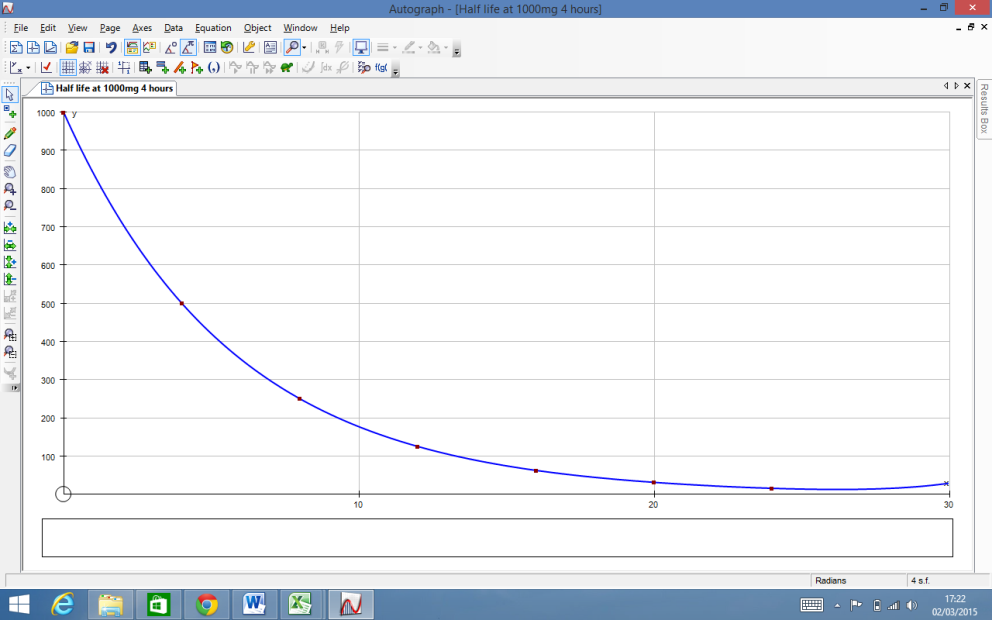
Cormathzadrine dosage and variables

Cormathzadrine has a chemical half-life of 2–4 hours, and assuming that the level of Cormathzadrine should preferably stay above zero during the course, we find that some dosage plans are very unstable and potentially dangerous.

Let’s consider our patient taking 1000mg four times a day.

Half-life model:

|  |  |
| --- | --- |
| Half-life/hours | Drug quantity remaining/mg |
| 0 | 1000 |
| 4 | 500 |
| 8 | 250 |
| 12 | 125 |
| 16 | 62.5 |
| 20 | 31.25 |
| 24 | 15.625 |



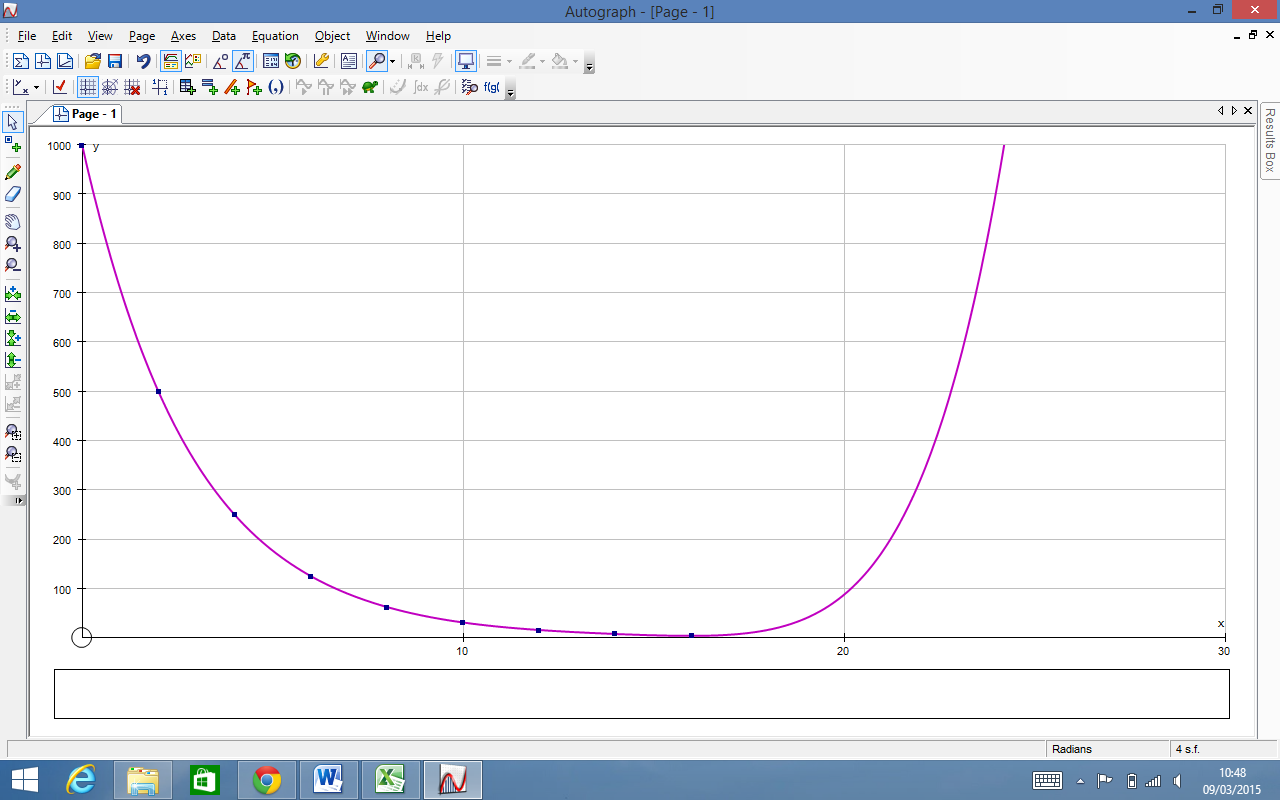
This initially looks good. However fitting four doses in a day results in a cumulative effect as seen from the extracts of the table below (red indicates dosage). Here we attempt to stagger the doses evenly while fitting in four doses.

