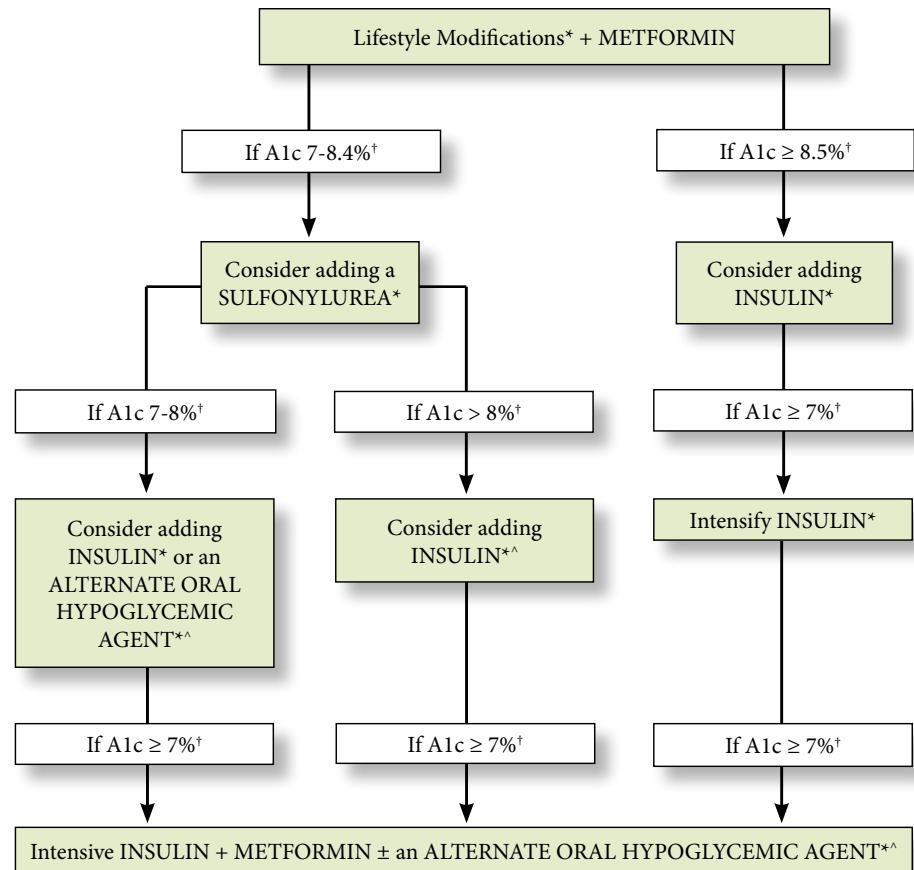


# Achieving Glycemic Goals in Type 2 Diabetes

**Figure 1: Treatment Algorithm for Type 2 Diabetes**

\* Diet and exercise can lower A1c by 1–2%; reinforce lifestyle interventions at each visit.  
 † Check A1c every 3 months until < 7%, then at least every 6 months thereafter.  
 ^ Based on effectiveness and expense, initiation and intensification of insulin therapy is preferred to treatment with three oral agents.

Adapted from: American Diabetes Association and European Association for the Study of Diabetes Consensus Statement for the Management of Hyperglycemia in Type 2 Diabetes. May differ from Canadian Diabetes Association 2003 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada. Canadian Diabetes Association 2008 guidelines are pending.



**Table 1: Comparative efficacy, safety, and cost of oral hypoglycemic agents**

Drug	Death, major CV events	A1c	Weight	Hypoglycemia	Heart failure and edema	LDL	GI	Cost	Overall
Biguanides (metformin)	Best Outcome	Best Outcome	Best Outcome	Best Outcome	Best Outcome	Best Outcome	Problem	Best Outcome	Best Outcome
Sulfonylureas	Problem	Best Outcome	Problem	Problem	Best Outcome	Intermediate	Best Outcome	Best Outcome	Best Outcome
Glitazones	Best Outcome	Intermediate	Problem	Best Outcome	Problem	Intermediate	Best Outcome	Best Outcome	Best Outcome
	rosiglitazone	Problem	Best Outcome	Problem	Best Outcome	Problem	Best Outcome	Problem	Problem
α-glucosidase inhibitors	Unknown	Intermediate	Best Outcome	Unknown	Unknown	Intermediate	Problem	Best Outcome	Unknown
Meglitinides	Unknown	Best Outcome	Problem	Problem	Unknown	Intermediate	Best Outcome	Best Outcome	Unknown
	nateglinide	Unknown	Intermediate	Best Outcome	Unknown	Intermediate	Best Outcome	Problem	Unknown
DPP 4 inhibitors	Unknown	Intermediate	Unknown	Unknown	Unknown	Unknown	Unknown	Problem	Unknown

Best Outcome    Intermediate    Problem    Unknown

GI=gastrointestinal intolerance ; LDL = LDL cholesterol level  
 For cost information see Table 2 (on reverse)

