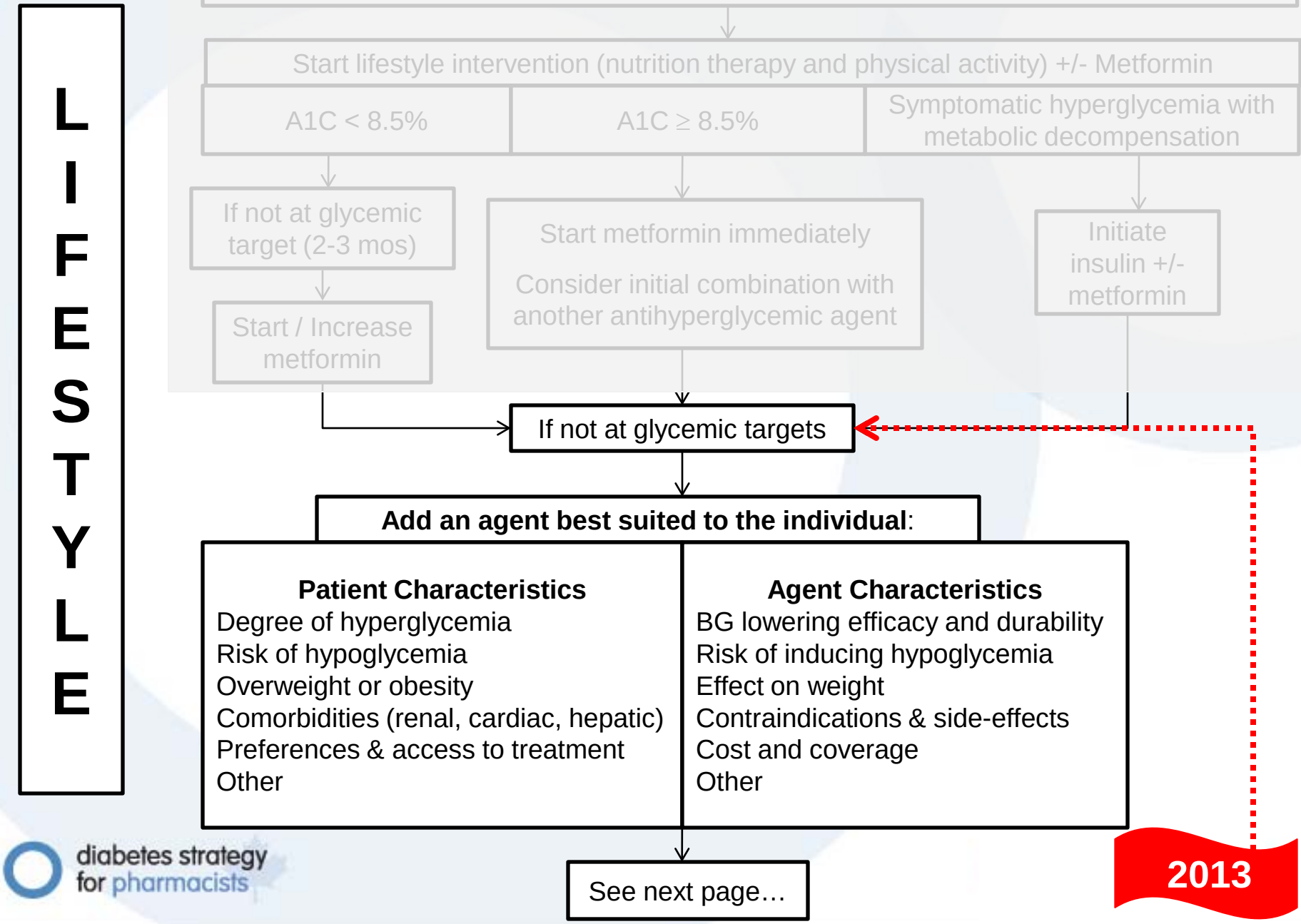
Add an agent best suited to the individual (agents listed in alphabetical order):					
Class	**Relative A1C lowering**	**Hypo-glycemia**	**Weight**	**Other therapeutic considerations**	**Cost**
Alpha-glucosidase inhibitor (acarbose)	↓	Rare	neutral to ↓	Improved postprandial control, GI side-effects	$$
Incretin agents: DPP-4 Inhibitors GLP-1 receptor agonists	 ↓↓ ↓↓ to ↓↓↓	 Rare Rare	 neutral to ↓ ↓	 GI side-effects	 $$$ $$$$
Insulin	↓↓↓	Yes	↑↑	No dose ceiling, flexible regimens	$-$$$$
Insulin secretagogue: Meglitinide Sulfonylurea	 ↓↓ ↓↓	 Yes Yes	 ↑ ↑	 Less hypoglycemia in context of missed meals but usually requires TID to QID dosing Gliclazide and glimepiride associated with less hypoglycemia than glyburide	 $$ $
TZD	↓↓	Rare	↑↑	CHF, edema, fractures, rare bladder cancer (pioglitazone), cardiovascular controversy (rosiglitazone), 6-12 weeks required for maximal effect	$$
Weight loss agent (orlistat)	↓	None	↓	GI side effects	$$$