It does not go well.

Here we can begin to see this cumulative effect. As doses are administered there remains the residue of the previous dosage, which brings levels above 1000mg. By the 6th dosage the patient would have over 2000mg in their blood at once. While this is unlikely to be dangerous, imagine the runaway effect by the end of the week. So what if, instead, we allow the levels to drop close to zero so a clean slate keeps the peak level at 1000mg? Well, this would make administering 4000mg within the time frame impossible, so clearly a dose of 1000mg 4 times a day is not acceptable.

|  |  |
| --- | --- |
| 0 | 1000 |
| 2 | 750 |
| 4 | 375 |
| 6 | 1187.5 |
| 8 | 890.625 |
| 10 | 593.75 |
| 12 | 445.3125 |
| 14 | 296.875 |
| 16 | 1148.4375 |
| 18 | 861.328125 |
| 20 | 574.21875 |
| 22 | 1287.10938 |
| 24 | 950 EST |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Day 1 |  |  |  |  |  |
|  | Hours |  |  |  |  | In body |
|  | 0 |  |  |  |  |  |
|  | 2 |  |  |  |  |  |
|  | 4 |  |  |  |  |  |
|  | 6 |  |  |  |  |  |
|  | 8 | 1000 |  |  |  | 1000 |
|  | 10 | 500 |  |  |  | 500 |
|  | 12 | 250 | 1000 |  |  | 1250 |
|  | 14 | 125 | 500 |  |  | 625 |
|  | 16 | 62.5 | 250 | 1000 |  | 1312.5 |
|  | 18 | 31.25 | 125 | 500 |  | 656.25 |
|  | 20 | 15.625 | 62.5 | 250 | 1000 | 1328.125 |
|  | 22 | 7.8125 | 31.25 | 125 | 500 | 664.0625 |
|  | 24 | 3.90625 | 15.625 | 62.5 | 250 | 332.0313 |

With a half-life of 2 hours:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Day 2 |  |  |  |  |  |  |
| 2 |  |  |  |  |  | 166.0156 |
| 4 |  |  |  |  |  | 83.00781 |
| 6 |  |  |  |  |  | 41.50391 |
| 8 |  | 1000 |  |  |  | 1020.752 |
| 10 |  | 500 |  |  |  | 510.376 |
| 12 |  | 250 | 1000 |  |  | 1255.188 |
| 14 |  | 125 | 500 |  |  | 627.594 |
| 16 |  | 62.5 | 250 | 1000 |  | 1313.797 |
| 18 |  | 31.25 | 125 | 500 |  | 656.8985 |
| 20 |  | 15.625 | 62.5 | 250 | 1000 | 1328.449 |
| 22 |  | 7.8125 | 31.25 | 125 | 500 | 664.2246 |
| 24 |  | 3.90625 | 15.625 | 62.5 | 250 | 332.1123 |

We can see that the half-life model for two hours has a much more drastic decay rate than the four-hour model. Looking at the table, we can also see that four doses can be taken in a day, with four hours of separation, without breaking the 1500 limit.

However, this model does briefly break the 100 min limit during the early morning.

Despite this, I believe this is likely to be the best solution, as maintaining above 100mg would require the patient to either take multiple doses in the night or use an IV drip to administer. This model provides virtually zero runaway effect, has practical dosage plans and doesn’t go above 1500mg in one dose.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Day 3 |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  | 166.0562 |
| 4 |  |  |  |  |  |  | 83.02808 |
| 6 |  |  |  |  |  |  | 41.51404 |
| 8 |  |  | 1000 |  |  |  | 1020.757 |
| 10 |  |  | 500 |  |  |  | 510.3785 |
| 12 |  |  | 250 | 1000 |  |  | 1255.189 |
| 14 |  |  | 125 | 500 |  |  | 627.5946 |
| 16 |  |  | 62.5 | 250 | 1000 |  | 1313.797 |
| 18 |  |  | 31.25 | 125 | 500 |  | 656.8987 |
| 20 |  |  | 15.625 | 62.5 | 250 | 1000 | 1328.449 |
| 22 |  |  | 7.8125 | 31.25 | 125 | 500 | 664.2247 |
| 24 |  |  | 3.90625 | 15.625 | 62.5 | 250 | 332.1123 |