Benzodiazepine withdrawal

This excellent video by Dr. Kim explains the process and specifically the challenges of benzodiazepine withdrawal.

Click the like below to watch this informative presentation:

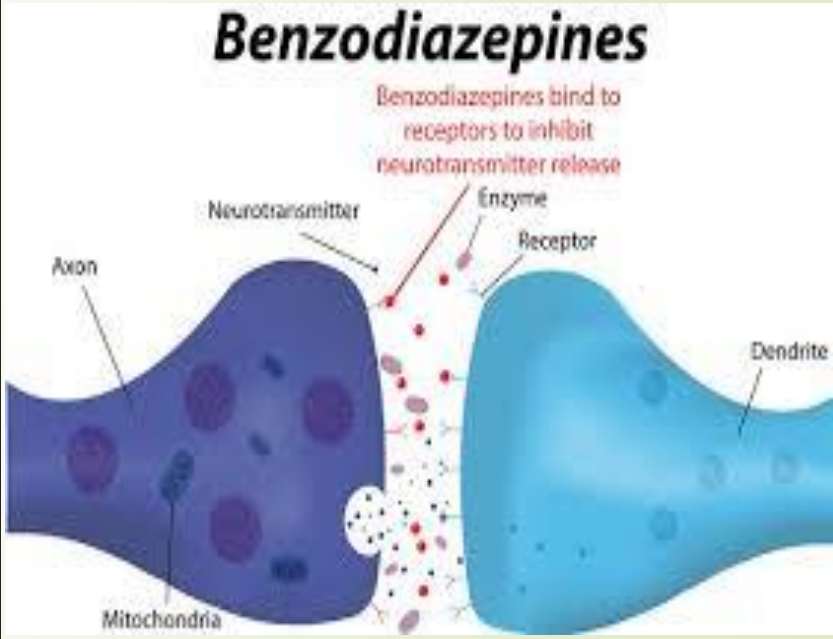
https://www.youtube.com/watch?v=89EsoxE4_ac&ab_channel=AndrewKimM.D.

What are benzodiazepines:

- A class of psychoactive drugs / tranquillizers with sedative, sleep-inducing, anti-anxiety, anticonvulsant, and muscle relaxant properties

- They target the $GABA_A$ receptor and enhance the effect of the neurotransmitter GABA

- Common Brand names/drug names are Xanax/ Alprazolam, Klonopin/Clonazepam, Valium/ Diazepam, Ativan/ Lorazepam



Benzodiazepines become addictive rapidly

Benzodiazepines and addiction

Heikkinen, A. E., Möykkynen, T. P., & Korpi, E. R. (2009). **Long-lasting modulation of glutamatergic transmission in VTA dopamine neurons after a single dose of benzodiazepine agonists.** *Neuropsychopharmacology*, *34*(2), 290.

Tan, K. R., Brown, M., Labouèbe, G., Yvon, C., Creton, C., Fritschy, J. M., ... & Lüscher, C. (2010). **Neural bases for addictive properties of benzodiazepines.** *Nature*, *463*(7282), 769.

Tan, K. R., Rudolph, U., & Lüscher, C. (2011). **Hooked on benzodiazepines: GABAA receptor subtypes and addiction.** *Trends in neurosciences*, *34*(4), 188-197.

Wafford, K. A. (2005). **GABAA receptor subtypes: any clues to the mechanism of benzodiazepine dependence?.** *Current opinion in pharmacology*, *5*(1), 47-52.

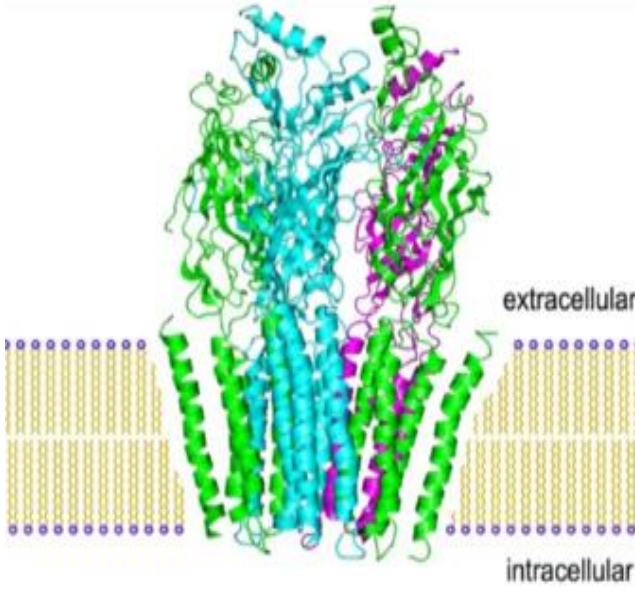
Rada, P., & Hoebel, B. G. (2005). **Acetylcholine in the accumbens is decreased by diazepam and increased by benzodiazepine withdrawal: a possible mechanism for dependency.** *European journal of pharmacology*, *508*(1-3), 131-138.

