



Ziprasidone (Geodon[®]) in EMS

Geodon (ziprasidone)

- ▶ Unable to obtain any droperidol or haloperidol at this time.
- ▶ Due to concerns for the safety of our responders and our patients, we needed to find an acceptable substitute.



Geodon (ziprasidone)

EMS

- ▶ What is unknown- very few studies have looked at the use of chemical restraint agents in the pre- hospital setting.

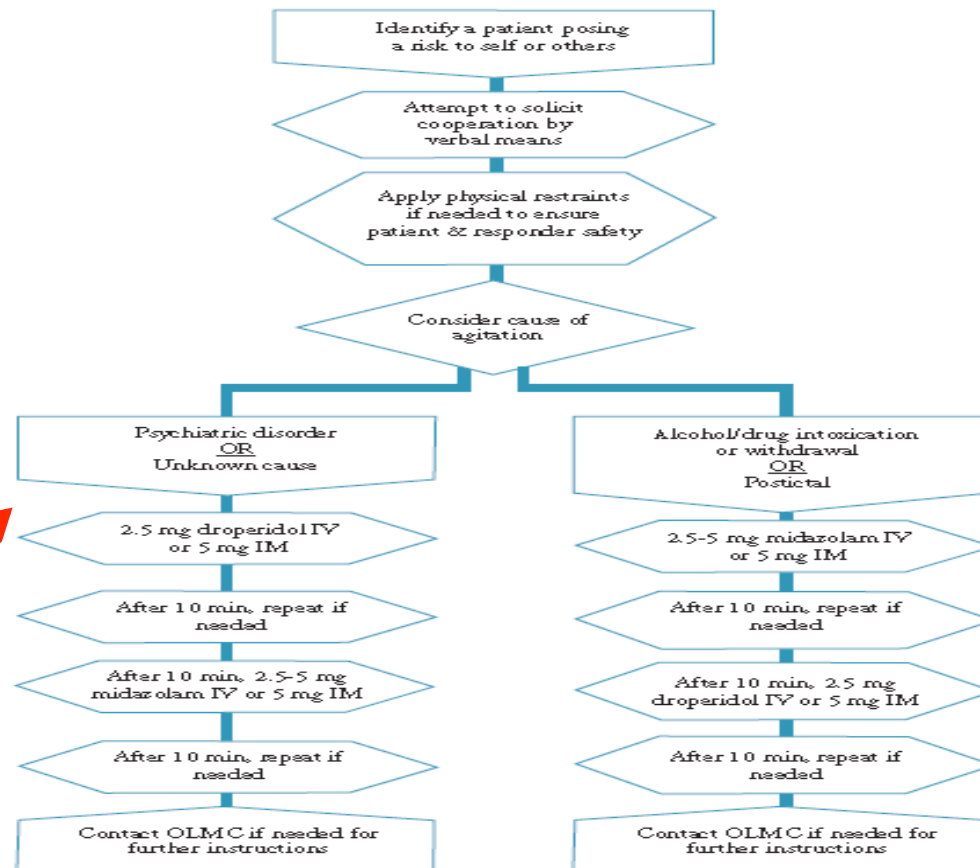


Chemical Restraint in EMS Options with current Medication Shortages

JON JUI MD, MPH

Multnomah County EMS Chemical Restraint Protocol

Patient Restraint Flow Chart



Geodon (ziprasidone)

- ▶ When rapid control of acute agitation is necessary to prevent harm to patient or staff

Geodon : Examples of Patient Presentations

- ▶ Found running naked and manic through street. Pt stabbed himself multiple times, restrained by police.
- ▶ Smoking crack, raging mad, hit bus station employee, yelling obscenities
- ▶ Broke out basement windows, trying to escape from aliens
- ▶ Patient screaming and yelling at police telling EMS to arrest police since they violated CIA law.
- ▶ Neighbor call PPD pounding on door. Patient in chicken coop stating snipers out to get him.

Geodon (ziprasidone)

- ▶ Fifth atypical antipsychotic medication to gain FDA approval in 2001.
- ▶ We have been using it in emergency departments safely for over 10 years.

