ANTIPSYCHOTICS
COST-CONSCIOUS USAGE
January 2008 Version

ASCP Model Curriculum

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Pre-Lecture Exam
Question 1

1. Which of the following is an antipsychotic dose that is in excess of the optimal?

   A. Aripiprazole 15 mg/day

   B. Ziprasidone 80 mg bid

   C. Haloperidol 20 mg qd

   D. Risperidone 4 mg/day

   E. Quetiapine 300 mg bid

Question 2

2. Which of the following antipsychotics must be taken with food in order to prevent significant loss of absorption?

   A. Ziprasidone

   B. Olanzapine

   C. Clozapine

   D. Aripiprazole

   E. Risperidone

Question 3

3. Which of the following is the recommended starting dose for clozapine?

   A. 25 mg twice a day

   B. 12.5 mg

   C. 25 mg

   D. 50 mg

Question 4

4. All of the following are true of a patient on risperidone who gets parkinsonian side effects, except:

   A. D2 receptor occupancy is 75% or more

   B. The patient is above the “neuroleptic threshold”

   C. Patient is at risk for secondary negative symptoms

   D. Raising the dose is likely to be helpful

Question 5

5. All of the following are true of olanzapine, except

   A. Smoking increases clearance by 40%

   B. Works most quickly when started at 15-20 mg/d

   C. Elevated Hemoglobin A1C the most in CATIE

   D. Increased triglycerides the most in CATIE

   E. Produces clinically significantly better results at doses over 20 mg daily.

Outline of Lecture

- Pre-lecture questions
- Introduction
- Algorithm for selecting antipsychotics
- How to give trials of antipsychotics
- Prescribing antipsychotics in dementia
- Cost-conscious use of antipsychotics
- Post-lecture questions and answers

Major Teaching Points

- Psychopharmacology algorithms help structure the knowledge base that pertains to decision-making
- Dosing strategies should be informed by the pertinent evidence-base
- Antipsychotic choice should be influenced by the patient's likely susceptibility to the common side effects
- Occasionally, cost considerations may be relevant

Recommended Handbook

- Taylor D et al. **The Maudsley Prescribing Guidelines.** 9th edition. Taylor & Francis. 1-800-272-7737. $40. Paperback. July, 2007
- Chapter 1 & 2, pp 1-141 on Schizophrenia

Goals of Treatment

- Recovery and normalized activity are the goals of adequate antipsychotic trials.
- Response short of this should be considered unsatisfactory.
- If response is unsatisfactory, review diagnosis, psychosocial factors, and investigate behavioral toxicity

Algorithm For Selection of Antipsychotics in 1st Onset Schizophrenia

- Begin with aripiprazole, risperidone, or ziprasidone. Olanzapine not first-line due to metabolic risks. Minority view: OK to consider first-gen (FGA) e.g. perphenazine.
- If patient intolerant/unable to complete trial of initial agent, try others until you complete an adequate trial.
- If you gave a good trial of aripiprazole or ziprasidone as the first choice, choose risperidone, olanzapine or FGA.
- If you gave risperidone first, then next choose olanzapine or an FGA.
- Next: **clozapine.** But if you did not follow the above and used aripiprazole and ziprasidone for your first 2 trials, try FGA before clozapine.

Speed of Response

- Speed is critical in the acute inpatient, managed-care-driven environment.
- If the patient does not achieve a 25% reduction in symptoms in the first 2 weeks, outcome is likely to be poor at 4 weeks. (Leucht S: J Clin Psychiatry 2007)
- More improvement occurs in the first two weeks than the second two weeks. (Leucht S: Biol Ps 2005)
- So, probably switch if no response in 2 weeks
- Risperidone, olanzapine, and conventional antipsychotics may work a bit faster than others*

  (*Osser & Sigadel: J Clin Psychopharmacol 2001, McCue et al: Br J Psychiatry 2006.)

Evidence-Based Algorithms On Line

- International Psychopharmacology Algorithm Project (www.ipap.org)
- Algorithm Project at the Harvard South Shore Department of Psychiatry (www.mhc.com/Algorithms)
- Texas Medication Algorithm Project (www.dshs.state.tx.us/mhprograms/TIMA.shtm)

Ziprasidone – caveats from package insert

- Avoid ziprasidone if EKG shows QTc is >500 milliseconds
- Is patient on medications that might prolong the QTc since EKG was done? (tricyclics, quetiapine, thioridazine, floxacins.) If so, repeat EKG
- Check pulse. Low pulse risks Torsades. Is the patient on a drug that lowers pulse? (Beta-blocker – often; SSRI – infrequently)
- Risk for electrolyte problems? (alc. Dependent, purging bulimic) If so, get K+, Mg++ and follow
- History of arrhythmias? Get medical clearance.

Dosing of Ziprasidone - 1

- Package insert recommends starting at 20 mg twice daily, but 3/4 acute treatment studies in patients with schizophrenia failed to show superiority of 20 mg bid to placebo.
- Stable outpatient being switched: could start with 40 mg bid.
- Absorption is reduced by 40% if not taken with food. 500 calorie meal is optimal. (Gandelman K et al. APA New Research Poster NR 482. San Diego, 2007)

Dosing of Ziprasidone - 2

- At 40 mg bid and especially at 80 mg bid, robust superiority to placebo is seen. In CATIE it was 110 mg/day, and ziprasidone underperformed a bit
- So, raise the dose, as tolerated, every 1-2 days to 80 bid for the routine case of an acutely ill hospitalized patient with schizophrenia
- If this is a first episode patient, try perhaps half the routine dose.