If not at glycemic target

- Add another agent from a different class
- Add/Intensify insulin regimen

2013

Make timely adjustments to attain target A1C within 3-6 months


LIFESTYLE
AT DIAGNOSIS OF TYPE 2 DIABETES
Start lifestyle intervention (nutrition therapy and physical activity) +/- Metformin
A1C < 8.5%
A1C ≥ 8.5%
Symptomatic hyperglycemia with metabolic decompensation
If not at glycemic target (2-3 mos)
Start / Increase metformin
Start metformin immediately
Consider initial combination with another antihyperglycemic agent
Initiate insulin +/- metformin
If not at glycemic targets
Add an agent best suited to the individual:
Patient Characteristics
Degree of hyperglycemia
Risk of hypoglycemia
Overweight or obesity
Comorbidities (renal, cardiac, hepatic)
Preferences & access to treatment
Other
Agent Characteristics
BG lowering efficacy and durability
Risk of inducing hypoglycemia
Effect on weight
Contraindications & side-effects
Cost and coverage
Other
See next page…
diabetes strategy for pharmacists
2013

2013

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Class	Relative A1C lowering	Hypo-glycemia	Weight	Other therapeutic considerations	Cost
Alpha-glucosidase inhibitor (acarbose)	↓	Rare	neutral to ↓	Improved postprandial control, GI side-effects	$$
Incretin agents: DPP-4 Inhibitors GLP-1 receptor agonists	 ↓↓ ↓↓ to ↓↓↓	 Rare Rare	 neutral to ↓ ↓	 GI side-effects	 $$$ $$$$
Insulin	↓↓↓	Yes	↑↑	No dose ceiling, flexible regimens	$-$$$$
Insulin secretagogue: Meglitinide Sulfonylurea	 ↓↓ ↓↓	 Yes Yes	 ↑ ↑	 Less hypoglycemia in context of missed meals but usually requires TID to QID dosing Gliclazide and glimepiride associated with less hypoglycemia than glyburide	 $$ $
TZD	↓↓	Rare	↑↑	CHF, edema, fractures, rare bladder cancer (pioglitazone), cardiovascular controversy (rosiglitazone), 6-12 weeks required for maximal effect	$$
Weight loss agent (orlistat)	↓	None	↓	GI side effects	$$$

Tom 2 years later: He is now 55

Medical history

- BP 140/85 mm/Hg
- BMI 31 kg/m^2
- LDL-C 2.7 mmol/l
- A1C 7.5%
- Pre-breakfast BG average 8.0 mmol/L
- eGFR = 80 mL/min

Medications

- Celecoxib 200 mg UID for "arthritis"
- Zopiclone 5m hs PRN
- Metformin 1000 mg BID with food
- Ramapril 2.5 mg uid

- When prompted, Tom indicates that he occasionally awakens in the night with excessive sweating, which is relieved by eating. Tom thought it was due to stress.
- Tom operates heavy equipment, has private insurance, he is concerned as brother Bill had a MI 2 years ago and was told diabetes was a large factor.
- Next steps?

Tom Issues & Results:

- Tom maybe having occasional hypoglycemic episodes
- He has an occupation that requires constant attention to details for safety
- He is worried about weight gain
- He has reasonable insurance coverage
- He also does not want to test frequently, as his job does not provide many breaks, eats when he can.
- His physician and he decided that a DPP-IV would be a good choice, Sitagliptan 100 mg once daily was added and he was informed that he needs to be more active, work on his diet and weight as a bedtime insulin may be in his future.

But we are not done with TOM yet!

Tom and Bill

- Bill was not on CV medication until he had an MI 8 years after diagnosis (2 years ago at Age 60). Now takes ARB, beta blocker and cholesterol meds. Bill's BP and cholesterol now under control.
- Tom's doctor indicated where there is a family history, wants to start him now on cholesterol medication and lower his blood pressure.
- His brother Bill has had diabetes for only 10 years, he now has symptoms of neuropathy, "protein" in his urine, his eyes are still clear.
- Tom now is scheduled to have regular (annual) foot exams, eye exams, and regular blood work (every 6 months) (contact with the DMC).

Macrovascular Disease

Vascular Protection: Who and When?

Vascular Protection Checklist

2013

- ✓ **A** • A1C – optimal glycemic control (usually ≤7%)
- ✓ **B** • BP – optimal blood pressure control (<130/80)
- ✓ **C** • Cholesterol – LDL ≤2.0 mmol/L if decided to treat
- ✓ **D** • Drugs to protect the heart

  A – ACEi or ARB | **S** – Statin | **A** – ASA if indicated
- ✓ **E** • Exercise – regular physical activity, healthy diet, achieve and maintain healthy body weight
- ✓ **S** • Smoking cessation