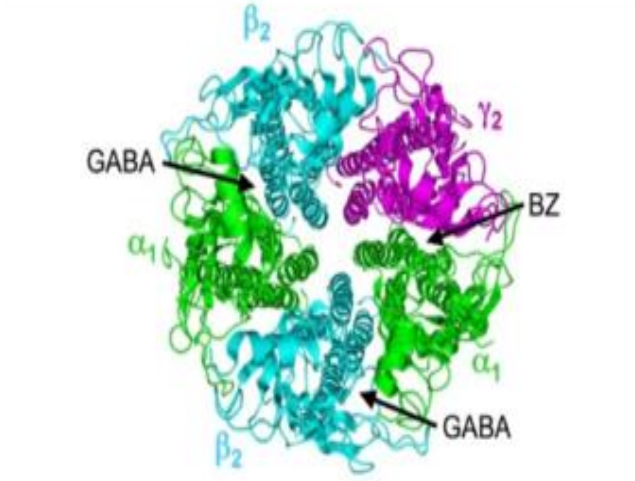
There are about 70 types of benzodiazepines on the market today

Benzodiazepines		
Adinazolam	Cloxazolam	Flunitrazepam
Alprazolam	Delorazepam	Flunitrazolam
Bretazenil	Diazepam	Flurazepam
Bromazepam	Diclazepam	Flutazolam
Bromazolam	Estazolam	Flutoprazepam
Camazepam	Ethyl carfluzepate	Halazepam
Chlordiazepoxide	Ethyl loflazepate	Ketazolam
Cinazepam	Flualprazolam	Loprazolam
Cinolazepam	Flubromazepam	Lorazepam
Clobazam	Flubromazolam	Lormetazepam
Clonazepam	Mexazolam	Meclonazepam
Clonazolam	Midazolam	Medazepam
Clorazepate	Nifoxipam	Quazepam
Nitrazepam	Nimetazepam	Rilmazafone
Nitrazolam	Pinazepam	Temazepam
Nordiazepam	Prazepam	Thienalprazolam
Norflurazepam	Premazepam	Tetrazepam
Oxazepam	Pyrazolam	Triazolam
Phenazepam		

athienotriazolodiazepines
Bentazepam
Brotizolam
Clotiazepam
Deschloroetizolam
Etizolam
Fluclotizolam
Metizolam