Ziprasidone Side Effects

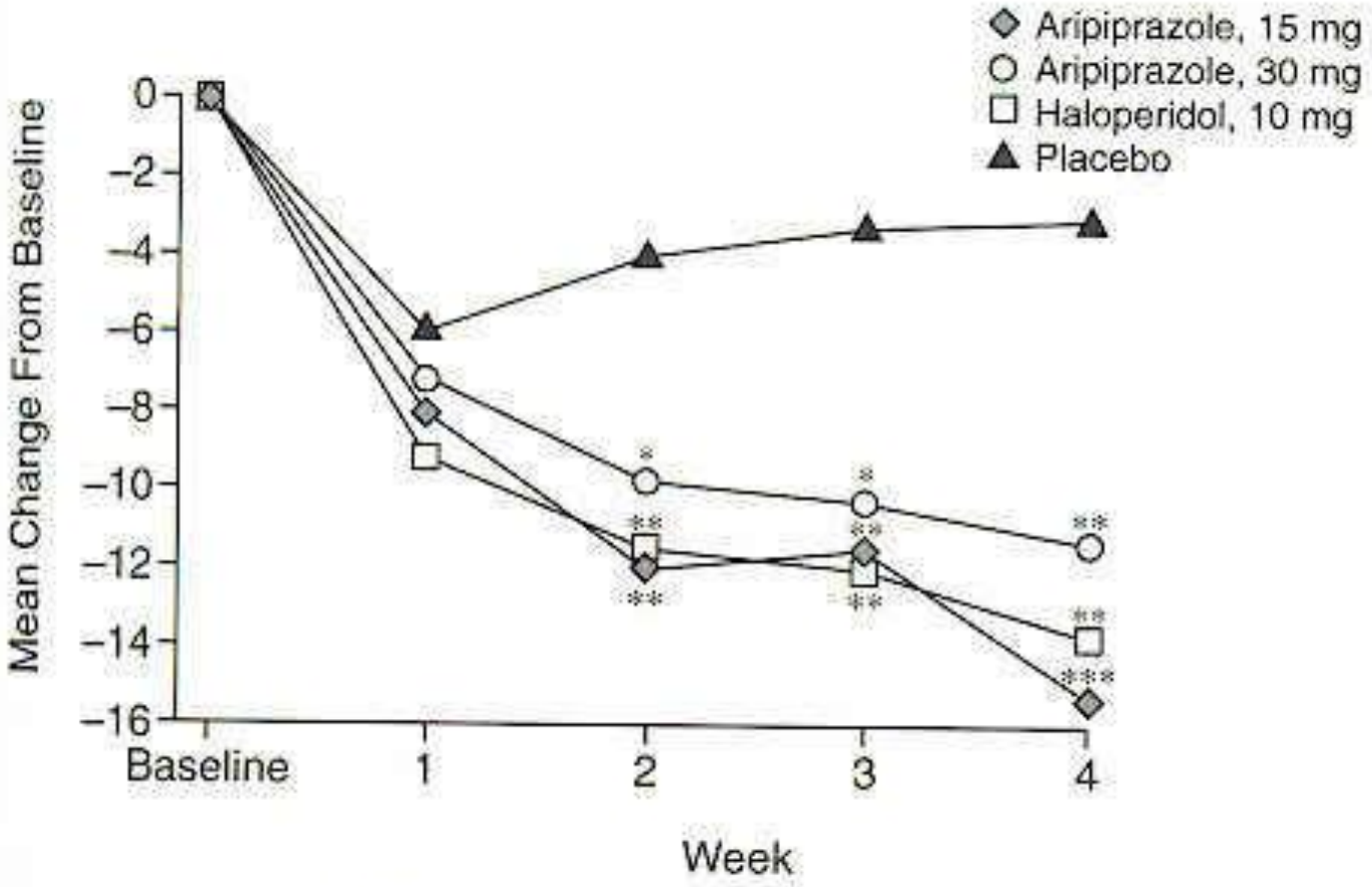
- Activation, especially at low doses
- Sedation
- Nausea, dry mouth
- EPS occasionally
- No QTc problems were seen in CATIE compared to the others

