



SDI Review Form 1.6

Journal Name:	British Journal of Mathematics & Computer Science
Manuscript Number:	2014_BJMCS_14628
Title of the Manuscript:	A Mathematical Model and Simulation of Chlamydia Trachomatis in a Human carrier
Type of the Article	Original Research Article

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Compulsory REVISION comments	A mathematical model of Chlamydia Trachomatis dynamics was presented. According to the authors two features were added: recovery class and drug administration. They also conducted a linear stability analysis of the model and calculated the analytical solution, therefore presenting the proof of the existence and uniqueness of the solution. The results showed the behaviour of the model variables by varying the new parameters. The authors describe the model briefly and some explanation about their choices and the model are not clear to the reader, for example: (a) why did they choose to include those specific features and what do they add to the existing model in terms of biological insights, (b) what are the units of the parameters in the model and (c) whether they were based in the literature. I also suggest the authors to include in the introduction more recent references on modeling of Chlamydia Trachomatis and to state why they chose that model to modify. Regarding the stability analysis section, I believe there should be a brief explanation of the two types of equilibrium of the model and their biological meaning, in the beginning. In the beginning of the analytical solution section there is no explanation of the method chosen. Moreover, there is no comparison of the results to the previous model or validation of the new model, what I strongly recommend. A validation could be provided by comparison to experimental data, results obtained by a similar model and a sensitivity analysis of the model parameters. I missed a more detailed discussion of the results. For example, is it reasonable that the number of uninfected epithelial cells decreases as the rate of recovery increases?	We choose to include recovery class through drug administration into the model, because, we believed a patient received treatment may be recovered. We thought this may be applicable to the infected epithelial cells of mucosal linings. This was represented by equation (4). Concerning the units of the parameters, we have included the units in the revised manuscript. See results and discussion on page 12. In the stability analysis section, we have a trivial steady state (infection-free equilibrium) which correspond to clearance of infection and a non-trivial steady state (endemic equilibrium) which correspond to active disease. The parameter-expanding method used in this work was proposed by He and the details can be found in reference [9]. On the results, we have made correction.



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<u>Minor</u> REVISION comments	I have a few comments about the text: Abstract: In the abstract we usually avoid references. However, if one is citing another model there should be a reference, otherwise it should be rewritten to avoid the need of a citation by saying for example “previous model”. The sentence “The results indicated which is depending on initial data shows that (...)” is confusing and should be rewritten. Introduction: The whole fifth paragraph is missing some reference. It is missing a word to commence the paragraph seven. It would be better to have a brief description of the parameters when they first appear. Method of solution In equation 3.6 it is written w instead of omega. In equation 3.8 the authors use the same greek letter sigma with a distinct meaning than was previously stated. I suggest to use another letter or write the matrix in terms of previous parameters. In line 12 of page 6 it is missing some word. In page 7 there are extra bracket: missing the reference. Analytical solution: Please check the references to the equations 3.16 to 3.18. they all seem to be linked to the previous equation. Results and discussion: In line 4 of second paragraph: “In Figure (...) shows”, either remove word “In” or change the following sentence. Check figures references. Keeping the original variables from the model would make it more clear when presenting the results.	All comments about the text have been corrected in the revised manuscript. See pages 1 to 20.
<u>Optional/General</u> comments	Maybe grouping the figures with variation of the same parameter would make the results more readable.	This has been corrected in the revised manuscript. See figures 1 to 7.