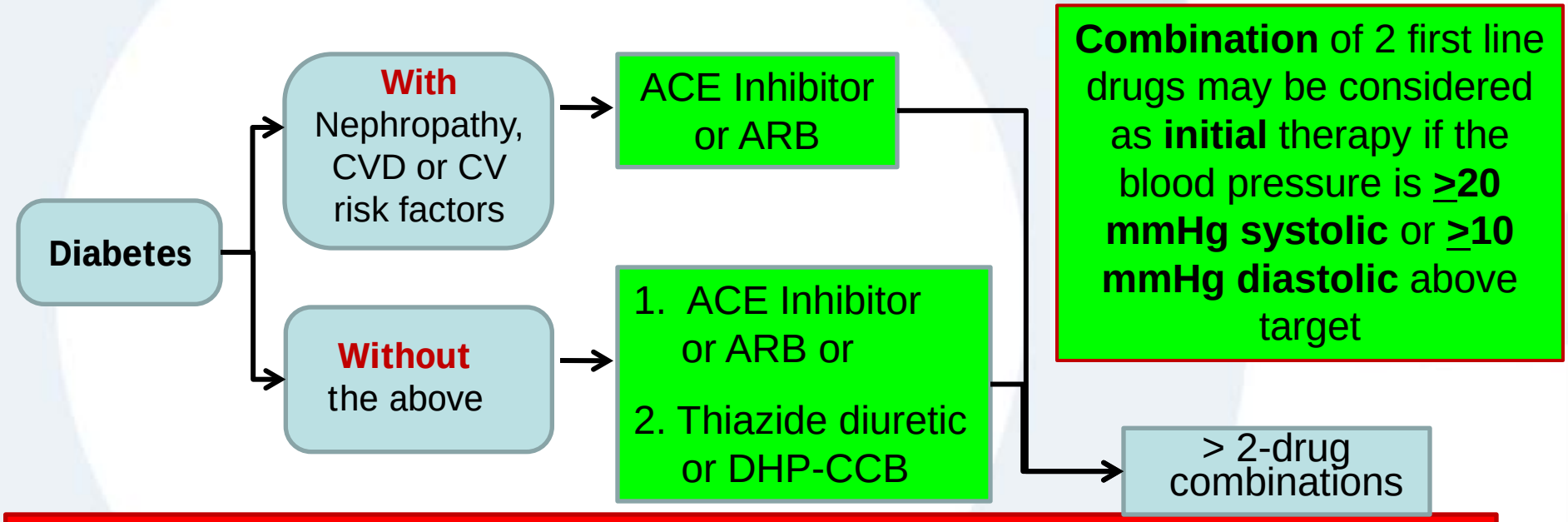
Hypertension Checklist

2013

- ✓ ASSESS for hypertension (≥ 130/80 mmHg)
- ✓ TREAT to target < 130/80 mmHg
- ✓ USE multiple antihypertensive medications if needed to achieve target (often necessary)
- ✓ USE initial combination therapy if systolic blood pressure >20 mmHg or diastolic blood pressure > 10 mmHg above target

Summary of Pharmacotherapy for Hypertension in Patients with Diabetes

Threshold equal or over 130/80 mmHg and Target below 130/80 mmHg



Monitor serum potassium and creatinine carefully in patients with CKD prescribed an ACEI or ARB

Combinations of an ACEI with an ARB are specifically not recommended in the absence of proteinuria

More than 3 drugs may be needed to reach target values

If Creatinine over 150 µmol/L or creatinine clearance below 30 ml/min (0.5 ml/sec), a loop diuretic should be substituted for a thiazide diuretic if control of volume is desired

Dyslipidemia Checklist

2013

- ✓ **CHECK** lipid profile at diagnosis then yearly OR every 3-6 months when on treatment
- ✓ **KNOW** when to use **statin** therapy
- ✓ **ADD** second line agent only when LDL-C is not at target despite statin therapy
- ✓ **USE** fibrate when TG ≥ 10.0 mmol/L

Who Should Receive Statins?

2013

- ≥40 yrs old ***or***
- Macrovascular disease ***or***
- Microvascular disease ***or***
- DM >15 yrs duration and age >30 years ***or***
- Warrants therapy based on the 2012 Canadian Cardiovascular Society lipid guidelines

Among women with childbearing potential, statins should only be used in the presence of proper preconception counseling & reliable contraception. Stop statins prior to conception.

Who Should Receive ACEi or ARB Therapy?

2013

- ≥55 years of age *or*
- Macrovascular disease *or*
- Microvascular disease

At doses that have shown vascular protection (ramipril 10 mg daily, perindopril 8 mg daily, telmisartan 80 mg daily)

Among women with childbearing potential, ACEi or ARB should only be used in the presence of proper preconception counseling & reliable contraception. Stop ACEi or ARB either prior to conception or immediately upon detection of pregnancy