Aripiprazole – Dosage Issues

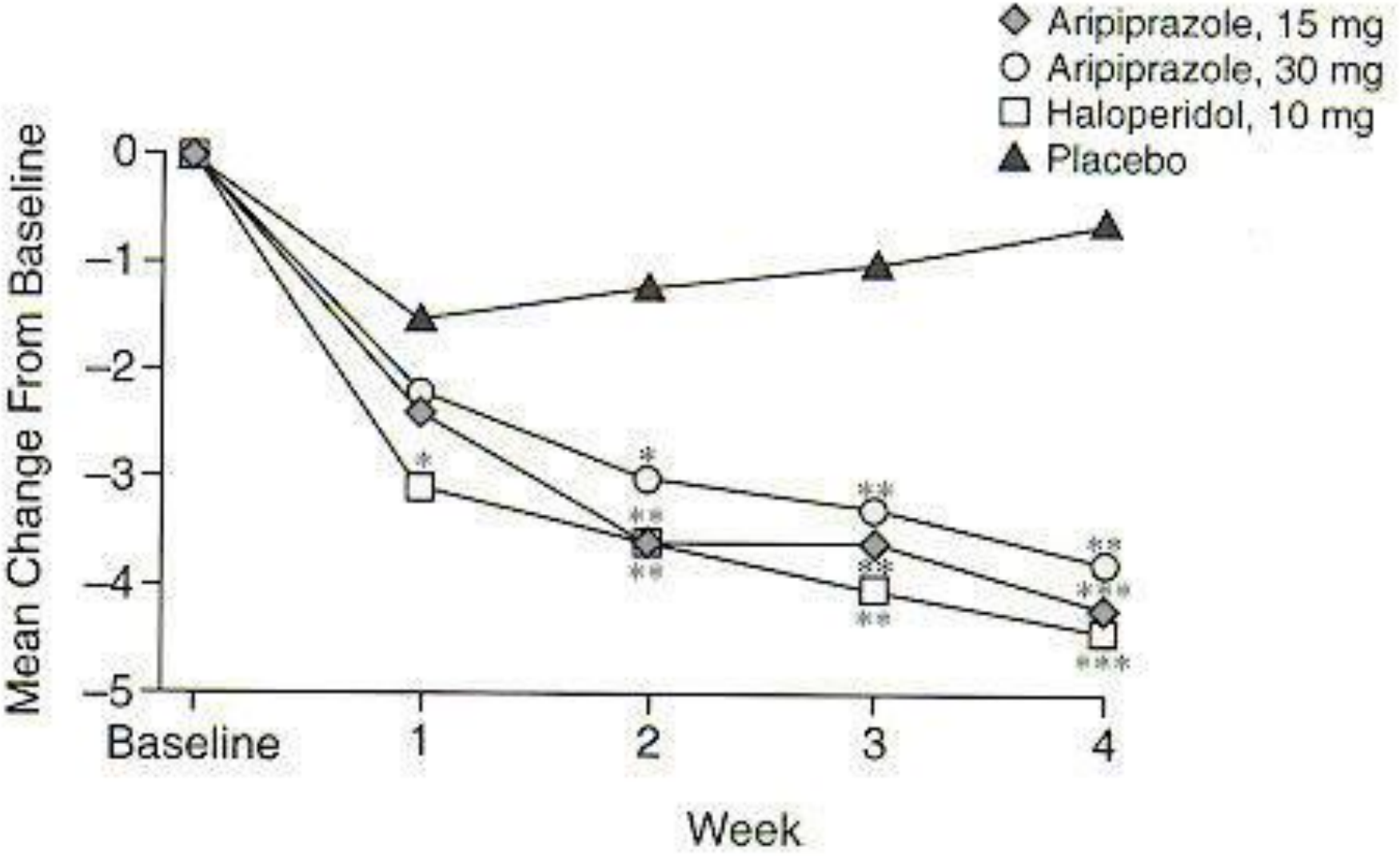
- 4 week multicenter DBPC compared 15 or 30 mg aripiprazole with 10 mg haloperidol
- 414 acutely ill inpatients entered the study.*
- Fixed doses
- Lorazepam and benztropine were allowed
- Dropouts: 45% on placebo; 42% on Haldol and aripiprazole 30; 33% on aripiprazole 15.

***Kane et al. J Clin Psychiatry 2002;63:763-771**

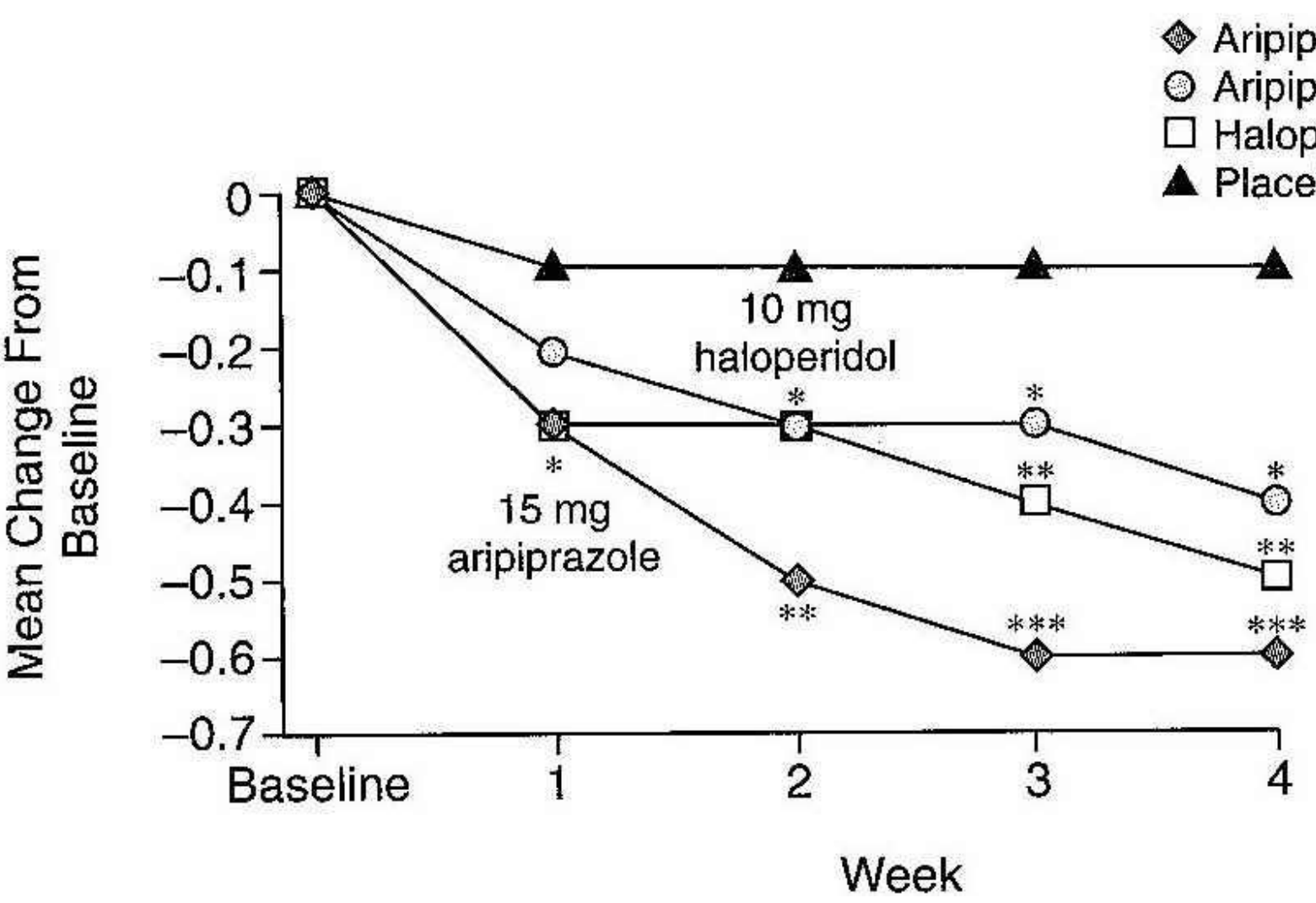
Figure 1. Mean Change in PANSS Total Score From Baseline Over 4 Weeks of Treatment With Aripiprazole (15 mg or 30 mg), Haloperidol 10 mg, or Placebo (LOCF)[a,b]



[a]Abbreviations: LOCF = last observation carried forward, PANSS = Positive and Negative Syndrome Scale.
[b]Pairwise comparison p values (vs. placebo): *p < .05; **p < .01; ***p < .001.



