Reviewer's report

Title: Modelling imperfect adherence to HIV induction therapy

Version: 3 Date: 21 October 2009

Reviewer: Robert Stengel

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With this third (and final) reading of the Miron-Smith paper (second revision), I am content to follow Voltaire's counsel that the perfect is the enemy of the good. I find the paper acceptable for publication in its current form, as the authors have responded to my previous comments in satisfactory fashion. I do, however, have three additional suggestions that I believe would improve the paper.

1) The equations should be numbered and referenced accordingly

2) Figures 4 to 10 present interesting traces of virion concentrations, but there is no presentation of healthy T-cell concentrations. The strength of the patient’s immune system is directly related to the healthy immune cell population but only indirectly to the viral population. Consequently, the reader has no way of knowing if one drug regimen provides better protection against opportunistic infection than another, and there is no indication of the deleterious effect of viral rebound following additional missed doses. Given that a 10th-order mathematical model is used, it is a shame that there is no presentation or discussion of the multi-dimensional nature of the analysis.

3) The paper refers to periodicity, orbits, and troughs without graphical support. The authors could strengthen the impact of the paper by using phase-plane portraits in place of one or more of the time traces. These would not only depict the progression of local extrema in drug levels and virus concentrations, but they would show convergence, divergence, and quasi-equilibria in a more compelling way.

Additionally, I have a few grammatical issues. One that is a “no-no” for formal writing and of dubious acceptability in informal conversation is the use of a plural possessive adjective to avoid using one that is gender-specific:

“A patient is able to miss h2 doses so long as their drug concentration levels...”

Use “his or her” (cumbersome), “his/her” (still awkward), “his” (sexist?), “her” (equally sexist?), a plural subject (“Patients are able...”), or re-phrase the sentence to make the problem go away.

I also might quibble about “so long as” vs. “as long as”. A quick Google search reveals the following:
“We use <as (so) long as> in two ways.
“When they are used in the comparison of physical lengths, use only <as long
as> for affirmative sentences and <so long as> or <as long as> for negative
sentences.
This bridge is as long as the Golden Gate Bridge.
That bridge is not so/as long as the Golden Gate Bridge.
“When <as (so) long as> is used as an adverbial conjunctive similar to <provided
that ...>, you can use either, though <so long as> sounds somewhat more
archaic than <as long as>.
As/so long as you stay in US, you can improve your English speaking skill.
I can read any book as/so long as it is written in English.”