

## Comparison of AEDs

|             | <b>Carbamazepine (CBZ)</b>   | <b>Oxcarbazepine (OXC)</b>   | <b>Valproic Acid/Divalproex (VPA/DVA)</b>  | <b>Gabapentin (GBP)</b>                           | <b>Topiramate (TPM)</b>   |
|-------------|--|--|--|---|---|
| Doses       | 300-1600mg/day<br>BID-TID dosing<br><br>*available in CR form  | 600-1200mg/day<br>in divided doses                                     | 750-3000mg/day<br>BID-TID dosing   | 900-3600mg/day<br>TID dosing                      | 50-400mg/day<br>BID dosing  |
| Meta-bolism | Liver & P-gp<br>* induces own metabolism   | Liver<br>* DOES NOT induce own metabolism                              | Liver  | Not metabolized,<br>Eliminated by renal excretion | P-gp, ( 70% is eliminated unchanged in urine)   |
| Drug levels | 17-54 µmol/L ( <b>Cdn</b> )<br>4-12 mcg/ml ( <b>USA</b> )<br>* Frith: 3wks after Rx started, Verani: initially 2 levels taken 4 wks apart & both agree with testing 5d after Δ dose or +/- other Rx , may need to check other Rx levels if CBZ added | Not required   | 350-800 µmol/L ( <b>Cdn</b> )<br>50-115 mcg/ml ( <b>USA</b> )<br>*initially 2 levels to establish dosage, 3-5d after Rx started & 5d after Δ dose or +/- other Rx (Verani); Frith recommends only if toxicity or non-compliance suspected, & DeLeon q.6 months thereafter  | Not required                                      | Not required  |
| W/U         | <ol style="list-style-type: none"> <li>1. CBC, plats &amp; diff</li> <li>2. E-, BUN, sCr</li> <li>3. LFTs</li> <li>4. TSH</li> <li>5. ECG (&gt;45yrs)</li> <li>6. BMD</li> <li>7. r/o pregnancy</li> </ol>   | <ol style="list-style-type: none"> <li>1. E-</li> <li>2. Cr</li> </ol> | <ol style="list-style-type: none"> <li>1. <b>CBC, plats &amp; diff</b></li> <li>2. <b>LFTs</b></li> <li>3. <b>Lipid profile (total, HDL &amp; TG)</b></li> <li>4. ♀: <b>wt &amp; BMI &amp; r/o pregnancy</b></li> <li>5. <b>Consider serum testosterone in young ♀</b></li> <li>6. <b>BMD</b></li> <li>7. <b>Serum amylase &amp; lipase</b></li> </ol> | BUN & sCr   | Baseline serum bicarbonate<br>BUN & sCr   |
| F/U         | Repeat #1, 2, & 3 monthly X 3 months, then annually<br>BMD if risk factors for osteopenia<br><br><b>**Increased risk of SJS in certain Asian populations.</b>  | Na+ levels when suspected hyponatremia.                                | Repeat #1 & 2 monthly X2, then 2-3X/yr (Verani); Repeat #1 & 2 monthly X6, then annually (Frith). Repeat #3 & 4 q.3 months X4, then annually. Test #5 if s/s of menstrual irregularities or hyperandrogenism; also test prolactin, LH & TSH, & for insulin resistance & HTN. Ammonia levels if lethargy & Δ LOC.                                       | LH & TSH<br>sCr if renal toxicity suspected       | Periodic serum bicarbonate;<br>sCr if renal toxicity suspected<br>(risk of kidney stones) |

## Comparison of AEDs

|                 | <b>Lamotrigine (LTG)</b>  | <i>Levetiracetam (LEV)</i>  | <i>Zonisamide (ZNS) (*sulfa Rx)</i>                          | <i>Tiagabine (TGB)</i>        |  | <i>Phenobarbital (PB)</i>                                   | <i>Phenytoin (PHT)</i>                                     |
|-----------------|---|---|--|-------------------------------|--|---|--|
| Doses           | 100-500mg/day<br>BID dosing   | 1000-3000<br>mg/day<br>BID dosing   | 100-600mg/day<br>in single or<br>BID dosing                  | 32-56mg/day<br>BID-QID dosing |  | 15-180mg/day in single<br>or divided doses                  | 300-400mg/day in<br>single or divided doses                |
| Meta-<br>bolism | Liver<br>(NO effect on<br>P450 Enzymes)   | Not metabolized,<br>Eliminated by<br>renal excretion<br>( 66% eliminated<br>unchanged in urine) | Liver  | Liver                         |  | Liver   | Liver  |
| Drug<br>levels  | Not required  | Not required  | Not required   | Not required                  |  | 65-150 µmol/L ( <b>Cdn</b> )<br>20-40 mcg/ml ( <b>USA</b> ) | 40-80 µmol/L ( <b>Cdn</b> )<br>10-20 mcg/ml ( <b>USA</b> ) |
| W/U             | Skin exam<br>CBC & diff, LFTs,<br>E-, sCr,<br>r/o pregnancy                         | CBC, plats & diff,<br>sCr   | CBC & diff, LFTs, sCr  |                               |  | CBC & diff, LFTs  | CBC & diff, LFTs,<br>folate?                               |
| F/U             | CBC, LFTs<br>annually<br><b>**monitor<br/>closely for SJS in<br/>first 2 months</b> | CBC & diff, sCr<br>annually   | CBC & diff, LFTs, sCr<br>annually (risk of kidney<br>stones) | none                          |  | CBC & diff, LFTs<br>annually.<br>BMD/Vit D                  | CBC & diff, LFTs, folate<br>annually.<br>BMD/Vit D         |

Virani, A., Bezchlibnyk-Butler, K., & Jeffries, J., *Clinical Handbook of Psychotropic Drugs*, (2012); Saskatoon City Hospital, *Rx Files Drug Comparison Charts*, (2008), Bhaumik, S. & Branford, D., *The Frith Prescribing Guidelines for Adults with Intellectual Disabilities*, (2008), DeLeon, J., *A Practitioner's Guide to Prescribing Antiepileptics and Mood Stabilizers for Adults with Intellectual Disabilities* (2012).

**\*Use alphabetic order to recall drug levels (in USA units: mcg/ml units):** CBZ (4-12), Dilantin (10-20), PB (20-40), VPA (50-115)