Mean Change in PANSS Positive Symptoms


Aripiprazole, 15 mg
Aripiprazole, 30 mg
Haloperidol, 10 mg
Placebo
Mean Change From Baseline
0
–0.1
–0.2
–0.3
–0.4
–0.5
–0.6
–0.7
10 mg haloperidol
15 mg aripiprazole
*
**
***
Baseline
1
2
3
4
Week

CGI Outcome

Conclusions

- 15 mg is superior to 30 mg, at all data points and even after 1 week
- There is no advantage to a “loading dose”
- Results develop slowly compared to haloperidol 10 mg, but patience is rewarded. There is no advantage to raising dose.
- Six-month relapse rates are somewhat higher than other antipsychotics (27%, compared to 15-19%)*

*Pigott TA J Clin Psychiatry 2003;64:1048-1056

Aripiprazole Issues

- 75 hour half life
- Substrate for Cytochrome P450 3A4 and 2D6. Paroxetine and fluoxetine will raise levels (use 50% dose), carbamazepine will lower them 50%.
- 8% of population are poor metabolizers of 2D6 and will get 60% higher levels. So, some patients need only 5 mg
- 30 mg? Possible use in tx-resistant schizophrenia*

*Kane JM et al. J Clin Psychiatry 2007;68:213-223

Aripiprazole Side Effects

- Dizziness
- Insomnia
- Akathisia, agitation
- Headache
- Sedation
- Metabolic syndrome – minimal risk

Aripiprazole

- Lower metabolic side effects
- But, some patients develop irritability, insomnia, excitement, and nervousness.
- Is this a dopamine agonist effect?
- This may occur more often if the patient was recently on a strong dopamine blocker like a FGA or risperidone.* Also, best to avoid adding DA stimulants such as bupropion.

***Raja M. Int J Neuropsychopharmacol 2007;10:107-110.**

Risperidone Dosing

- 3-6 mg per day for 3-6 weeks
- A dose that produces parkinsonian side effects is probably too high a dose
- First exposure: 0.5 mg bid, then 1 mg bid
- Acute exacerbation: 1 mg bid, then 2 mg bid
- Elderly: 50% of above, or less
- P450 Drug Interactions: 2D6 substrate

Risperidone dosing - II

- Chinese and other East Asian ethnic individuals (and many Africans) usually need somewhat lower doses of antipsychotics metabolized by 2D6, probably because 35-50% have a less active form of the 2D6 enzyme, rendering them "Slow Metabolizers" (SM's).
- Poor metabolizers (PM's) are comparatively rare among Asians, being found in 1-6% compared to 5-10% in Caucasians. They are very prone to EPS

Risperidone dosing and D2 receptor occupancy

- In first-episode and drug free patients, risperidone at 6 mg per day produced EPS in almost everyone and dopamine D2 receptor occupancy averaging 82%*
- At risperidone 3 mg, EPS were usually not present and the average D2 occupancy was 72%.*
- Previous studies have shown that the optimal D2 occupancy level for maximizing benefits and minimizing EPS is 70-80%.
- CATIE phase 1 dose was 3.9 mg/day – *slightly* low for non-neuroleptic naïve patients.

***Nyberg S et al, 1999**

Risperidone Side Effects

- Prolactin elevation, probably greater than that seen with the typical neuroleptics.
- Agitation. This can look like akathisia, or it may present as hypomania or mania. It is unclear whether these reports represent true side effects of the atypicals or coincidental exacerbations of the patient's underlying condition.
- Anxiety, insomnia, headache and nausea.
- Weight gain and the metabolic syndrome – low to medium risk

Paliperidone (™Invega)*

- Paliperidone is the major active metabolite of risperidone, the result of hydroxylation mediated primarily by CYP P450 2D6.
- 80% renally excreted.
- Slow release formulation – 1 day half-life – tablet should not be crushed or chewed.
- Recommended dose is 6 mg in AM. Maximum is 12. Efficacy more robust at 9-12.

*See Carlat Report: 3/07, Psychopharm Review: 7/07, Current Psychiatry 9/07

Paliperidone: When to Use?

- Janssen hopes you will use it now, before risperidone goes off-patent in July, 2008. Efficacy appears the same as risperidone.
- Patients who are slow metabolizers of risperidone at 2D6, or are taking drugs that inhibit 2D6 metabolism like fluoxetine, may develop high risperidone blood levels and more side effects. Giving paliperidone will avoid this problem.
- However, paliperidone itself causes a lot of EPS and other side effects, especially at 12 mg where it may have more than comparable doses of risperidone.

Paliperidone: When to Use - 2

- Tachycardia was a frequent side effect with paliperidone but is not with risperidone. Probably should avoid if patient has cardiac issues.
- No difference from risperidone in hyperprolactinemia, metabolic side effects, or weight gain
- Avoid if patient has impaired renal clearance capacity.
- Avoid for inpatients where rapid effect is important and who may need crushed medication to deal with non-compliance.