Geodon (ziprasidone): Packaging

- A: Geodon for injection is available as single dose vial 20 mg/mL.



Geodon (ziprasidone) : Cost

- ▶ Geodon is approximately \$20.00 per dose compared to \$4.00 for droperidol.

Geodon in EMS

Results of 1st Two months deployment

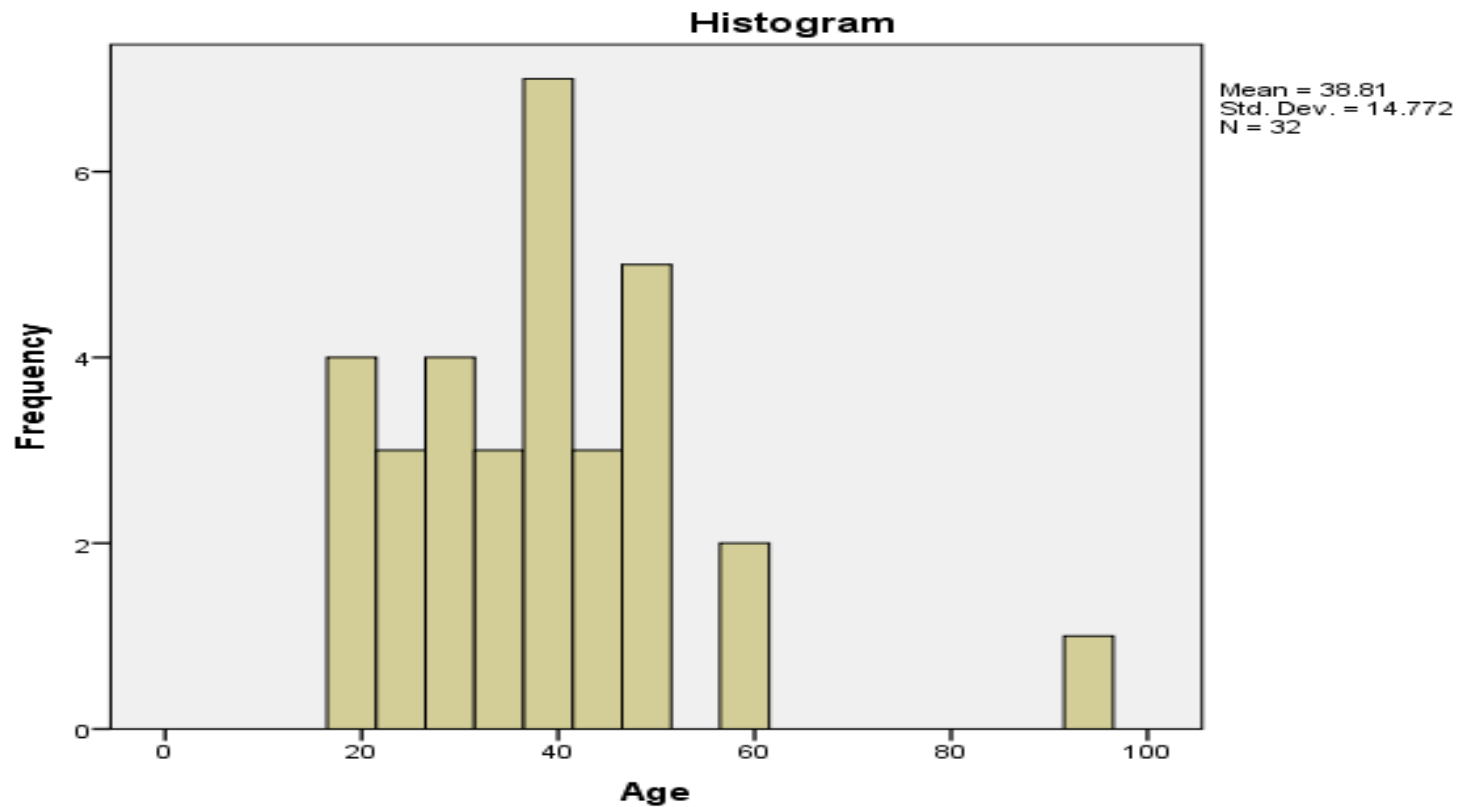




Geodon in EMS

- ▶ From August 13, 2012 to October 25, 2012
- ▶ 32 Consecutive cases

Geodon : Patient Ages



Geodon in EMS Demographics

	Number	Percent
Females	11	35%
Males	21	65%
Total	32	100%

Geodon : Scene Indications

	No	Yes
Danger Self	19	13
Danger Others	3	29
LE Present	9	23

Geodon : Underlying PMH

	NO	YES
ETOH	27 (84%)	5 (16%)
Diabetes	32 (100%)	0 (0%)
Street Drugs	25 (78%)	7 (22%)
Cardiac	32 (100%)	0 (0%)
Psych	16 (50%)	16 (50%)
Seizure	31 (96%)	1 (3%)
Head Injury	31 (97%)	1 (3%)



Geodon Efficacy



