

UConn JOHN DEMPSEY HOSPITAL
DEPARTMENT OF PHARMACY
M E M O R A N D U M

To: JDH Staff
From: Pharmacy Department
RE: IV Benzodiazepine Shortage
Date: July 19, 2022

Situation: The use of lorazepam and diazepam for IM and IV injection needs to be limited.

Background: There is a low supply of IV benzodiazepines due to the ongoing shortage of lorazepam and diazepam injection.

Assessment: Alternative benzodiazepines and other agents need to be used to lower the usage of lorazepam and diazepam injection while there is a shortage.

Recommendation: The following are recommendations being made in response to the benzodiazepine injection shortage. Patient-specific clinical assessment should be used when determining alternative medications.

Supply:

- Reserve a supply of lorazepam injection for behavioral health/emergency departments and diazepam injection for seizure treatment

Alternative Benzodiazepines:

- When IV benzodiazepines are necessary, utilize alternative injectable benzodiazepines. There are no direct dose conversions between agents so consider their pharmacokinetic profiles to determine dosing (reference table attached below for your reference).
 - Midazolam infusions will be benzodiazepine injection of choice in ICU
- Utilize oral benzodiazepines whenever possible
 - Including CMO patients
 - Oral lorazepam and diazepam can be used at equivalent doses to IV formulations
- For seizures, benzodiazepines are 1st line.
 - IV/IM lorazepam remains first line while supply is available
 - In units where IV/IM midazolam and diazepam are available for use, IM midazolam 10mg is the preferred alternative agent.
- Use alternative benzodiazepines for anxiety/sedation
 - Antipsychotics can also be used
 - Multiple agents are available in PO, IM and IV formulations

Alcohol Withdrawal:

- Use adjunctive agents with scheduled benzodiazepines to decrease PRN benzodiazepine needs
 - Gabapentin taper at start of therapy
 - 300-400mg tid x 3 days, then 300mg-400mg bid x 1 day, then d/c
 - Phenobarbital in ICU setting
 - Dexmedetomidine infusion in the ICU setting
 - Haloperidol
 - Oral benzodiazepines such as chlordiazepoxide
 - Oral diazepam/lorazepam as symptom-triggered PRN in mild-moderate withdrawal
 - IV diazepam is reserved for symptom-triggered management in select units (ED, UT2, UT1)

Please note patient specific pharmacokinetic considerations should be considered when converting doses for benzodiazepines (see tables below). For any related questions, contact your floor pharmacist or the Pharmacy Department at x7627

Table 1. Pharmacokinetics of Injectable Benzodiazepines⁷⁻¹¹

Agent	Onset of Action (min) Intravenous	Onset of Action (min) Intramuscular	Duration of Action (hours) Intravenous	Duration of Action (hours) Intramuscular	Half-life (hours)	Active Metabolites
Diazepam	1 to 5	slow and erratic absorption	0.3 to 0.5	slow and erratic absorption	20 to 120	Yes
Lorazepam	5 to 20	15 to 30	6 to 8	6 to 8	8 to 15	No
Midazolam	1 to 5	5 to 15	≤ 2 ^a	2 ^a	3 to 11	Yes

^a The pharmacologic effect of midazolam may last up to 6 hours in some patients.

Benzodiazepine	Onset of Action/ Time to Peak	Half-life	Active metabolites?
Alprazolam (PO)	1-2 hours	12 hours	No
Chlordiazepoxide (PO)	1 hour	5-30 hours	Yes
Clonazepam (PO)	20-40 minutes	17-60 hours	No
Diazepam (PO, IM, IV)	PO: 15-30 minutes IM: unreliable IV: 1 minute	PO: 44-48 hours IM: 60-72 hours IV: 33-45 hours	Yes
Midazolam (PO, IM, IV)	PO: 10-20 minutes IM: 15 minutes IV: 1-5 minutes	IM: up to 6 hours IV: less than 2 hours	Yes
Oxazepam (PO)	3 hours	8 hours	No
Temazepam (PO)	1-2 hours	4-18 hours	No