Haloperidol…Dosing

- With acute treatment, check for cogwheel rigidity daily as haloperidol, started at 2 mg per day, is increased by 2 mg every other day.
- McEvoy* found this “neuroleptic threshold” in 44 of 47 patients (94%) at a median dose of 4 mg per day. (2 mg in neuroleptic-naïve patients)
- If poor response *and* no parkinsonian effects, despite dose of 10-20 mg, check plasma level to assure absorption/compliance. (5-15 ng/ml)

**McEvoy JP, Stiller RL, Farr R. J Clin Psychopharmacol 1986; 6:133-138.*

Perphenazine - Dosing

- Comes in 2, 4, 8, and 16 mg tablets
- Begin with 4 mg twice daily and increase by 4 mg twice daily every other day until cogwheel rigidity is noted.
- Average dose in CATIE was 20 mg daily (equivalent to 6 mg haloperidol*).
- Maximum dose is 64 mg daily.

*Kane et al 2003: Expert Consensus Guideline, J Clin Psychiatry

Quetiapine…Dosing

- Standard recommendation is 25 mg bid, 50 mg/day on day 2, 100 bid on day 3, 150 bid on day 4, and 200 mg on day 5. PDR max is 800.
- Pilot randomized study showed equivalent safety and faster results with 100 bid on day 1, 200 bid on day 2, 300 bid on day 3 and 400 bid on day 4. (Pae C-U et al: J Clin Psychiatry 2007)
- CATIE patients received 543 mg/d
- A study is underway comparing 600 & 1200 mg

Quetiapine side effects

- Agitation, Insomnia, Sedation, Headache, Dyspepsia
- Seizures occurred 0.8% in premarketing studies, which is similar to olanzapine 0.9% and higher than risperidone's 0.4%.
- Postural dizziness from alpha-adrenergic blockade will sometimes prevent rapid dosage
- Liver function tests are elevated about as often as olanzapine and more frequently than risperidone.
- Focal cataracts in dogs. No problems in CATIE.

Quetiapine Sustained Release

Kahn et al. Schizophrenia Bull 2007;33:435

- Once daily preparation is available in US
- Starting dose 300 at bedtime. Increase to 600 at bedtime on second day.
- Same effectiveness as standard-release preparation compared with placebo

Olanzapine…Dosing

- Works most quickly when *started* at 10-20 mg/d*
- Smoking increases clearance by 40%** (58-88% of patients with schizophrenia smoke)
- Female gender decreases clearance by 30%**
- Should you exceed the PDR max. dose of 20 mg? (the *average* dose used in CATIE) Not routinely.

* Osser DN, Sigadel R (2001)

**Package Insert, Weiss (2005), Carrillo (2003)

High Dose Olanzapine vs Clozapine

- 16 week DB crossover study comparing 50 mg of olanzapine with 450 mg of clozapine*
- 13 patients met rigorous criteria for treatment-resistant schizophrenia
- Criteria for response was 20% improvement on BPRS, final score <35 or CGI improvement score greater than 1.0

*Conley RR et al J Clin Psychopharmacology 2003;23:668-71

Results and Conclusions

- Clozapine response was good: 30% had BPRS drop of 20%. Similar to other clozapine studies. Effect size 0.5
- No olanzapine patients improved.
- Six of 13 patients dropped out when in the olanzapine phase vs none in the clozapine phase.
- Conclusion: No support for high dose olanz.

Olanzapine Raised from 20 to 30*

- 39 patients were treated with olanzapine for 8 weeks at a mean dose of 20 mg.
- If results were unsatisfactory, dose was increased to a mean of 30 mg for 6 more weeks
- There was an improvement in positive symptom scores from 23 to 22 on the PANSS
- Is this clinically significant?

*Volavka J et al. Am J Psychiatry 2002

Metabolic Issues w. Olanzapine

- 30% of olanzapine patients gained > 7% body wgt
- Elevated triglycerides – highest with olanzapine
- HgbA1C – increased the most with olanzapine
- Triglycerides v. strongly correlated with insulin resistance (IR)
- Mechanisms: Fat, especially abdominal, increases IR. Pancreas responds with increased insulin levels to compensate. If you have bad genes, beta cells eventually can't keep up: Diabetes.

Olanzapine Metabolic Issues - 2

- Consensus panels and the FDA have concluded that olanzapine has higher risk of weight gain, elevated lipids and diabetes.
- Several studies (non-industry sponsored) show decreased insulin secretion and increased triglycerides within 1 to 2 weeks of starting olanzapine, before any weight change. This is not seen with risperidone.

J Clin Psychiatry 2004;65:267-72. Olanzapine Package Insert, PDR, 2008. J Clin Psychopharmacology 2006;26:504-7

Other Olanzapine Side Effects

- Liver enzyme elevation (use with caution in hepatitis patients, and if patient on other medications that irritate liver such as statins, valproate, carbamazepine, naltrexone)
- Sedation
- EPS, prolactin elevation, & neuroleptic dysphoria can occur at doses over 20 mg

Monitoring Recommendations

If the patient has pre-existing diabetes, hypertension, or obesity, consider another antipsychotic

- Baseline: FBS, HbA1C, lipids, LFTs, weight, abdominal circumference (ac)
- Followup at 1 month: weight, ac, FBS, HbA1C
- Followup at 3 months: same, plus lipids

If metabolic problems develop, consider another antipsychotic, or treat medically

- If FBS elevated, get glucose tolerance test. If abnormal, this predicted 96% of patients who developed diabetes (van Winkel et al JCP 2006;67:1493-1500)

Some Side Effect Comparisons - 1

Side effect	typicals	cloza-pine	risperi-done	olanza-pine	quetia-pine	ziprasi-done	aripipra-zole
Weight gain	+ - +++	12 lbs avg/10 weeks	4 lbs avg/6 weeks	12 lbs avg/12 weeks	6 lbs avg/6 weeks	0	1.5 lbs avg/6 weeks
Sedation	some - +++	+++	+	++	++	0 - ++	0 - +
LFT increase	0 - ++	++	0 - +	++	++	0 - +	0 - +
CYP450 Substrate for…	**various**	**1A2**, 2D6, 3A4	2D6	1A2, 2D6	3A4	3A4	2D6, 3A4