ASA for 1^0 Prevention in Diabetes

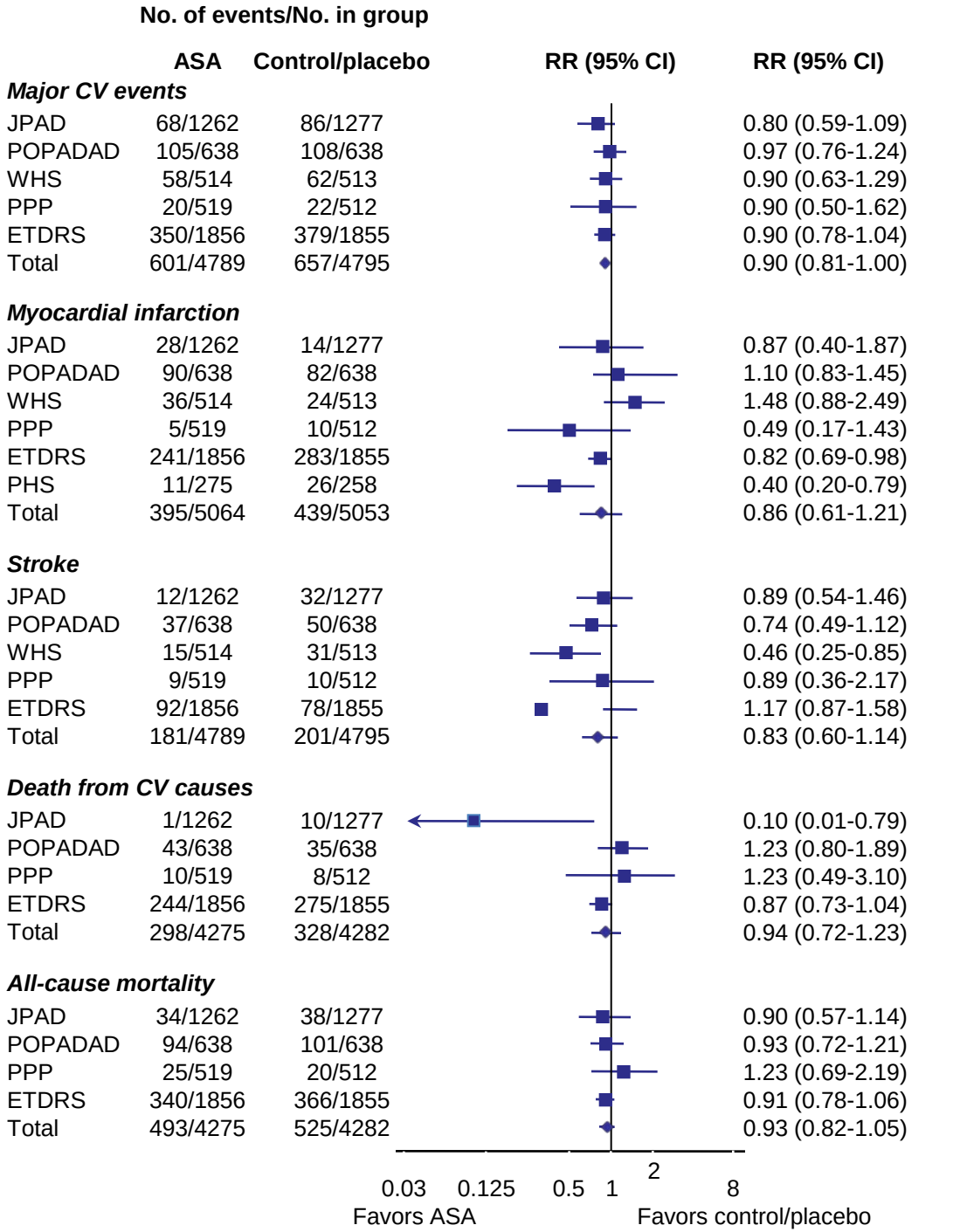
Meta analysis of 6 studies (n = 10,117)

No overall benefit for:

- Major CV events
- MI
- Stroke
- CV mortality
- All-cause mortality

JPAD = Japanese Primary Prevention of Atherosclerosis with Aspirin for Diabetes
POPADAD = Prevention of Progression of Arterial Disease and Diabetes
PPP = Primary Prevention Project
ETDRS = Early Treatment Diabetic Retinopathy Study
PHS = Physicians' Health Study
WHS = Women's Health Study

De Beradis G, et al. BMJ 2009; 339:b4531.



Does This Patient Require Vascular Protective Medications?

STEP 1: Does the patient have end organ damage?

☐ Macrovascular disease
- Cardiac ischemia (silent or overt)
- Peripheral arterial disease
- Cerebrovascular/Carotid disease

OR

☐ Microvascular disease
- Retinopathy
- Nephropathy (ACR ≥ 2.0)
- Neuropathy

YES → **STATIN* + ACEi or ARB# + ASA**
Clopidrogrel if ASA-intolerant

NO

STEP 2: What is the patient's age?

☐ ≥ 55 years

YES → **STATIN* + ACEi or ARB#**

OR

☐ 40-54 years

YES → **STATIN***

NO

STEP 3: Does the patient...

☐ Have diabetes > 15 years AND age > 30 years

☐ Warrant statin therapy based on the 2012 Canadian Cardiovascular Society Lipid Guidelines

YES → **STATIN***

Tom Results

Medications

- Metformin 1000 mg bid
- Sitagliptin 100 mg od
- Rosuvastatin 20 mg
- Bisoprolol 5 mg
- Indapamide 2.5 mg
- ASA 81 mg od
- Perindopril 4 mg

Medical history

- BP: 125/78 mm Hg
- BMI: 32 kg/m2
- LDL-C: 1.9 mmol/L
- A1C: 7.1%
- Pre-breakfast BG average: 6.8 mmol/L
- eGFR: 80 mL/min

How can we keep track of all these parameters for our patients?