Atypical benzodiazepines
DMCM
Flumazenil
Eszopiclone
Zaleplon
Zolpidem
Zopiclone





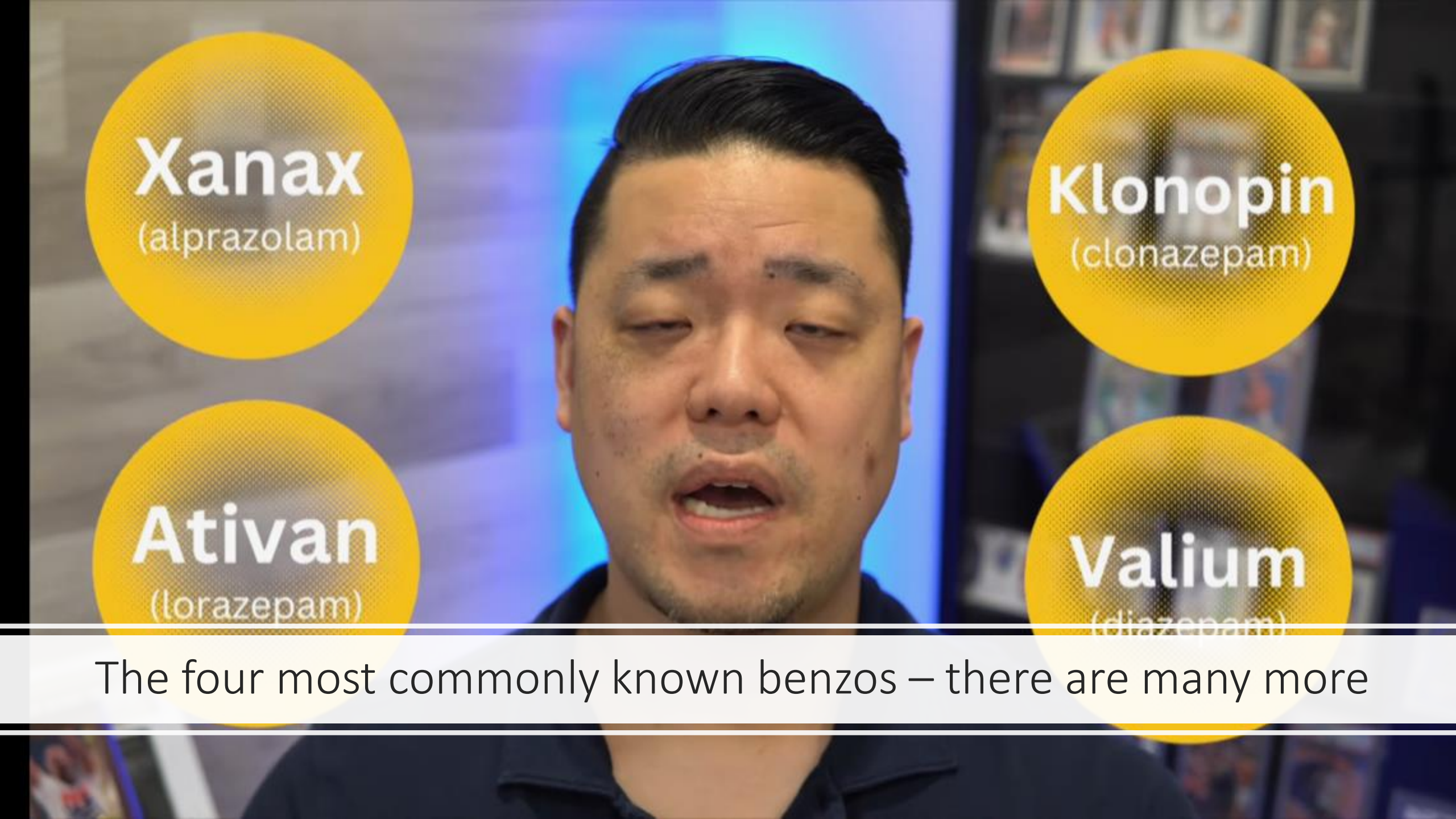
Benzodiazepines and GABA receptors

McKernan, R. M., Rosahl, T. W., Reynolds, D. S., Sur, C., Wafford, K. A., Atack, J. R., ... & Garrett, L. (2000). **Sedative but not anxiolytic properties of benzodiazepines are mediated by the GABA A receptor α 1 subtype.** *Nature neuroscience*, *3*(6), 587.

Rowlett, J. K., Platt, D. M., Lelas, S., Atack, J. R., & Dawson, G. R. (2005). **Different GABAA receptor subtypes mediate the anxiolytic, abuse-related, and motor effects of benzodiazepine-like drugs in primates.** *Proceedings of the National Academy of Sciences*, *102*(3), 915-920.

Milić, M., Divljaković, J., Rallapalli, S., Van Linn, M. L., Timić, T., Cook, J. M., & Savić, M. M. (2012). **The role of α1 and α5 subunit-containing GABAA receptors in motor impairment induced by benzodiazepines in rats**. *Behavioural pharmacology*, *23*(2), 191.

Benzodiazepines impact the GABA receptors



The four most commonly known benzos – there are many more

Benzodiazepines aka tranquilizers/sedatives are commonly prescribed around the world (Xanax, Ativan, Klonopin, Valium) to spot treat anxiety and insomnia. But these medications carry a potential inherent risk of patients developing a physical tolerance and physical/psychological dependence on them. When that point of tolerance is reached, there is a higher risk of going through withdrawal when trying to stop or gradually come off this medications. And this concept of withdrawal will be the primary focus of today's educational discussion.

Mild withdrawal symptoms

Moderate withdrawal symptoms

Severe withdrawal symptoms