Some Side Effect Comparisons - 2

Side effect	typicals	cloza-pine	risperi-done	olanza-pine	quetia-pine	ziprasi-done	aripipra-zole
EPS	+ - +++	0	**+ less if dose < 4 mg**	**0 - + (if dose < 10 mg)**	0	0 - +	0 - +
Seizure risk (~ %)	0.1 - 0.3	2 – 6	0.3	0.9	0.8	0.4	0.1
Ortho-stasis	some - +++	+++	++	+	++	+ - ++	+ - ++
Prolactin increase	++ - +++	**transient**	+++	+, if > 20 mg	0	0 - +	0

Depot Neuroleptics

- Fluphenazine Decanoate: 12.5 mg (0.5 cc test dose) to 50 mg (2 cc) every 2-3 weeks.
- Haloperidol Decanoate 25 mg (0.5 cc test dose) to 200 mg every 4 weeks.
- Underutilized in the US. Many patients are not as compliant as we think and do better with a Depot.
- There is one second-generation depot: risperidone Consta. There is no evidence that it has better efficacy or safety than the depot neuroleptics.

Risperidone “Consta®”

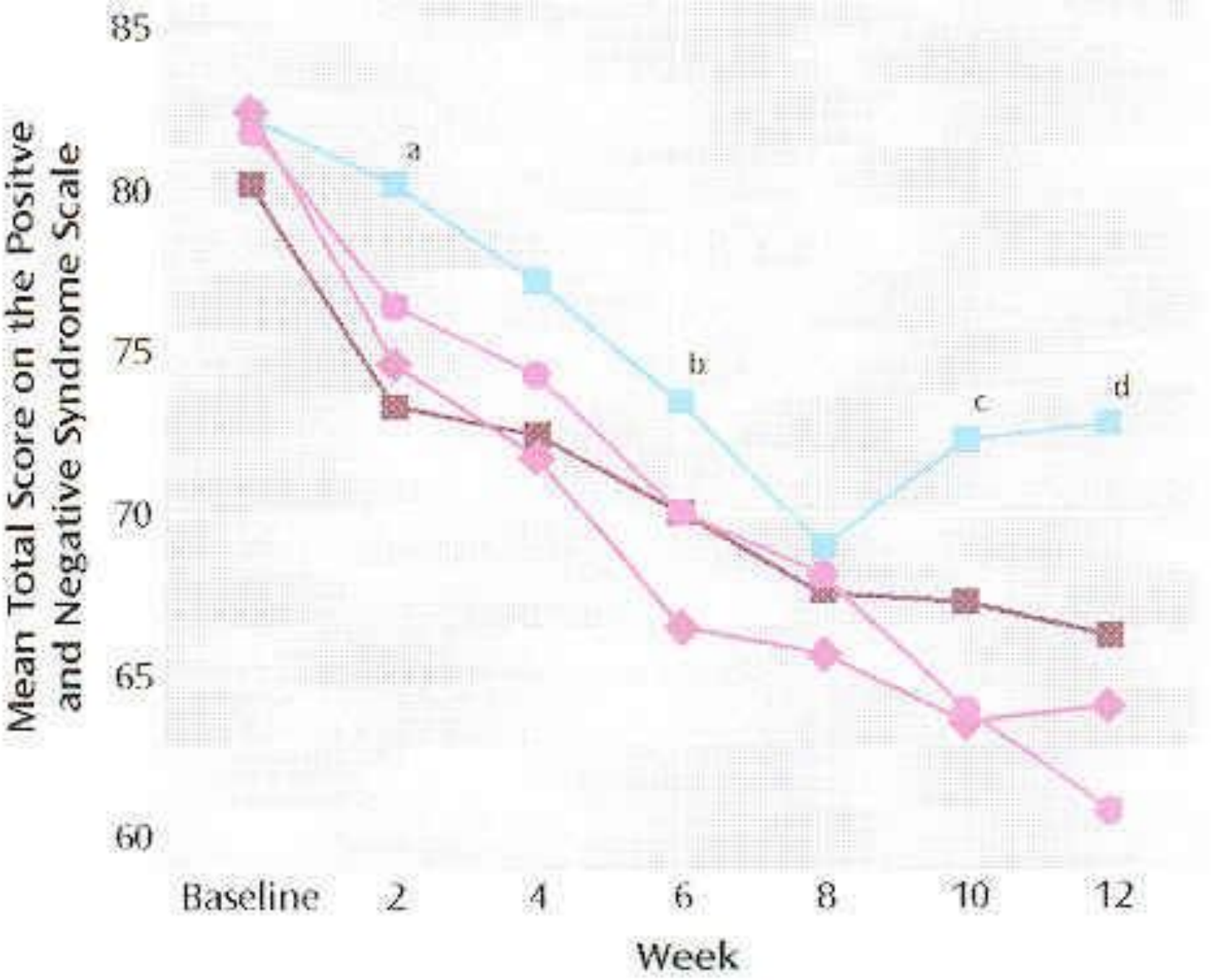
- 12-week, DBPC randomized trial of IM risperidone 25, 50, or 75 mg. (Kane et al ’03)
- 461 patients entered the study.
- Patients’ CGI at start averaged 3, “mildly ill”
- Switched to oral risperidone for 1 week before the IM: 2 mg per day, then 4 mg per day after three days. Oral continued for 3 more weeks after the IM.
- 15% dropped out in the first week