Tools to help us keep track of our patients

Sample Diabetes Patient Care Flow Sheet For Adults

Name:	Type of diabetes: Type 1 ☐ Type 2 ☐ Other ☐	Date of birth:	Date of Diagnosis:

Risk factors, co-morbidities

☐ Hypertension ☐ Dyslipidemia ☐ Coronary Artery Disease (CAD)
☐ Peripheral Artery Disease ☐ Chronic Kidney Disease
☐ Mental health diagnosis ☐ Polycystic Ovarian Syndrome
☐ Foot disease ☐ Erectile Dysfunction
☐ Smoking _____ (Date stopped)
☐ Alcohol: _____ (Assess/discussed)

Vaccinations

Flu (annual) Date: _____ Date: _____
Pneumococcus Date: _____

Self-management (discuss with patient add date and location in chart)

Patient Goals: _____
Possible Barriers to Self-management: _____
Diabetes Self-management Education: _____
☐ Weight management:
Ht: _____ Target Wt: _____ Target BMI: _____
☐ Physical activity (aerobic 150 min/week; resistance 2-3 times/week)
_____
☐ Glucose meter/lab comparison
☐ Patient Care Plan (Pregnancy Planning/ Driving License):
_____ date discussed

Visits (Every 3 to 6 months)

Date	BP	Weight	A1C Target ≤7% or _____	Notes (Goals, clinical status)	Hypo-glycemia	Antihyperglycemic Agents / CV protection agents (ACEi / ARB / Statin / ASA as indicated*)

Review SMBG records. Target: pre-prandial 4-7 mmol/L; 2-hour post-prandial 5-10 mmol/L (5-8 mmol/L if A1C not at target)

Screen for diabetes complications annually or as indicated

Nephropathy

Date	ACR	eGFR

Neuropathy

- Check feet for lesions and sensation (10-g monofilament or 128 Hz tuning fork)
- Check for pain, ED, GI symptoms

Date: _____ Findings: _____
Date: _____ Findings: _____
Date: _____ Findings: _____

Retinopathy

Annual eye exam:
Date: _____
Date: _____

Ophthalmologist/ Optometrist:
_____

***For vascular protection:**

☐ Statins if ≥40 yrs OR >30 yrs and >15 yrs duration OR end organ damage
☐ ACEi/ARB if ≥55 yrs OR end organ damage (even in the absence of hypertension)

Lipids Targets: If indicated to treat LDL-C ≤2 mmol/L

Date	Medication	LDL-C	HDL-C	TG	(Non-HDL-C)	(Apo B)

CAD Assessment

ECG: _____
Stress ECG: _____
Other: _____

See reverse side for care objectives and targets

diabetes strategy for pharmacists

Canadian Pharmacists Association / Association des Pharmaciens du Canada

Sample Diabetes Patient Care Flow Sheet For Adults

Name:	**Type of diabetes:** Type 1 ☐ Type 2 ☐ Other ☐	**Date of birth:**	**Date of Diagnosis:**

Risk factors, co-morbidities

☐ Hypertension ☐ Dyslipidemia
☐ Peripheral Artery Disease
☐ Mental health diagnosis
☐ Foot disease
☐ Coronary Artery Disease (CAD)
☐ Chronic Kidney Disease
☐ Polycystic Ovarian Syndrome
☐ Erectile Dysfunction
☐ Smoking (Date stopped)

Self-management (discuss with patient add date and location in chart)

Patient Goals: _____
Possible Barriers to Self–management: _____
Diabetes Self-management Education: _____
☐ Weight management:
Ht: Target Wt: Target BMI:

Screen for diabetes complications annually or as indicated

Nephropathy

Date	ACR	eGFR

Neuropathy

- Check feet for lesions and sensation (10-g monofilament or 128 Hz tuning fork)
- Check for pain, ED, GI symptoms

Date: _____ Findings: _____
Date: _____ Findings: _____
Date: _____ Findings: _____

Retinopathy

Annual eye exam:
Date: _____
Date: _____

Ophthalmologist/
Optometrist:
_____

***For vascular protection:**

☐ Statins if ≥40 yrs OR >30 yrs and >15 yrs duration OR end organ damage
☐ ACEi/ARB if ≥55 yrs OR end organ damage (even in the absence of hypertension)

Lipids Targets: If indicated to treat LDL-C ≤2 mmol/L

Date	Medication	LDL-C	HDL-C	TG	(Non-HDL-C)	(Apo B)

