



SDI Review Form 1.6

Journal Name:	International Journal of TROPICAL DISEASE & Health
Manuscript Number:	2014_IJTDH_10040
Title of the Manuscript:	An Age- Structured Model for the spread of Buruli ulcer : Analysis and Simulation in Ghana
Type of the Article	Research

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	1- (63)-(66) see [Population Models Structured by Age, Size, and Spatial Position, G.F. Webb in Structured Population Models in Biology and Epidemiology (Pierre Magal · Shigui Ruan (Eds.)), 2009, Springer]: "The earliest models of age structured populations, due to Sharpe and Lotka in 1911 [104] and McKendrick in 1926 [92] established a foundation for a partial differential equations approach to modelling continuum age structure in an evolving population." 2- (129) in \Omega, "Bi.eP" ?? (128) and (129) define two "Omega": it is confusing. 3- (136) Please: $\beta_H(t)$ is $B_H(t)$?? see also (151). 4- (149) Why the newborns at time t appear as the total population until (maximum) age A at time t? A fertility coefficient is needed (see e.g. http://intranet.inria.fr/international/arima/017/pdf/Vol.17.pp.23-52.pdf). 5- (152) "Table 1" is a poor "copy and paste" process with fuzzy description of most of parameters. 6- (155) "By using Banach contraction mapping principle" a) Banach ? b) Why not use the Volterra (integral) formulation of the characteristics problem (see: H.R. Thieme and C. Castillo-Chavez, How may infection-age-dependent infectivity affect the dynamics of HIV/AIDS? SIAM. J. Appl. Math. 53 (1993), pp. 1447-1479. /And/ G.F. Webb, E. D'Agata, P. Magal, and	



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	S. Ruan, A model of antibiotic resistant bacterial epidemics in hospitals, Proceedings of the National Academics of Sciences of the USA, Vol. 102 (2005), 13343-13348) 7- (174) "right hand sides of the partial differential equation (PDES)" mention please "PDES (2a-b-c-d)-(3a-b-c)-4a" 8- (184)-(185) How could you prove that the domain defined here is globally invariant? That is to show that the system is point dissipative in some sens...(see for a simple example: http://dx.doi.org/10.12988/ams.2013.37420 , page 5982/ Theorem 2.2 and its proof) 9- (186) What is "B_H0" ? (consider relation with beta_H (0) ?) 10- (193) is difficult to understand. Please explain the notation and the definition of the operator L. 11- (194) alpha times which Omega ?? 12- (195-196-197) a notational problem with "ifa". The multiplications between the terms in L1, L2 and L3 are alittle bit difficult to read. 13- (206) "to the system 2 - 2d with...": please 2a-2d ?? 14- (269) "applying Counrant-Friedrids-Levy (CFL) condition [17]..." I suggest "Courant-Friedrich-Levy..." 15- (272) I suggest (because of equation 271) to permute the role played by (Delta x) and (Delta t). If it is just a typing error, then it is ok. If it has been considered in the simulations, then ... 16- (278) "fora"... and "15 year". 17- (288) "weks"... 18- (297) Table 2 19- (299) "this leads this leads 40 _ 333 humans humans..." Please use: "this leads 40 to 333 humans". 20- Why you did not compare the aggregate variable $\int^A_0 S(t,a)da$, $\int^A_0 I(t,a)da$ and $\int^A_0 R(t,a)da$ with another model of the literature indicated? Then the curves (a-b-c) in Figure 3 (326) would traduce necessarily an "accurate" modelling. 21- Existence does not implies necessarily uniqueness. How does the Authors know that they are not simulating another solution	
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	of the problem?	
Minor REVISION comments	Some sentences or expressions should be reconsidered: (35) "Buruli ulcer is severe disfigurng disease which affect all age" (39) "[19." (374) M.(2005). (72) L^1 and L^{∞} (94) "say age a_1, and a_2" (106) schematic diagram below (fig. 1). (134) (2b) (177) (5b)	
Optional/General comments	1- The model is very interesting and the introduction is also well presented. But some references are not accurate (e. g. foundations of age structure models...). 2- The problem of existence could be studied with powerful tool as Volterra integral formulation. 3- Simulations are not compared to other results of the literature. 4- Little problems in the English expressions and grammar.	

Note: Anonymous Reviewer