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## Global dynamics with age structure

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A heroin model with nonlinear  
reproduction number is determined  
employing the Lyapunov function  
stable if  $R_0 \leq 1$ ; while the drug  
if  $R_0 > 1$ . Our results imply that  
prevention play more important

**Keywords:** Nonlinear incidence

**Mathematics Subject Classification:**

## 1. Introduction

It has been reported that heroin  
addicted that about 23% of individuals  
spread of heroin habituation. The  
phenomena of epidemics, including  
[16]. Mathematical modeling  
between preventions and treatments  
have been addressed mathematically  
(see [14, 27]). Generally, they consider  
models, heroin users or alcoholics  
which denote by  $S(t), U_1(t)$  and  
on treatments for drug users  
differential equations. For example,  
epidemic model with distributed  
 $R_0$  which determines the extinction  
[8] got the global stability of