CAD Assessment

ECG: _____
Stress ECG: _____
Other: _____

See reverse side for care objectives and targets

Back Page: "Cheat Sheet" of Targets and Goals

Care	Objective	Target
Self-monitoring of Blood Glucose	Ensure patient can use glucose meter, interpret results and modify treatment as needed. Develop a blood glucose monitoring schedule with patient and review records.	Premeal (mmol/L) = **4.0-7.0 mmol/L for most patients** 2hr Postmeal (mmol/L) = **5.0-10.0 mmol/L for most patients** **5.0-8.0 mmol/L** if not achieving A1C target
Blood Glucose Control	Measure **A1C every three months** for most adults. Consider testing at least every 6 months in adults during periods of treatment and lifestyle stability when glycemic targets have been consistently achieved.	A1C **≤7.0% for most patients.** Individualized based on life expectancy, functional dependency, extensive coronary artery disease at high risk of ischemia, multiple comorbidities, recurrent severe hypoglycemia, hypoglycemia unawareness, longstanding diabetes unable to achieve A1C ≤7% despite best efforts (including intensified insulin).
Hypoglycemia	Enquire about hypoglycemia at each visit. Discuss recognition and treatment of hypoglycemia and risk/ benefit of hypoglycemia and pharmacologic management.	Avoidance of hypoglycemia especially in the elderly, those with hypoglycemia unawareness, and those with criteria for less stringent control.
Blood glucose meter accuracy	Meter results should be compared with laboratory measurements at least **annually**, and when indicators of glycemic control do not match meter.	Simultaneous fasting glucose/meter lab comparison within **20%.**
Hypertension	Measure BP at **diagnosis and at every diabetes clinic visit**	**<130/80**
Waist Circumference	Measure as an indicator of abdominal fat	Central obesity defined as: WC **M ≥102cm W ≥88cm** (North America) WC **M ≥94cm W ≥80cm** (Europids; Middle-Eastern; Sub-Saharan African; Mediterranean) WC **M ≥90cm W ≥80cm** (Asians; Japanese; South and Central Americans)
Body Mass Index	Calculate BMI (mass in kilograms/height in metres^2)	Healthy body weight target: **BMI: 18.5-24.9**
Nutrition	Encourage nutritional therapy (by a registered dietitian) as an integral part of treatment and self-management (can reduce A1C by 1-2%).	Meet nutritional needs by following **Eating Well with Canada's Food Guide**
Physical Activity	Discuss and encourage aerobic and resistance exercise. Evaluate those with possible CAD or microvascular complications undertaking exercise substantially more vigorous than brisk walking.	Aerobic: **≥150 minutes /week** Resistance: **3 sessions/week**
Smoking	Encourage patient to stop at each visit; provide support as needed.	**Smoking cessation**
Chronic Kidney Disease (CKD)	Identification of CKD requires screening for **proteinuria** using random urine **ACR** (2 out of 3 samples over 3 mths) and **assessment of renal function** using a serum creatinine converted to **eGFR**. **Type 1 diabetes**-Screen at 5 years duration and then annually if no CKD. **Type 2 diabetes**-Screen at diagnosis and then yearly if no CKD.	**Normal ACR <2.0 mg/mmol** **Normal eGFR >60 mL/min**
Retinopathy	**Type 1 diabetes**-Screen 5 years after diagnosis, then rescreen annually **Type 2 diabetes**-Screen at diagnosis and 1-2 years after initial screening if no retinopathy is present. The interval for follow-up assessment should be tailored to the severity of the retinopathy. Screening should be conducted by an experienced eye care professional.	Early detection and treatment
Neuropathy/Foot examination	**Type 1 diabetes**-Screen 5 years duration and annually **Type 2 diabetes**-Screen at diagnosis, then annually Screen for neuropathy with 10-g monofilament or 128 Hz tuning fork at dorsum of great toe. In foot exam look for: structural abnormalities, neuropathy, vascular disease, ulceration, infection.	Early detection and treatment. If neuropathy present: require foot care education, specialized footwear, smoking cessation. If ulcer present: manage by multidisciplinary team with expertise
Coronary Artery Disease (CAD)	**Conduct CAD risk assessment periodically:** CV history, lifestyle, duration of DM, sexual function, abdominal obesity, lipid profile, BP, reduced pulses, bruits, glycemic control, retinopathy, eGFR, ACR. **Baseline ECG and every 2 years if** >40 years, >30 years and duration >15 years, end organ damage, cardiac risk factors.	**Vascular Protection:** First priority in prevention of diabetes complications is **reduction of cardiovascular risk by vascular protection** through a comprehensive multifaceted approach **All people with DM:** optimize: BP, glycemic control and lifestyle **Statin if:** age ≥40 years OR macrovascular disease OR microvascular disease OR long duration of DM (DM >15 years and age >30 years) **ACE-I or ARB if:** age ≥55 years OR macrovascular disease OR microvascular disease
Dyslipidemia	**Fasting lipid levels (TC, HDL, TG and calculated LDL)** at diagnosis, then yearly if treatment not initiated. More frequent testing if treatment initiated.	Lipid targets for those who need therapy: **Primary target: LDL ≤2.0 mmol/L or ≥50% reduction** **Alternate Primary target: apo B ≤0.8 g/L or non-HDL-C ≤2.6 mmol/L**
Care Objectives: People with diabetes will have better outcomes if primary care providers 1) identify patients with diabetes in their practices 2) encourage self-management and use interdisciplinary team approach to attain care objectives 3) schedule diabetes-focused visits 4) use diabetes patient care flow sheets and systematic recall.		

