

## Evaluate the Effectiveness of Regular Health Examination Among the Newly Diagnosed Diabetes Patients in Taiwan

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### ABSTRACT

**INTRODUCTION:** Studies indicate that Health Examination (HE) is associated better health outcomes over shorter period of time among general populations. In this study, we evaluate the effectiveness of regular HE on health care expenditure and all-cause mortality among a group of newly diagnosed diabetes patients over a 6-year period. **METHODS:** Newly diagnosed diabetes patients aged 70 or older between 2003 and 2007 were identified from the National Health Insurance Research Database. The selected cases were divided into four groups: (1) those who never had HE; (2) those who received one HE; (3) those who received two HEs; and (4) those who received 3 HEs over the past three years. Proportional hazards and linear regression models were used to compare the risk of all-cause mortality and their diabetes-related health care expenditure across the four groups. **RESULTS:** Among the 13,349 newly diagnosed diabetes patients, 29.9% of them never had HE and 22.7% receiving 3 HEs over the past 3 years. Patients received 3, 2, and 1 HE over the past 3 years spent 43%, 31%, and 23% less, respectively, when compared to those who never had annual, HE. For all-cause mortality, patients with 3, 2, and 1 HE was 33%, 26%, and 13% less likely to die, respectively, when compared to those who never had HE over the 3-year period. **DISCUSSION:** Our analyses confirm that, for the newly diagnosed diabetes patients, regular HE seems effective in reducing their health care spending on diabetes and mortality.

**KEYWORDS:** health examination, newly diagnosed diabetes, regular, effectiveness

## Evaluation of Different Concentration of Pyriproxyfen, An Insect Growth Regulator (IGR) Against Immature Stages of *Aedes Aegypti* and *Aedes Albopictus*

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### ABSTRACT

**INTRODUCTION:** Pyriproxyfen is an insect growth regulator that has proved promising for controlling vector mosquitoes such as *Culex*, *Anopheles*, and *Aedes* species. In this study, the efficacy of pyriproxyfen at different concentration were evaluated against dengue vectors, *Aedes aegypti* and *Aedes albopictus*. **METHODS:** Eggs, larvae and pupae were exposed to 100, 50, 40, 30, 20, 10, 5, 1, 0.9, 0.8, 0.7, 0.6, 0.5, 0.4, 0.3, 0.2 and 0.1mg/L of pyriproxyfen. Bioassay was carried out to determine the concentration-mortality response of immature stages of *Aedes* mosquito towards pyriproxyfen. **RESULTS:** Following the exposure, 100% of eggs from both species were prevented from hatching in all petri dish treated containing at least 0.7mg/L of pyriproxyfen while ~95% of eggs hatched from the control group within 24 hours. Within 48 hours, larvae from both species treated with minimum 3mg/L of pyriproxyfen shows 100% mortality with  $LC_{50}$  recorded in *Ae. aegypti* and *Ae. albopictus* are 0.740 (0.683-0.803) and 0.901 (0.817-1.000) respectively.  $LC_{50}$  for pupae in *Ae. aegypti* and *Ae. albopictus* are 0.924 (0.789-1.092) and 1.183 (1.027-1.380) with minimum 4 mg/L of pyriproxyfen required for 100% mortality within 48 hours. An additional study showed that 100 gravid female mosquitos, exposed to 100mg/L pyriproxyfen transfer enough chemicals to new oviposition sites containing uncontaminated water to prevent 100% of adult emergence. The existence of pyriproxyfen in uncontaminated water is assessed using Ultra Performance Liquid Chromatography (UPLC). **DISCUSSION:** The actual efficacy of insecticide in field application can be reflected from laboratory test and evaluation.

**KEYWORDS:** Insect growth regulator, pyriproxyfen, *Aedes aegypti*, *Aedes albopictus*