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Promoting Sustainable Kidney Health: The Asia-Pacific and Beyond

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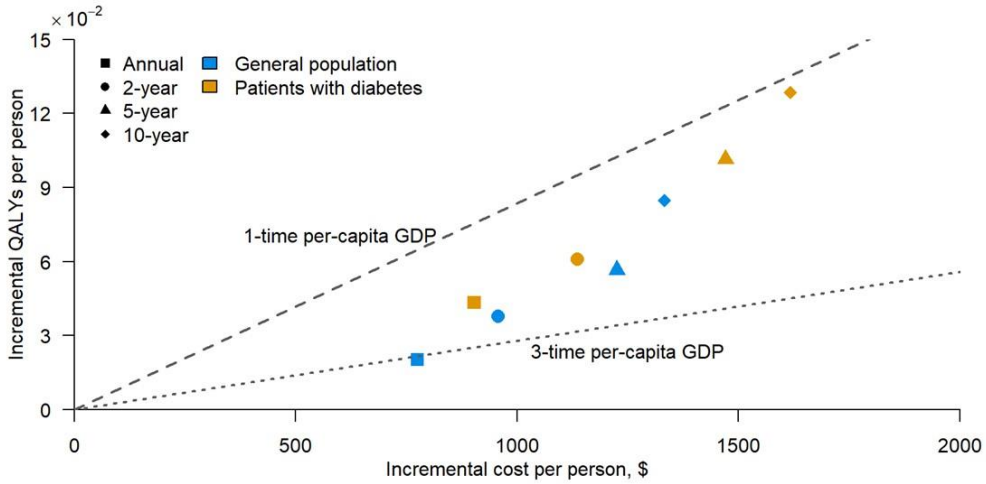
Cost-effectiveness of Population-based Screening for Chronic Kidney Disease in China

Fengyu Wen[1], Jinwei Wang[2], Chao Yang[2], Yongxian Zhang[3], Yan Li[4], Luxia Zhang[5]
[1]Department of Institute of Medical Technology, Peking University Health Science Center, China
[2]Department of Renal Division, Department of Medicine, Peking University First Hospital, China
[3]Department of College of Food Science and Nutritional Engineering, China Agricultural University, China
[4]Department of School of Public Health, Shanghai Jiao Tong University School of Medicine, China
[5]Department of National Institute of Health Data Science at Peking University, Peking University, China

Objectives : Although chronic kidney disease (CKD) is a growing public health concern in China, the awareness of CKD has been low. CKD screening and the subsequent early diagnosis and treatment could prevent adverse kidney events and, thus, improve quality of life. However, evidence on the cost-effectiveness of population-based screening for CKD in China is still limited.
Methods : A validated microsimulation model of CKD was developed to estimate the lifetime cost and consequences from a societal perspective. Screening with assessment of glomerular filtration rate and albuminuria status was considered. Model parameters were estimated based on the existing literature and various data sources. We simulated a cohort of population aged 45 years. Main outcomes included incremental cost-effectiveness ratios (ICERs) by screening compared with usual care and the averted number of patients with end-stage kidney disease (ESKD). We considered screening in general population and in people with diabetes. One-way sensitivity analyses were performed to assess the robustness of the results.
Results : Compared with usual care, universal annual CKD screening at the age of 45 had an ICER of $15,706 per quality-adjusted life year (QALY), with an incremental cost of $1,332 and a gain of 0.085 QALYs per person. Among all alternative intervals (1-, 2-, 5-, and 10-years) for follow-up screening, annual screening had the highest ICER, which was less than three times the per capita gross domestic product ($35,811). Annual targeted screening was associated with an ICER of $12,575 for people with diabetes. CKD screening could avert ESKD events over lifetime by more than 32% and 44%, for general population and those with diabetes, respectively.
Conclusions : Population-based screening for CKD is likely to be cost-effective and would reduce the incidence of ESKD in China. Screening in patients with diabetes could be more cost-effective than that in general population of China.

Figure1.jpg


× 10^−2
15
12
9
6
3
0
Annual
2-year
5-year
10-year
General population
Patients with diabetes
1-time per-capita GDP
3-time per-capita GDP
Incremental QALYs per person
0
500
1000
1500
2000
Incremental cost per person, $