APPENDIX: CONVERSION CALCULATIONS FOR

OPIOIDS AND BENZODIAZEPINES

Opioid Conversions:

1.0 Conversion of IV morphine to enteral morphine:

The bioavailability of oral morphine is 33%. Therefore when converting morphine IV to enteral multiply the IV dose by 3.

1) Calculate the total daily dose of morphine IV in 24 hours
   E.g. for morphine Infusion:
   a) ____ microgram/kg/hour x Wt=_____mcg/hr
   b) ____ microgram/hr x 24 =_____mcg/24 hours
   c) ____ microgram/24 divide by 1000=_____mg/24 hours

   E.g. for intermittent IV morphine
   a) ____mg x ______doses per 24hrs = _____mg/24hrs

2) Multiply total daily dose of morphine IV by 3 to give total daily dose of enteral morphine in 24 hours
   ____mg/24hr of morphine IV x 3 = ____mg/24hr of enteral morphine

3) Divide into Q4h or Q6h dosing

| Conversion of IV morphine to enteral morphine: |
| ___mg/24hr of morphine IV x 3 = ___mg/24hr of enteral morphine (divide into Q4-Q6h) |

2.0 Conversion of IV fentanyl to IV morphine

- Fentanyl is more potent than morphine. In acute pain the conversion of morphine to fentanyl is 1:100. In the chronic situation (i.e. those patients who requiring weaning) the conversion is thought to be 1:25-50.

- When changing between opioids the tolerance between opioids is not thought to be the same so hence the dosage of the new opioid should be reduced.

Steps:

1) Calculate the total daily dose of IV fentanyl in micrograms

2) Convert to milligrams by dividing by 1000

3) Multiply total daily dose of fentanyl in milligrams by 25 (allows for chronic exposure and cross tolerance) to give total daily dose of IV morphine in milligrams.
4) Divide this into q4h – q6h dosing.

**Conversion of IV fentanyl to IV morphine:**

\[ \frac{\text{micrograms/24hr of fentanyl IV}}{1000 \times 25} = \text{mg/24hr of IV morphine (divide into Q4-Q6h)} \]

**3.0 Conversion of IV fentanyl to enteral morphine**

1. Convert IV fentanyl to IV morphine first following above steps

2. Then convert IV morphine to enteral morphine.

**Conversion of IV fentanyl to enteral morphine:**

\[ \frac{\text{micrograms/24hr of fentanyl IV}}{1000 \times 25 \times 3} = \text{mg/24hr of enteral morphine (divide into Q4-Q6H)} \]

**Max Doses:**

Note: These are maximum doses in relation to converting someone already on opioids. It does not reflect dosing in acute situations.

- **IV morphine** = 5mg /dose
- **Enteral morphine** = 15mg /dose
**Benzodiazepine conversions**

**Conversion of IV Lorazepam to IV or Enteral Diazepam:**

1) Calculate the total daily dose of lorazepam:
   
   Eg/ Patient is receiving 0.5mg lorazepam Q2h x 8 doses/day.
   
   Total daily dose of lorazepam is: 0.5 x 8 = 4mg

2) Use a 1:2 conversion – i.e. multiply total daily dose of lorazepam by 2 in order to get total daily dose of diazepam
   
   E.g. Total daily dose of lorazepam is 4mg x 2 = 8mg total daily dose of diazepam

3) Divide total daily dose of diazepam by 4 to get Q6h dosing. It is preferable to give Diazepam enterally (PO/NG).
   
   E.g. 8mg/4 = 2mg of diazepam Q6h enterally

4) Once regular diazepam doses have been charted. Lorazepam dosing should be changed to Q12h PRN as required to provide a bridge until diazepam established. Review PRN dosing after 24-48hrs.

   Note: Reason Lorazepam is kept on PRN is that the exact conversion of lorazepam to diazepam is not known and it may take 24-48 hours to establish diazepam dosing based on its longer half life. Lorazepam can therefore act as a bridge till the diazepam dosage is established. If patient is requiring multiple PRN’s then MD needs to be notified and diazepam should be increased. The PRN dose of Lorazepam should be ceased after 48 hours.

**Conversion of IV Midazolam to IV or PO Diazepam:**

1) Calculate the total daily dose of IV midazolam in milligrams

2) Divide total daily dose by 3 to give total daily dose of IV or enteral diazepam in milligrams

3) Divide total daily dose of diazepam (can be given IV or PO) by 4 to get Q6h dosing

4) Start diazepam and decrease IV midazolam infusion by 50% with 1st dose of IV or enteral diazepam.

5) Cease IV midazolam infusion with 2nd dose IV or enteral diazepam

**Conversion of IV diazepam to enteral diazepam**

Use a 1: 1 conversion of IV diazepam to enteral diazepam

**Maximum Doses:**

Note: These are maximum doses in relation to converting someone already on benzodiazepines. It does not reflect dosing in acute situations.

IV/Enteral Diazepam = 10mg