Geodon (ziprasidone) Time onset of Effects

- ▶ A: The most likely earliest onset of the sedation effects of Geodon is approximately 15-20 minutes.
- ▶ In most cases, the agitation will be markedly decreased in 30 to 45 minutes.

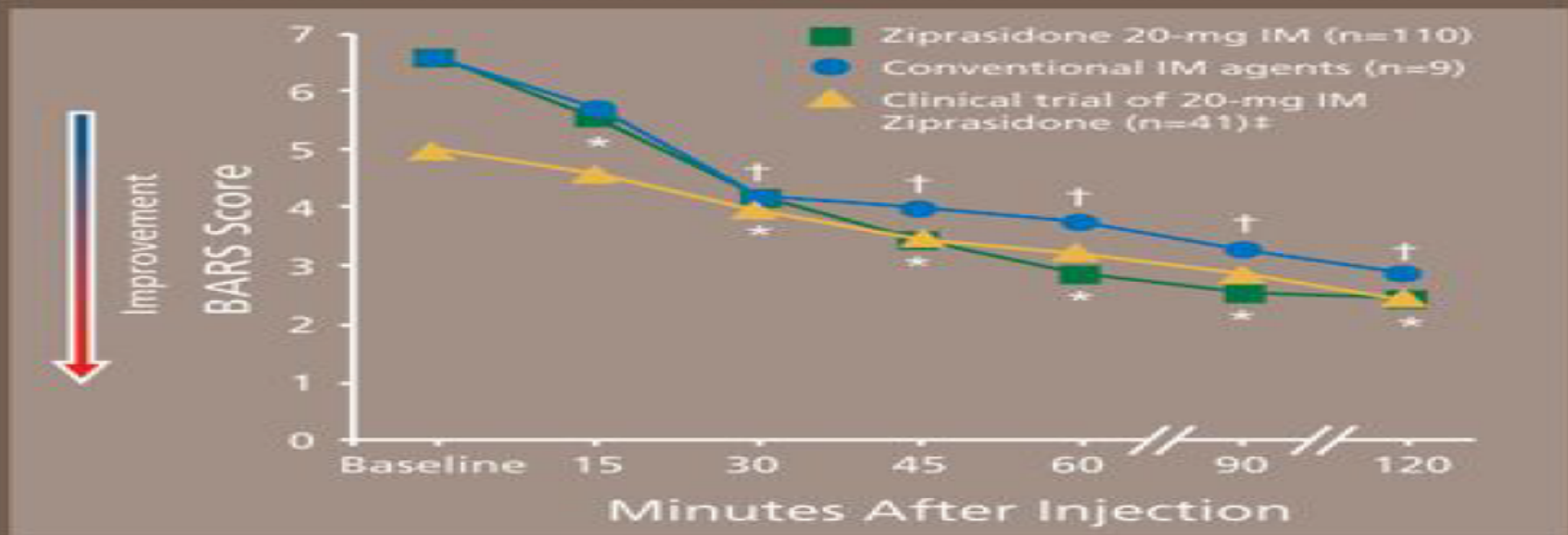
Behavioral Activity Rating Scale

- ▶ 1 = difficult or unable to rouse
- ▶ 2 = asleep but responds normally to verbal or physical contact
- ▶ 3 = drowsy, appears sedated
- ▶ 4 = quiet and awake (normal level of activity)
- ▶ 5 = signs of overt (physical or verbal) activity, calms down with instructions
- ▶ 6 = extremely or continuously active, not requiring restraint
- ▶ 7 = violent, requires restraint

Geodon (ziprasidone)

Slide 9

BARS Scores in PES Patients After Ziprasidone IM 20 mg⁴⁹



* $P < .01$ versus baseline for ziprasidone in PES patients.

