

# Curriculum Vitae

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**Jung-Der Wang, M.D., Sc. D.**

Chair Professor

Institute of Public Health,

National Cheng Kung University College of Medicine

No.1, University Road, Tainan, TAIWAN 701

Phone No.: +886-6-2353535 ext 5600/ 5869

Fax No.: +886-6-2359033

E-mail: [jdwang121@gmail.com](mailto:jdwang121@gmail.com)



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**Education:**

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| 1968-75 | Bachelor of Medicine (equivalent to M.D.),<br>National Taiwan University College of Medicine | Taipei, Taiwan |
| 1978-79 | Master of Industrial Health,<br>Harvard School of Public Health                              | Boston, MA.    |
| 1979-82 | Doctor of Science in Occupational Medicine,<br>Harvard School of Public Health               | Boston, MA.    |

**Current position:**

Chair Professor of the National Cheng Kung University College of Medicine

**Experiences:**

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| 1983-4    | Visiting Associate Professor of Occupational Medicine<br>National Taiwan University College of Medicine                                  | Taipei, Taiwan    |
| 1984-7    | Associate Professor of Occupational Medicine<br>and Epidemiology   | Taipei, Taiwan    |
| 1992-6    | President, Environmental and<br>Occupational Medicine Association (R.O.C.)   | Taipei, Taiwan    |
| 1986-2010 | Staff physician, Departments of Internal Medicine and<br>Environmental and Occupational Medicine,<br>National Taiwan University Hospital | Taipei, Taiwan    |
| 1987-2011 | Professor of Occupational Medicine and Epidemiology<br>National Taiwan University  | Taipei, Taiwan    |
| 1993-9    | Director, Institute of Occupational Medicine and<br>Industrial Hygiene, National Taiwan University                                       | Taipei, Taiwan    |
| 1996-7    | Visiting Professor of Mahidol University Faculty of Public<br>Health   | Bangkok, Thailand |

2002-5	Dean, College of Public Health National Taiwan University	Taipei, Taiwan
2003-5	President, Taiwan Public Health Association	Taipei, Taiwan
2010-	Staff physician of Department of Environmental and Occupational Medicine, National Cheng Kung University Hospital	

### **License and certification obtained or passed:**

in Taiwan:

Board certified in the specialties of internal medicine and occupational medicine

in the U.S.:

Jun. 1979 FLEX (Federation Licensing Examination) and Massachusetts license

Jan. 1982 American Board of Preventive Medicine (Specialized in Occupational Medicine)

### **Awards and Honors:**

1987	Ten Outstanding Young Men of the Republic of China
1988-96	Outstanding Research Award of the National Science Council (4 times)
1996-2001	Y-T Lee's Outstanding Scholars Award
1998	Executive Yuan Award for outstanding contribution in Science and Technology
2001	Outstanding Academic Award by the Ministry of Education of Taiwan
2001	Elected Fellow of the Collegium Ramazzini
2003-6	National Chair Professorship Award by the Ministry of Education (MOE)
2003	National Taiwan University Hospital Award for Excellent Innovative Teaching Material
2004	Health Medal of the second order by the Department of Health, Executive Yuan
2007-2010	2 <sup>nd</sup> time of National Chair Professorship Award and permanent honor by the MOE
2010-	Chair Professor of the National Cheng Kung University

### **Summary of academic and scholastic contributions:**

Dr. Wang has devoted his life to public health and has published more than 460 papers on academic journals. His contributions are mainly on the following two fields:

1. **Documentation of occupational and environmental diseases and help the government to establish the hazard communication system in Taiwan:** After he obtained his Sc.D. from Harvard University and board certified in the American Board of Occupational Medicine, he came back to Taiwan in 1982 and began to apply the principles proposed by Karl Popper in the search of etiological agents for occupational and environmental diseases. Owing to a strong support from colleagues, they have successfully documented about 20 different kinds of occupational and environmental diseases in Taiwan, including at least hepatitis caused by carbon tetrachloride, chloroform, dimethyl formamide and dimethyl acetamide; vinyl chloride related liver cancer; acute renal failure caused by ethylene glycol; polyneuropathy induced by n-hexane and lead, impairment of intelligence quotient in kindergarten children caused by increased lead absorption, manganese induced Parkinsonism; toluene diisocyanate asthma; mercury poisoning, dermatoses caused by kerosene and thiazolidone, skin cancer caused by bipyridines manufacturing, etc. Based on these experiences, he has written 4 books in Chinese to promote the occupational and environmental health in Taiwan, and an English textbook entitled "Basic principles and practical applications in epidemiological research", which was

first posted on a WHO website of supercourses for free download during 1999-2001 and later published by the World Scientific in 2002.

## **2. Development of a general method to quantify health for improvement of equality and**

**efficiency of healthcare services in the era of pay-for-value:** In collaboration with Dr. J.S. Hwang of Academia Sinica, we have successfully integrated the survival function with quality

of life (QOL) function with the following equation in 1996:  $\int E(Qol | x_t)S(t | x_t)dt$  to quantify

health benefit for health condition  $x_i$  under a common unit of quality-adjusted life year (QALY). The lifetime survival function of an index cohort can be estimated based on a cohort followed for more than 5-10 years, and then extrapolated to lifetime with an assumption of constant excess hazard. The basic concept and equation has been extended and applied extensively, including at least following aspects: (1) All health outcome and cost-effectiveness research by using utility values of QOL and QALY as the common unit; (2) applying psychometric measurements for individual attributes of QOL and multiplying with survival can come up with score-time as the unit and used for clinical decision; we have adopted the World Health Organization Quality of Life (WHOQOL) questionnaire to Taiwan for this purpose, and incorporated contingent valuation method to estimate the stated preference values of a pain-killing pill that is effective for 24 hours, which has linked the score-time unit with a monetary value; (3) multiplying survival function with average healthcare expenditures reimbursed by the NHI (National Health Insurance) at time  $t$ , we can estimate the lifetime expenditure for a specific disease; (4) multiplying the survival function with proportions of functional disability at time  $t$  can estimate the lifetime or long-term care needs for different illnesses; (5) simulating age- and sex-matched referents from hazard functions of national life tables and subtracting the quality-adjusted life expectancy (QALE) of the cohort with a specific disease can provide the QALY gained from successful prevention of this disease; (6) multiplying the likelihood of diseases (e.g., incidence rate or relative risk) with consequence of disease (QALE loss, healthcare costs, and/or functional disabilities, etc.) can estimate the total impact of a certain health policy, which pave the way for the paradigm shift toward pay-for-value. Dr. Wang's team has demonstrated the feasibility of these methods through empirical examples of Taiwan. They have published more than 100 academic papers related to the improvement of equity, efficiency (or, cost-effectiveness), and sustainability of NHI, and prepared our country for long term care insurance. In fact, their studies of patients under prolonged mechanical ventilation provided the decision makers the needed information and facilitated the enactment of law for possible withdrawing ventilators under appropriate ethical constraints.