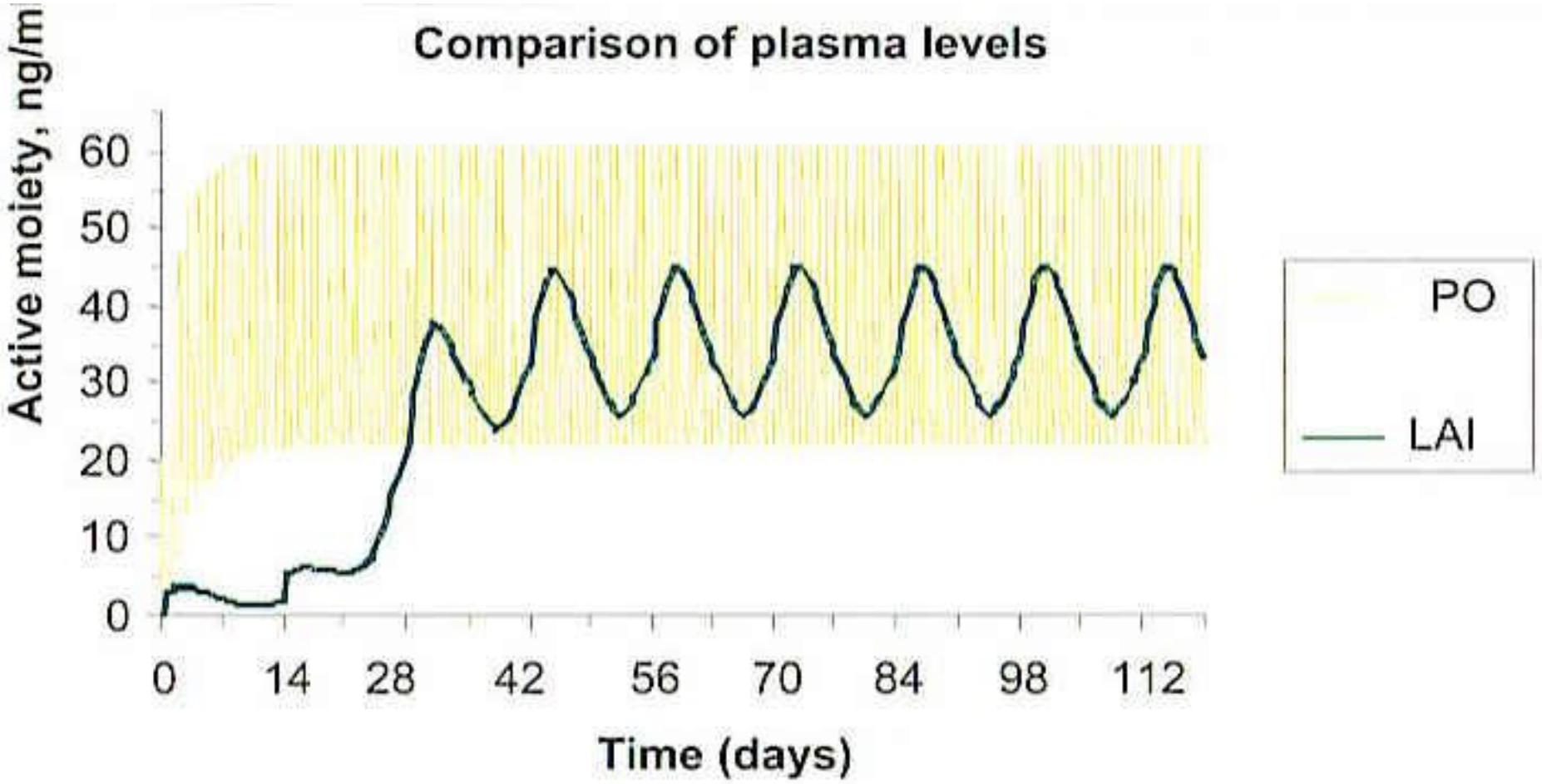
TABLE 2. Reasons for Study Discontinuation Among Patients With Schizophrenia Randomly Assigned to 12 Weeks of Double-Blind Treatment With Long-Acting Injectable Risperidone (25, 50, or 75 mg) or Placebo

	Patients Giving Reason (%)			
		Long-Acting Injectable Risperidone[a]		
Reason	Placebo (N=98)	25 mg (N=99)	50 mg (N=103)	75 mg (N=100)
Any reason	68	52	51	52
Insufficient response	30	22	15	12
Adverse event	12	11	12	14
Withdrew consent	10	7	13	11
Lost to follow-up	6	2	3	6
Noncompliance	4	0	3	3
Ineligibility	0	3	3	2
Death	1	0	0	0
Other	5	6	4	4

[a] Dose administered every 2 weeks.

Kane et al. Am J Psychiatry 2003:160:1125-1132


Mean Total Score on the Positve and Negative Syndrome Scale
85
80
75
70
65
60
a
b
c
d
Baseline
2
4
6
8
10
12
Week



Mannaert E et al. Poster 530. CINP. Paris, June 20-24, 2004

Comments on this study

- These mildly-ill, cooperative patients are not the usual population treated with depot, and yet 2/3 of them did not “survive” the transition to risperidone long-acting injectable.
- For those who did “survive,” the results were fair vs placebo by 12 weeks, with 25 mg.
- 50 mg was no better than 25 mg* **(See Turner, 2004)**
- Probably should continue oral for 6-8 weeks
- For more severely ill people, benefits unknown

Real World Comparison of Depot Neuroleptics and R. Consta®*

- Observational study of California Medicaid patients with schizophrenia initiated on one of the three depots in 2003-4. N=2,695 patients
- Most were taking less than 80% of their oral medication in the 6 months prior to Depot. (mean: 60%)
- 2/3 were on more than one oral antipsychotic and about half were on concomitant mood stabilizers, antidepressants, and anxiolytics.