† $P < .01$ versus baseline for conventionals in PES patients.

‡ Daniel DG, Potkin SG, Reeves KR, et al. *Psychopharmacology Berl.* 2001;155:128-134.

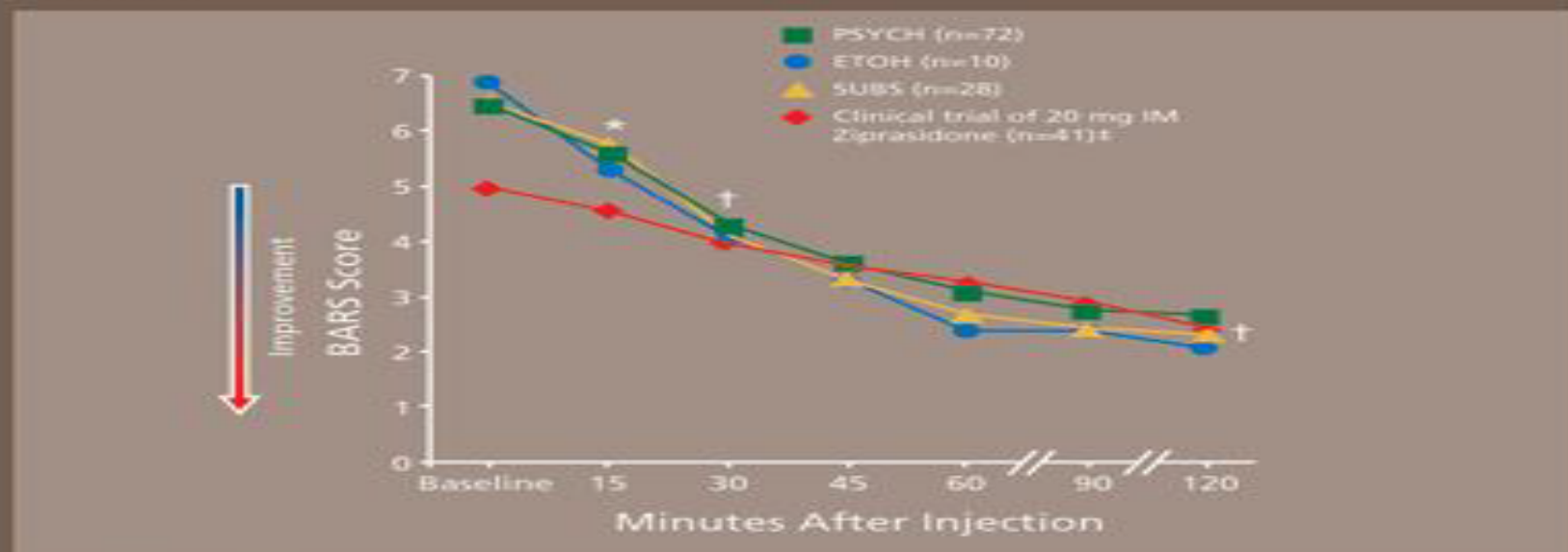
BARS=Barnes-Akathisia Rating Scale; PES=psychiatric emergency services; IM=intramuscular.

Preval H, Klotz SG, Southard R, Francis A. *Gen Hosp Psychiatry.* 2005;27:140-144. Reprinted with permission from Elsevier.

Geodon (ziprasidone)

Slide 10

BARS Scores in PES Patients By Diagnosis After Ziprasidone IM 20 mg⁴⁹



* $P < .05$ for all PES groups versus baseline at 15 minutes.