**Table 2: Average Daily Dose and ODB Coverage for Oral Hypoglycemic Agents**

Agent	Comments	Initial Dose	Average Daily Dose (max. dose)	Annual Drug Cost <sup>*,††</sup>	ODB Coverage
<b>Biguanides</b>					
Metformin (Glucophage <sup>®</sup> , generics)	<ul style="list-style-type: none"> <li>Start with low dose and titrate up every 2–4 weeks to avoid GI side effects</li> </ul>	250–500 mg daily x 1–2 weeks (then 500 mg bid x 1–2 weeks, then increase by 500 mg/day at weekly intervals)	1000–2500 mg in divided doses (2550 mg/day)	\$141	✓
<b>Sulfonylureas</b>					
Gliclazide (Diamicon <sup>®</sup> , generics)	<ul style="list-style-type: none"> <li>Titrate up every 1–2 weeks</li> <li>Caution if prescribing with insulin</li> </ul>	40–80 mg bid	80–160 mg bid (160 mg bid)	\$136	✓
Gliclazide MR (Diamicon MR <sup>®</sup> )		30 mg daily	30–120 mg daily (120 mg daily)	\$269 <sup>*,**</sup>	✓
Glimepiride (Amaryl <sup>®</sup> )		1 mg daily	1–4 mg daily (8 mg daily)	\$188 <sup>†</sup>	NB
Glyburide (Diabeta <sup>®</sup> , generics)		1.25–2.5 mg daily	2.5 mg daily–10 mg bid (10 mg bid)	\$50	✓
<b>Alpha-Glucosidase Inhibitors</b>					
Acarbose (Glucobay <sup>®</sup> , formerly Prandase <sup>®</sup> )	<ul style="list-style-type: none"> <li>Maximum effect may take weeks; increase dose gradually to reduce GI side effects and determine minimum effective dose</li> </ul>	25–50 mg daily x 1–2 weeks (then 50 mg bid x 1–2 weeks, then increase every 4–8 weeks)	50–100 mg tid (100 mg tid)	\$382	LU (175 <sup>∞</sup> , 176 <sup>§</sup> )
<b>Meglitinides</b>					
Nateglinide (Starlix <sup>®</sup> )	<ul style="list-style-type: none"> <li>Dose given within 30 minutes of meal (not taken if meals skipped)</li> </ul>	60 mg tid	60–180 mg tid (180 mg tid)	\$597 <sup>†</sup>	NB
Repaglinide (GlucoNorm <sup>®</sup> )		0.5 mg tid	0.5–4 mg before meals (4 mg qid)	\$444 <sup>†</sup>	ICR
<b>Glitazones</b>					
Pioglitazone (Actos <sup>®</sup> , generics)	<ul style="list-style-type: none"> <li>Risk of heart failure may be higher if combined with insulin (the combination of a glitazone and insulin is not approved in Canada)</li> </ul>	15 mg daily	15–45 mg daily (45 mg daily)	\$574	✓
Rosiglitazone (Avandia <sup>®</sup> )		4 mg daily	2–8 mg daily (can be divided bid) (8 mg daily)	\$1203	✓
<b>DDP-4 Inhibitors</b>					
Sitagliptin (Januvia <sup>®</sup> )		100 mg daily	100 mg daily	\$1054 <sup>†@</sup>	NB
<b>Combination Products</b>					
Avandamet <sup>®</sup> (rosiglitazone/metformin)	<ul style="list-style-type: none"> <li>As per individual agents</li> </ul>		i bid – tid	\$1265 <sup>†</sup>	NB
Avandaryl <sup>®</sup> (rosiglitazone/glimepiride)			i daily	\$1087 <sup>†</sup>	NB

✓ = general benefit; GI = gastrointestinal; ICR = Individual Clinical Review; LU = Limited Use Drug; MR = modified release; NB = not a benefit; ODB = Ontario Drug Benefit

\* Costs are given for the World Health Organization defined daily dose, unless otherwise specified.

† † Costs reflect drug cost only (i.e., no markup or dispensing fee), for the generic drug where available, with pricing based on Ontario Drug Benefit (ODB) Formulary electronic search conducted February 7, 2008, unless otherwise specified.

† Costs are based on retail pharmacy drug prices collected February 7, 2008.

\*\* Diamicon MR<sup>®</sup> cost based on usual dose of 60 mg daily.

@ Sitagliptin cost based on usual dose of 100 mg daily.

∞ LU 175: For the treatment of non-insulin-dependent diabetes mellitus (NIDDM) in patients who cannot tolerate or have failed treatment with other oral hypoglycemic agents or in whom other oral hypoglycemic agents are contraindicated

§ LU 176: For the treatment of NIDDM in patients who require combination therapy with more than one oral hypoglycemic agent to control their serum glucose concentrations.

**Note:** References for this tool can be accessed at [www.effectivepractice.org](http://www.effectivepractice.org) (click on Projects)