

## Health-Care Center

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### General Summary

In the Shimbashi Medical Checkup Office, our research efforts are focused on lifestyle-related diseases.

### Research Activities

#### *Preventing lifestyle-related disease through healthy habits*

Our mnemonic or motto for promoting healthy habits is “none of one, less of two, more of three.” The “one” behavior is smoking. The “two” things are intake of food and alcohol. The “three” things are exercise, rest, and enjoyable activities. We studied the correlation of these six healthy habits with metabolic syndrome. A questionnaire about compliance with our motto was filled out by 18,139 Japanese patients who visited the Health-Care Center at The Jikei University Hospital for medical health checkups. The prevalence of metabolic syndrome was negatively correlated with the number of healthy habits practiced (20.9% for 0, 17.4% for 1, 15.0% for 2, 13.1% for 3, 10.5% for 4, 8.4% for 5, and 7.2% for 6;  $p < 0.001$ ). Practicing these six healthy habits may be helpful for preventing metabolic syndrome.

#### *Smoking and metabolic syndrome*

Metabolic syndrome develops through the accumulation of excess central obesity and insulin resistance. Smoking also causes insulin resistance to develop. The purpose of this study was to clarify whether smoking is correlated with metabolic syndrome and how long the risk of metabolic syndrome remains elevated after smoking cessation. The subjects were 22,892 Japanese who visited the Health-Care Center at The Jikei University Hospital for medical checkups. Compared with never smokers ( $n = 9,434$ ; 41%), the odds ratio (95% confidence interval) for metabolic syndrome for current smokers ( $n = 7,634$ ; 33%) was 1.20 (1.07–1.35) and that for past smokers ( $n = 5,824$ ; 25%) was 1.21 (1.08–1.37). In current smokers, the odds ratio for metabolic syndrome increased with the number of cigarettes smoked, and rate of metabolic syndrome was significantly higher for subjects who smoked 20 or more cigarettes per day. After quitting, a longer cessation period was related to a decreased risk of metabolic syndrome. However, the risk of metabolic syndrome remained elevated for at least 10 years for subjects who smoked 20 or more cigarettes per day and remained elevated for more than 20 years for subjects who smoked 40 or more cigarettes per day. Past smoking as well as current smoking habits may contribute to the development of metabolic syndrome.

### Publications

**Wada T, Urashima M, Fukumoto T.** Risk of metabolic syndrome persists twenty years after the cessation of smoking. *Intern Med* 2007; **46**: 1079-82.

**Wada T, Urashima M, Fukumoto T, Joki M, Hashimoto H, Oda S.** Effective prevention of metabolic syndrome: "A motto for healthy habits- none of one, less of two more of three".

*Obest Res Clin Prac* 2007; **1**: 133-8.

**Oikawa T, Takahashi H, Ishikawa T, Hokari A, Otsuki N<sup>1</sup>, Azuma M<sup>1</sup> (<sup>1</sup>Dept Mol Immunol, Graduate Sch, Tokyo Med, Dent Univ), Zeniya M, Tajiri H.** Intrahepatic expression of the co-stimulatory molecules programmed death-1, and its ligands in autoimmune liver disease. *Pathol Int* 2007; **57**: 485-92.