

Toolbox: Metabolic adverse effects of atypical antipsychotics

Katie Smithwick Adams, PharmD, BCPS¹

¹PGY2 Psychiatric Pharmacy Resident, Virginia Commonwealth University Health System, Richmond, VA

KEYWORDS

metabolic effect, adverse effect, atypical antipsychotic

This toolbox provides a summary in tabular form of the various metabolic changes that may be caused by atypical antipsychotics. Included here are: average changes in weight both short and long term (Table 1), average change in lipids short term (Table 2), average change in

lipids long term (Table 3), average changes in fasting glucose short and long term (Table 4), and a ranking of the propensity of the atypical antipsychotics to cause metabolic changes (Table 5).

Table 1. Effect of atypical antipsychotics on weight in adult patients with schizophrenia or bipolar disorder in short and long-term placebo-controlled trials as reported in manufacturer prescribing information.¹⁻¹⁰

	Mean change in weight, kg (short-term, ≤12 weeks)	Patients with ≥7% increase in body weight (short-term, ≤12 weeks)	Mean change in weight, kg (long-term, ≥24 weeks)	Patients with ≥7% increase in body weight (long-term, ≥24 weeks)
Asenapine (Saphris®)	+1.1 – 1.3	4.9 – 5.8%	+0.9	14.7%
Aripiprazole (Abilify®)	+0.3	2.2 – 8.1%	-1.5	-
Clozapine (Clozaril®)	+0.9 – 2.8	-	-0.6 – +3.7	35%
Iloperidone (Fanapt®)	+2.0 – 2.7	12 – 18%	-	-
Lurasidone (Latuda®)	+0.43	4.8%	-0.59 – 0.73	-
Olanzapine (Zyprexa®)	+2.6	22.2%	+5.6	64%
Paliperidone (Invega®)	+0.6 – 1.1	6 – 9%	+1.4 – 2.6	-
Quetiapine (Seroquel®)	-	8 – 23%	-	-
Risperidone (Risperdal®)	+0.7 – 2.2	8.7 – 20.9%	+4.3 – 5.3	-
Ziprasidone (Geodon®)	+0.5	10%	+0 – 1.4	5.6%

*Results compared with placebo or active control

Downloaded from http://meridian.allenpress.com/nh/article-pdf/3/3/115/2095327/nhc_n166834.pdf by guest on 14 June 2024

Table 2. Effect of atypical antipsychotics on lipid profile in patients with schizophrenia or bipolar disorder in short-term (≤12 weeks), placebo controlled trials as reported in manufacturer prescribing information.¹⁻¹⁰

	Mean change in total cholesterol, mg/dL	Patients with total cholesterol elevations ≥240 mg/dL	Mean change in triglycerides, mg/dL	Patients with triglyceride elevations ≥200 mg/dL
Asenapine (Saphris®)	+0.4 – + 1.1	8.3 – 8.7%	-3.5 – +3.8	13.2 – 15.2%
Aripiprazole (Abilify®)	-	Normal (<200 mg/dL) to high (≥240 mg/dL): 2.5%	-	Normal (<150 mg/dL) to high (≥200 mg/dL): 7.4%
Clozapine (Clozaril®)	+13	Normal to high: 8% Borderline (200-239 mg/dL) to high: 38%	+71	Normal to high: 0% [based on N=4] Borderline to high 100% [based on N=1]
Iloperidone (Fanapt®)	+8.2	Normal to high: 3.6%	-0.8	Normal to high: 10.1%
Lurasidone (Latuda®)	-3.8 – +12.3	Normal to high: 3.8 – 13.8%	-3.1 – +29.1	Normal to high: 6.3 – 14.3%
Olanzapine (Zyprexa®)	+5.3	Normal to high: 2.8% Borderline to high: 23%	+20.8	Normal to high: 9.2% Borderline to high: 39.3%
Paliperidone (Invega®)	-2.4 – + 5.3	Normal to high: 2.8 – 5.6%	-10.6 – +18.3	4.3 – 11%
Quetiapine (Seroquel®)	-	Normal to high: 9 – 18%	-	Normal to high: 14 – 22%
Risperidone (Risperdal®)	+1.8 – +6.9	Normal to high: 4.3 – 6.3%	-4.9 – +8.3	Triglyceride <500 mg/dL to ≥500 mg/dL: 2.5 – 2.7%
Ziprasidone (Geodon®)	-	-	-	-

*Results compared with placebo or active control

Table 3. Effect of atypical antipsychotics on lipid profile in patients with schizophrenia or bipolar disorder in long-term (≥24 weeks), placebo controlled trials as reported in manufacturer prescribing information.¹⁻¹⁰

	Mean change in total cholesterol, mg/dL	Patients with total cholesterol elevations ≥240 mg/dL	Mean change in triglycerides, mg/dL	Patients with triglyceride elevations ≥200 mg/dL
Asenapine (Saphris®)	-6	-	-9.8	-
Aripiprazole (Abilify®)	-	Normal (<200 mg/dL) to high (≥240 mg/dL): 2.4%	-	Normal (<150 mg/dL) to high (≥200 mg/dL): 14.7%
Clozapine (Clozaril®)	-	-	-	-
Iloperidone (Fanapt®)	-3.9 – +23.2	-	-8.9 – +35.4	-
Lurasidone (Latuda®)	-2.5 – +3.8	-	-4.8 – +15.1	-
Olanzapine (Zyprexa®)	+5.6	Normal to high: 14.8% Borderline (≥200 and <240 mg/dL) to high: 55.2%	+18.7	Normal to high: 32.4% Borderline (≥150 and <200 mg/dL) to high: 70.7%
Paliperidone (Invega®)	-1.5	-	-6.4 – +10.5	-
Quetiapine (Seroquel®)	-	-	-	-
Risperidone (Risperdal®)	+4.4 – 5.5	-	+19.9	-
Ziprasidone (Geodon®)	-	-	-	-