† $P < .01$ for all PES groups versus baseline at 30 minutes and 2 hours.

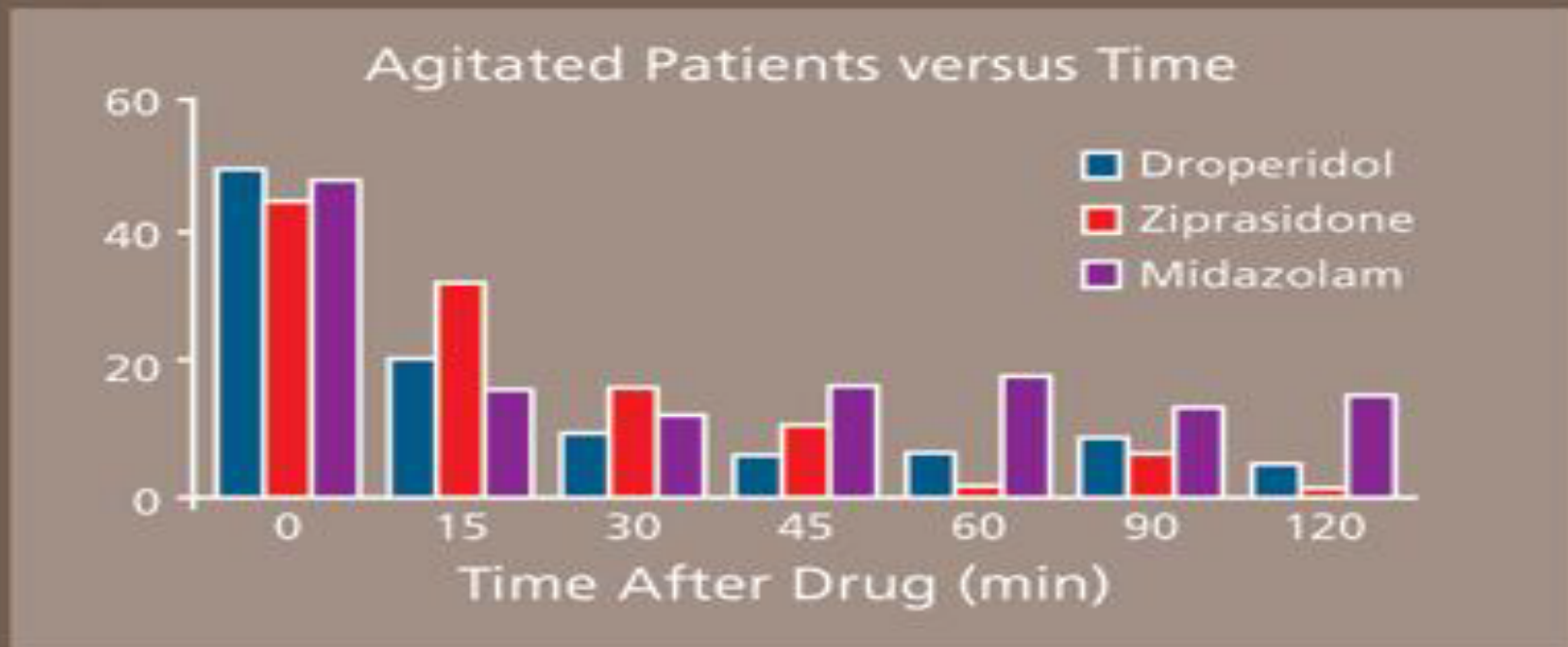
‡ Daniel DG, Potkin SG, Reeves KR, et al. *Psychopharmacology Berl.* 2001;155:128-134.

BARS=Barnes-Akathisia Rating Scale; PES=psychiatric emergency services; IM=intramuscular; PSYCH=psychotic agitation; ETOH=alcohol-induced agitation; SUBS=substance-induced agitation. Preval H, Klotz SG, Southard R, Francis A. *Gen Hosp Psychiatry.* 2005;27:140-144. Reprinted with permission from Elsevier.

