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Altri autori (Persone)	TchuencheJean Michel ChiyakaChristinah
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Trivial Equilibrium"; "2.8. Disease-Free Equilibrium ( $E_0$ )"; "2.9. Computation of the Reproduction Numbers  $R_0, R_V, R_T$  and  $R_{VT}$ "; "2.10. Local Stability of the Disease-Free Equilibrium  $E_0$ "; "2.11. Global Stability of the Disease-Free Equilibrium  $E_0$ " "2.12. Effects of Public Health Measures (Treatment and Vaccination)" "2.13. The Role of  $R_{VT}$  on Disease Eradication"; "2.14. Endemic Equilibrium and Its Stability"; "2.15. Stability Analysis when  $R_{VT} > 1$ "; "2.16. Endemic Equilibria when  $E^* > 0$ "; "2.17. Equilibria when  $E^* = 0$ "; "2.18. Existence of Backward Bifurcation"; "2.19. Local Stability of the Endemic Equilibrium  $E_1$ "; "2.20. Global Stability of the  $E_1$  when  $R_{VT} > 1$ "; "2.21. The Model with Mass-Action Incidence"; "2.22. Persistence of Solutions of the Model with Mass-Action Incidence" "2.23. Treatment-Only Submodel (with Mass-Action Incidence)" "2.24. Existence of Backward Bifurcation in the Treatment-Only Model"; "3. Sensitivity Analysis and Numerical Simulations"; "3.1. Sensitivity Analysis"; "3.2. Sensitivity Indices of  $R_{VT}$ "; "3.3. Numerical Simulations"; "4. Discussion and Conclusion"; "4.1. Discussion"; "4.2. Conclusion"; "Appendix A"; "Appendix B"; "Appendix C"; "Appendix D"; "(1) Endemic Equilibria when  $E^* = 0$ "; "(2) Endemic Equilibrium when  $E^* > 0$  and  $E^* = 0$ "; "References" "A THEORETICAL ASSESSMENT OF THE EFFECTS OF CHEMOPROPHYLAXIS, TREATMENT AND DRUG RESISTANCE IN TB INDIVIDUALS CO-INFECTED WITH HIV/AIDS"

## Sommario/riassunto

This text concentrates on the epidemiology of corruption and disease transmission as a saturable interaction as well as case studies of infectious diseases of global public health concern, namely drug resistant TB, influenza and malaria.