*Results compared with placebo or active control

Table 4. Effect of atypical antipsychotics on blood glucose and rate of fasting blood glucose elevations in patients with schizophrenia or bipolar disorder in short and long-term placebo-controlled trials as reported in manufacturer prescribing information.¹⁻¹⁰

	Mean change in fasting blood glucose, mg/dL (short-term, ≤12 weeks)	Patients with fasting blood glucose elevations ≥126 mg/dL (short-term, ≤12 weeks)	Mean change in fasting blood glucose, mg/dL (long-term, ≥24 weeks)	Patients with fasting blood glucose elevations ≥126 mg/dL (long-term, ≥24 weeks)
Asenapine (Saphris®)	-0.6 – +3.2	4.9 – 7.4%	+2.4	-
Aripiprazole (Abilify®)	+4.4	Normal (<100 mg/dL) to high (≥126 mg/dL): 3.8% Borderline (≥100 and <126 mg/dL) to high: 17.6%	+2.2	-
Clozapine (Clozaril®)	+11	Normal to borderline: 42%	-	-
Iloperidone (Fanapt®)	+6.6	Normal to high: 10.7%	-18 – +5.4	-
Lurasidone (Latuda®)	-0.4 – +2.6	Normal to high: 5.6 – 12.7%	+0.8 – +2.3	-
Olanzapine (Zyprexa®)	+2.76	Normal to high: 2.2% Borderline to high: 17.4%	+4.2	Normal to high: 12.8% Borderline to high: 26%
Paliperidone (Invega®)	-0.7 – +4.3	Normal to high: 3.2 – 4.8%	+3.3 – +4.6	-
Quetiapine (Seroquel®)	+3.2	Normal to high: 2.4% Borderline to high: 11.7%	+5	10.7%
Risperidone (Risperdal®)	+0.6 – +0.8	Fasting blood glucose <140 to ≥200 mg/dL: 0-0.4%	+2.8 – +4.1	-
Ziprasidone (Geodon®)	-	-	-	-

*Results compared with placebo or active control

Table 5. Summary of potential for metabolic adverse effects with atypical antipsychotics.¹⁻¹³

	Weight gain	Acute Hyperglycemia/ Diabetes	Worsening lipid profile
Clozapine (Clozaril®)	High	High*	High
Olanzapine (Zyprexa®)	High	High*	High
Quetiapine (Seroquel®)	Moderate	Moderate*	Moderate
Risperidone (Risperdal®)	Moderate	Low to moderate*	Low to moderate
Iloperidone (Fanapt®)	Moderate	Low/NR	Low/NR
Asenapine (Saphris®)	Low	Low/NR	Low/NR
Paliperidone (Invega®)	Low	Low/NR	Low/NR
Lurasidone (Latuda®)	Low	Low/NR	Low/NR
Aripiprazole (Abilify®)	Low	Low*	Low
Ziprasidone (Geodon®)	Low	Low*	Low

NR = not reported

*Agents with existing case reports of acute hyperglycemia

REFERENCES

1. Asenapine [package insert]. Whitehouse Station, NJ: Merck & Co, Inc; 2011.
2. Aripiprazole [package insert]. Tokyo, Japan: Otsuka Pharmaceutical Co; 2012.
3. Clozapine [package insert]. East Hanover, NJ; Novartis Pharmaceuticals Corp; 2011.
4. Iloperidone [package insert]. East Hanover, NJ; Novartis Pharmaceuticals Corp; 2013.
5. Lurasidone [package insert]. Marlborough, MA; Sunovion Pharmaceuticals Inc; 2012.
6. Olanzapine [package insert]. Indianapolis, IN; Eli Lilly and Company; 2011.
7. Paliperidone [package insert]. Titusville, NJ; Janssen Pharmaceuticals, Inc; 2007.
8. Quetiapine [package insert]. Wilmington, DE; AstraZeneca Pharmaceuticals LP; 2012.
9. Risperidone [package insert]. Titusville, NJ; Ortho-McNeil-Janssen Pharmaceuticals Inc, 2007.
10. Ziprasidone [package insert]. Indianapolis, IN; Eli Lilly and Company; 2011.
11. American Diabetes Association, American Psychiatric Association, American Association of Clinical Endocrinologists, North American Association for the Study of Obesity. Consensus development conference on antipsychotic drugs and obesity and diabetes. *J Clin Psychiatry*. 2004;65(2):267-72. PubMed PMID: [15003083](#).
12. De Hert M, Yu W, Detraux J, Sweers K, van Winkel R, Correll CU. Body weight and metabolic adverse effects of asenapine, iloperidone, lurasidone and paliperidone in the treatment of schizophrenia and bipolar disorder: a systematic review and exploratory meta-analysis. *CNS Drugs*. 2012;26(9):733-59. DOI: [10.2165/11634500-000000000-00000](#). PubMed PMID: [22900950](#).
13. Hasnain M, Vieweg WV, Hollett B. Weight gain and glucose dysregulation with second-generation antipsychotics and antidepressants: a review for primary care physicians. *Postgrad Med*. 2012;124(4):154-67. DOI: [10.3810/pgm.2012.07.2577](#). PubMed PMID: [22913904](#).

How to cite this editor-reviewed article

Adams KS. Toolbox: Metabolic Adverse Effects of Atypical Antipsychotics. *Ment Health Clin* [Internet]. 2013;3(3):115-8. Available from: <http://dx.doi.org/10.9740/mhc.n166834>