Geodon (ziprasidone)

Slide 11

Effect of Ziprasidone Versus Droperidol and Midazolam on Agitation in the Medical ED

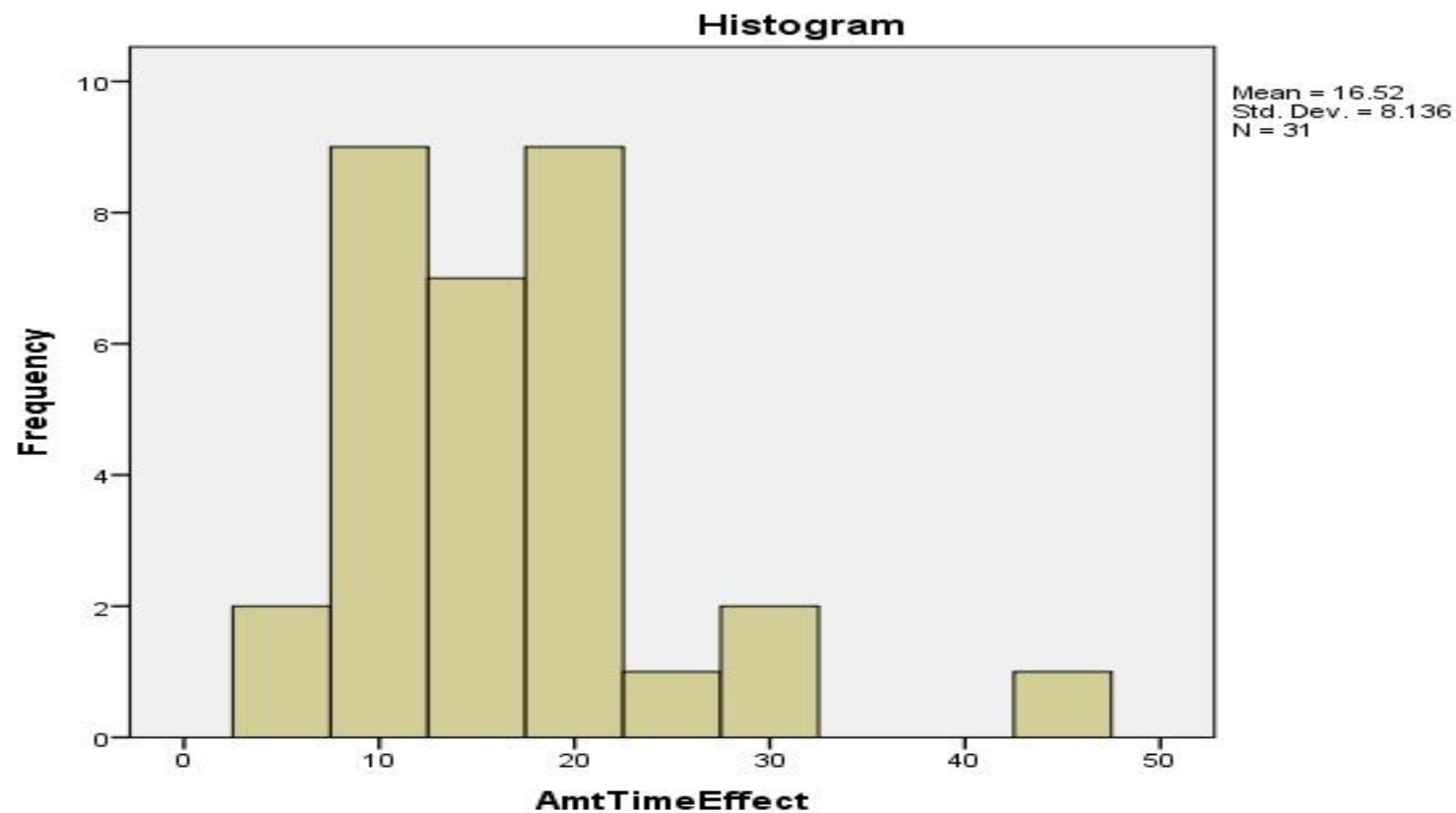


ED=emergency department; min=minutes.