Care	Objective	Target
Self-monitoring of Blood Glucose	Ensure patient can use glucose meter, interpret results and modify treatment as needed. Develop a blood glucose monitoring schedule with patient and review records.	Premeal (mmol/L) = **4.0-7.0 mmol/L for most patients** 2hr Postmeal (mmol/L) = **5.0-10.0 mmol/L for most patients** **5.0-8.0 mmol/L** if not achieving A1C target
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Retinopathy	**Type 1 diabetes**-Screen 5 years after diagnosis, then rescreen annually **Type 2 diabetes**-Screen at diagnosis and 1-2 years after initial screening if no retinopathy is present. The interval for follow-up assessment should be tailored to the severity of the retinopathy. Screening should be conducted by an experienced eye care professional.	Early detection and treatment
Neuropathy/Foot examination	**Type 1 diabetes**-Screen 5 years duration and annually **Type 2 diabetes**-Screen at diagnosis, then annually Screen for neuropathy with 10-g monofilament or 128 Hz tuning fork at dorsum of great toe. In foot exam look for: structural abnormalities, neuropathy, vascular disease, ulceration, infection.	Early detection and treatment. If neuropathy present: require foot care education, specialized footwear, smoking cessation. If ulcer present: manage by multidisciplinary team with expertise
Coronary Artery Disease (CAD)	**Conduct CAD risk assessment periodically:** CV history, lifestyle, duration of DM, sexual function, abdominal obesity, lipid profile, BP, reduced pulses, bruits, glycemic control, retinopathy, eGFR, ACR. **Baseline ECG and every 2 years if** >40 years, >30 years and duration >15 years, end organ damage, cardiac risk factors.	**Vascular Protection:** First priority in prevention of diabetes complications is **reduction of cardiovascular risk by vascular protection** through a comprehensive multifaceted approach **All people with DM:** optimize: BP, glycemic control and lifestyle **Statin if:** age ≥40 years OR macrovascular disease OR microvascular disease OR long duration of DM (DM >15 years and age >30 years) **ACE-I or ARB if:** age ≥55 years OR macrovascular disease OR microvascular disease
Dyslipidemia	**Fasting lipid levels (TC, HDL, TG and calculated LDL)** at diagnosis, then yearly if treatment not initiated. More frequent testing if treatment initiated.	Lipid targets for those who need therapy: **Primary target: LDL ≤2.0 mmol/L or ≥50% reduction** **Alternate Primary target: apo B ≤0.8 g/L or non-HDL-C ≤2.6 mmol/L**

Additional Tools:

Appendices(e.g.)

- DM Meds in CKD-Therapeutic Considerations in Renal
- Price Appendix (5)
- Sick Day management (SADMAN) etc
- SMBG Recommendations
- Sample Flow Sheets
- Foot Care patient hand-out

And embedded Charts & Tools (e.g.)

- Algorithms
- Pattern management tools
- Insulin Initiation & titration

Counsel all Patients About Sick Day Medication List

2013

Instructions for Healthcare Professionals:
If patients become ill and are unable to maintain adequate fluid intake, or have an acute decline in renal function (e.g. due to gastrointestinal upset or dehydration), they should be instructed to hold medications which will:

A) Increase risk for a decline in kidney function:
- Angiotensin-converting enzyme inhibitor
- Angiotensin receptor blockers
- Direct renin inhibitors
- Non-steroidal anti-inflammatory drugs
- Diuretics

B) Have reduced clearance and increase risk for adverse effects:
- Metformin
- Sulfonylureas (gliclazide, glimepiride, glyburide)

