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Optimal control in age-dependent models in epidemiology and demography.

Optimal control of age-structured populations has sparked significant interest during several decades. A brief survey of age-dependent models in epidemiology, demography, and biology will be presented. A special attention will be given to the models described by means of partial differential equations. The corresponding optimal control problems can be interpreted as the optimal drug vaccination in mathematical epidemiology or the optimal population size problem controlled via health expenditures, and so on. It will be shown that age-structured models fit data well and are most commonly applied to describe the spread of childhood diseases. Basic investigation techniques for the optimal control problems will be discussed. (Received September 21, 2011)