*Olfson M et al. Schizophrenia Bull 2007;33(6):1379-87

Results of Comparison of Depots

- *Very few* of these treatment-resistant, partly-compliant Medicaid patients stayed on their Depot for six months:
  - Haloperidol Dec: 9.7%
  - Fluphenazine Dec: 5.4%
  - Risperidone Consta: 2.6%
- Note that risperidone Consta was the least likely to be continued for 180 days ($p<0.0001$).
- Study was sponsored by Lilly (makes olanzapine)
- Speculate: Depots more helpful in more routine, less treatment-resistant patients – as in Europe. Or, maybe it's the structure that helps: e.g. "Prolixin Clinics"

Clozapine

- Our most powerful treatment. Should not be left to last resort after repetitive monotherapy trials, including the Depots, and non-evidence-supported combinations
- Pre-treatment workup similar to olanzapine plus WBC and ANC levels, EKG. Avoid combining with other drugs that can cause granulocytopenia like carbamazepine.
- Avoid combining with benzodiazepines if possible (possible respiratory depression risk)

Clozapine Dosing

- 12.5 mg for first dose. Thereafter, divided doses
- Increase by 25-50 mg per day as tolerated, to 300-400 mg per day. Maximum is 900 mg/d
- If response unsatisfactory, check plasma level. Best results are with levels of parent compound greater than 400 ng/ml
- For outpatients go at half this pace
- No single dose should exceed 450 mg

New CBC Monitoring with Clozapine

- Weekly CBC for six months. Then biweekly for six months. Then every 4 weeks
- If WBC < 3.5 or ANC (absolute neutrophil count) 1.5-2.0, get repeat CBC and biweekly CBC until levels rise.
- If WBC < 3.0 or ANC 1.0-1.5, hold clozapine, get daily CBC until levels rise. Rechallenge possible
- If WBC <2.0 or ANC <1.0, stop clozapine. Monitor daily. Rechallenge not advised, though some have done so with prophylactic Neutrophil Stimulating Factor.

Clozapine Side Effects

- Though the rewards are great, the side effects are many and challenging. Besides wgt gain:
- Seizures (2-10%)
- Respiratory depression (If interrupt therapy by 48 hours, restart at 12.5 mg for first dose)
- Myocarditis (fatal in 1/500,000)
- Neuroleptic Malignant Syndrome
- Pulmonary embolus, anticholinergic toxicity, temperature elevations, eosinophilia

Adverse Events

Event	Clozapine %	Olanzapine %
Weight Gain	31	56
Somnolence	46	25
Dizziness	27	12
Constipation	25	10
Hypersalivation	48	6
Seizures	2.3	0.4
Drug Abuse	1	3
WBC Decrease	6	1

Clozapine Side Effects – A Promising Strategy

- 68 Han Chinese received clozapine or clozapine plus 50 mg fluvoxamine to inhibit metabolism to norclozapine. Study was open label.
- Norclozapine may be more responsible for myelotoxicity, weight gain, and seizures.
- Only needed dose of 130 to get blood level of 500 ng/ml.
- All side effect parameters much improved on the combination
- Strategy needs longer-term study, monitoring

Lu et al. J Clin Psychiatry 2004;65:766-771

Antipsychotics for Psychosis or Agitation in Dementia

- 15 placebo-controlled studies of atypicals were reviewed*
- Most found no benefit, and most were never published.
- Meta-analysis showed modest efficacy, NNT = 10
- Death from stroke and related disorders was greater than placebo. Number Needed to Harm (NNH) = 100.
- Thus, for every 10 patients with good effect, 1 may die
- Typicals are not safer (NEJM Dec. 1, 2005)
- What to do? Milieu management; AP's very briefly
- More recent CATIE-AD study had very similar results.

  (NEJM 2006, Oct 12;355(15):1525-38.)

***Schneider LS et al. JAMA Oct. 19, 2005;1934-43**

Cost-Conscious Prescribing

- Be aware of costs of different pill sizes
- Better to diagnose cause of anxiety, depression, insomnia, somnolence, agitation and treat cause. (may result in < rather than > # of medications)
- It’s almost never cost-effective to combine two second-generation antipsychotics.
- Risperidone becomes generic in mid-2008

Antipsychotic Monthly Procurement Costs in the VA System - 1

August, 2007

- Haloperidol 5 mg 4
- Fluphenazine 5 mg 2
- Perphenazine 16 mg bid 11
- Risperidone 2 mg bid 151
- Risp. Consta 50 mg IM 327
- Olanzapine 10 mg 189
- Olanzapine 20 mg 343
- Olanzapine 25 mg 519

Antipsychotic Monthly Procurement Costs in the VA System – 2

- Quetiapine 50 mg 13
- Quetiapine 300 mg bid 145
- Ziprasidone 20 mg bid 165
- Ziprasidone 80 mg bid 184
- Ziprasidone 100 mg bid 349
- Aripiprazole 5,10,15, or 20 mg 175
- Aripiprazole 30 or 40 mg 350

Post-Lecture Exam Question 1

1. Which of the following is an antipsychotic dose that is in excess of the optimal?

   A. Aripiprazole 15 mg/day

   B. Ziprasidone 80 mg bid

   C. Haloperidol 20 mg qd

   D. Risperidone 4 mg/day

   E. Quetiapine 300 mg bid

Question 2

2. Which of the following antipsychotics must be taken with food in order to prevent significant loss of absorption?

   A. Ziprasidone

   B. Olanzapine

   C. Clozapine

   D. Aripiprazole

   E. Risperidone

Question 3

3. Which of the following is the recommended starting dose for clozapine?

   A. 25 mg twice a day

   B. 12.5 mg

   C. 25 mg

   D. 50 mg

Question 4

4. All of the following are true of a patient on risperidone who gets parkinsonian side effects, except:

   A. D2 receptor occupancy is 75% or more

   B. The patient is above the “neuroleptic threshold”

   C. Patient is at risk for secondary negative symptoms

   D. Raising the dose is likely to be helpful

Question 5

5. All of the following are true of olanzapine, except

   A. Smoking increases clearance by 40%

   B. Works most quickly when started at 15-20 mg/d

   C. Elevated Hemoglobin A1C the most in CATIE

   D. Increased triglycerides the most in CATIE

   E. Produces clinically significantly better results at doses over 20 mg daily.

Answers to Pre & Post Competency Exam

1. C
2. A
3. B
4. D
5. E