Geodon : Efficacy of Sedation

	Yes
Effect None	0 %
Effect Minimal	12 (46%)
Effect Complete	13 (40%)

Geodon: Time to Effect Observed



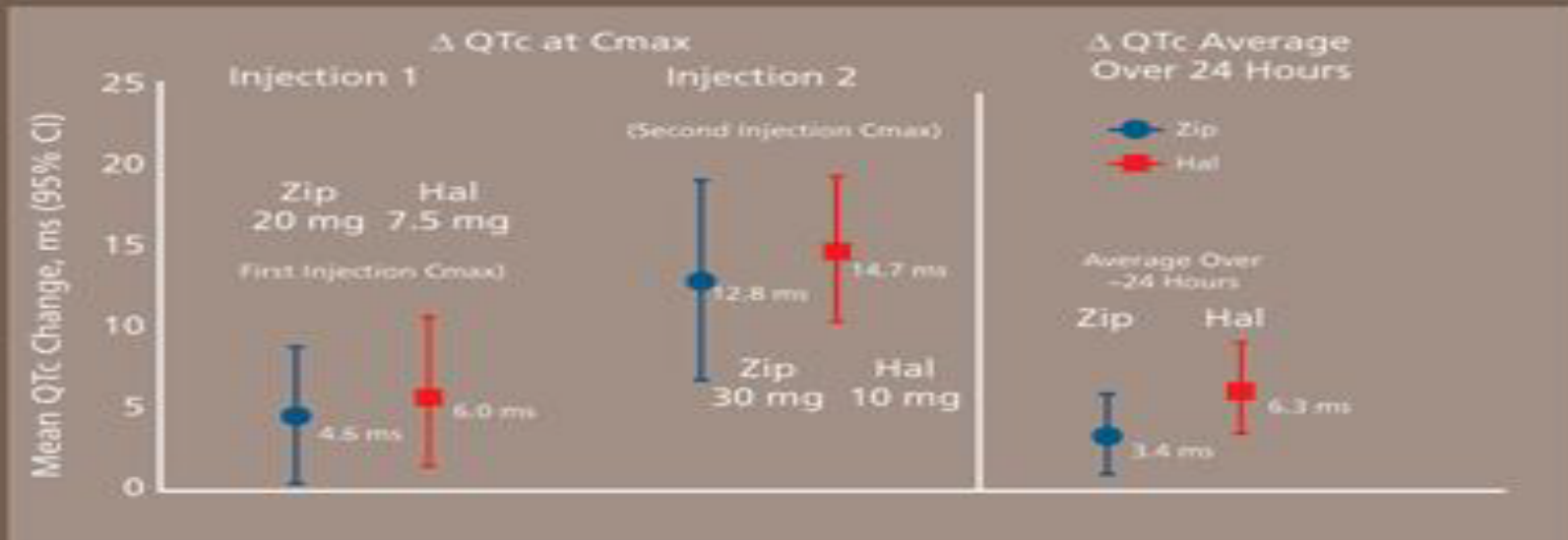


Geodon Adverse Effects

Geodon (ziprasidone) vs Haldol QT Prolongation

Slide 8

Ziprasidone IM 20-mg Versus Haloperidol IM 7.5-mg: Effect on QTc at C_{max}⁴⁰



IM=intramuscular; Zip=ziprasidone; Hal=haloperidol.

Miceli JJ, Anziano MS, Swift RH, et al. Presented at: 156th Annual Meeting of the American Psychiatric Association; May 17-22, 2003; San Francisco, CA.

Geodon (ziprasidone)

Side Effects

- ▶ Sedation,
- ▶ Hypotension
- ▶ Extrapyrarnidal symptoms (EPS)

Geodon (ziprasidone)

- ▶ prolongs QT and cause Torsades



Geodon Summary



Geodon: Summary

- ▶ Geodon was effective in decreasing agitation in approximately 50% of the patients
- ▶ Onset of effect was approximately 15-20 minutes
- ▶ No adverse effects were identified.
- ▶ Most likely the remainder of the effect was observed in the ED (work in progress)



The END