S sulfonylureas
A ACE-inhibitors
D diuretics, direct renin inhibitors

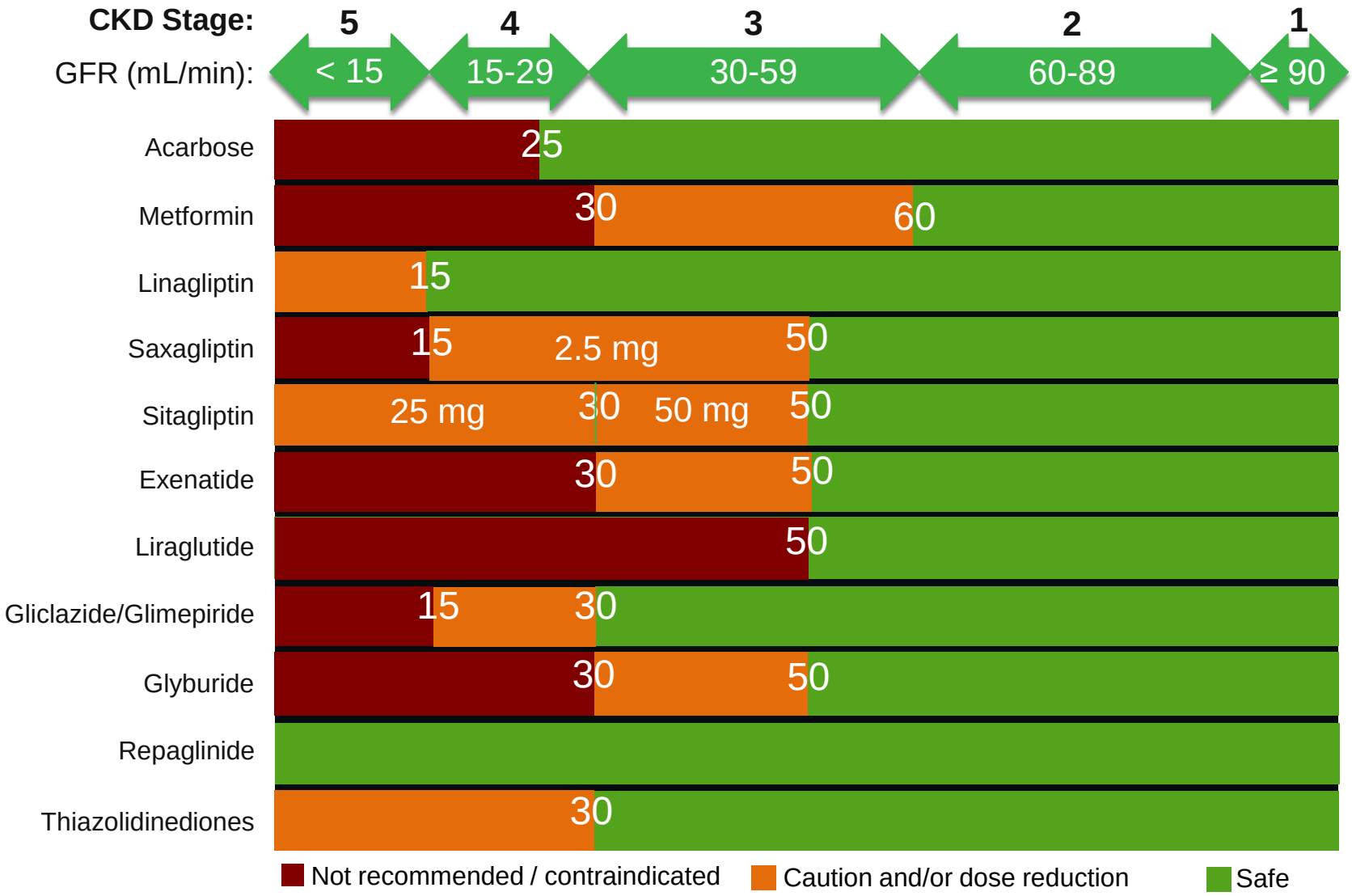
M metformin
A angiotensin receptor blockers
N non-steroidal anti-inflammatory

Please complete the following card and give it to your patient.

Patients should be instructed that increased frequency of self blood glucose monitoring will be required and adjustments to their doses of insulin or oral antihyperglycemic agents may be necessary.

diabetes strategy for pharmacists

Antihyperglycemic Agents and Renal Function



Adapted from: Product Monographs as of March 1, 2013; CDA Guidelines 2008; and Yale JF. J Am Soc Nephrol 2005; 16:S7-S10.

Appendix 5 Pricing Comparisons

Appendix 5

Approximate Cost Reference List for Antihyperglycemic Agents

Part A:

Antihyperglycemic Agents	Available strengths	Usual maintenance dose or usual dosage range	Approximate Wholesale cost*/unit
Alpha Glucosidase Inhibitor			
Acarbose (Glucobay®)	100 mg 50 mg	50-100 mg three times a day	$ 0.39/Tab $ 0.28/Tab
Biguanides			
Metformin (Glucophage®, generic) Metformin ER (Glumetza®)	500 mg 850 mg 500 mg 1000 mg	500-2000 mg per day in divided doses 850-2550 mg per day in divided doses 500-2000 mg per day 500-2000 mg per day	$ 0.09/Tab $ 0.19/Tab $ 0.63/Tab $ 1.29/Tab
Incretin Agents - DPP-4 inhibitors			
Linagliptin (Trajenta™) Saxagliptin (Onglyza®) Sitagliptin (Januvia®)	5 mg 2.5 mg 5 mg 25 mg 50 mg 100 mg	5 mg once daily 2.5-5 mg once daily 2.5-5 mg once daily 25 mg once daily (depending on renal function) 50 mg once daily (depending on renal function) 100 mg once daily	$ 2.64/Tab $ 2.48/Tab $ 2.72/Tab $ 2.97/Tab $ 2.97/Tab $ 2.97/Tab

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Summary:

- Comprehensive resource for guidance on the management of diabetes in Canada
- Chapters organized by topic with Practical tips box, Recommendations box & Key Messages within each section.
- Supported and contribution by other guideline groups
- Regularly updated (electronically) when new information available

Summary (cont')

- Embedded tools for use
  - Electronic interactive tools (A1c, Therapeutic Agents, etc.)
  - Appendices for reference use (sick day, prices, foot care)
  - PowerPoint Slides readily available to use for presenting, keeping message consistent and clear
- Written by Canadian Experts for Canadians and is one of the best evidenced based guidelines in the world.
- Pharmacists are part of this process including a retail pharmacist and a research teaching pharmacist and a clinic hospital pharmacist.

Questions and Answers!

Thanks for joining us!

- Please direct questions, feedback and suggestions to diabetes@pharmacists.ca
- Join the CPhA Continuing Professional Development Mailing List to be informed of future webinars and educational programs delivered by CPhA.
- Join MyCPhA and become a member of the Diabetes Community.