

A program for early detection and management of chronic kidney disease

Chronic kidney disease (CKD), also called chronic renal failure, is characterized by a gradual reduction of renal function over time [1]. The prevalence of CKD is 14.3% worldwide [2]. CKD will gradually progress into end-stage kidney disease (ESKD) and finally require renal replacement therapy (RRT). In China, CKD has characteristics of high prevalence (10.8%), low awareness (about 10%), and low control [3].

To detect CKD early and prevent the morbidity of ESKD, Shanghai, as one of the largest cities in China, conducted a 'CKD Early Detection System' project (CEDS). CEDS united medical resources of three levels including community health centers, district-level hospitals, and municipal-level hospitals (Figure 1), and established a three-stage

preventive system. CEDS first screened out 62 859 suspicious patients of CKD from 136 597 people in community health centers using urinalysis and blood routine examination. The screening criteria of CKD suspicious patients were proteinuria, hematuria (urinary red blood cells $>3/\text{hp}$), estimated glomerular filtration rate $<60\text{ mL}/\text{min}/1.73\text{m}^2$ or urinary microalbumin creatinine ratio $>30\text{ mg}/\text{g}$ [4]. After referring to the district or municipal hospitals, 26 500 of 62 859 (42.1%) suspicious patients were eventually diagnosed with CKD. The detection rate of CKD was 19.4% from 2019 to 2021. Meanwhile, an electronic data platform for screening and management of CKD was established (www.cnrds.org).

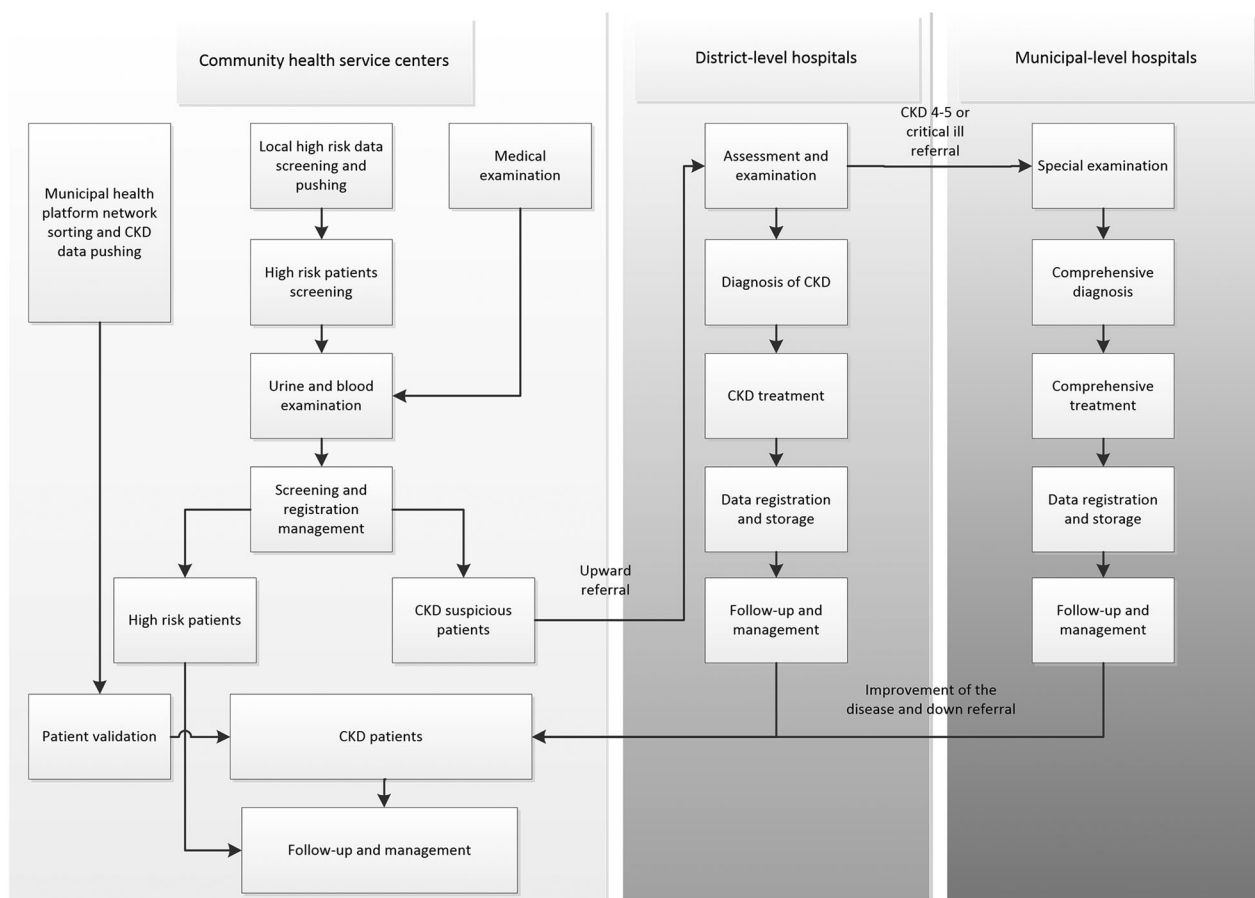


Figure 1. Flow diagram of the three-stage detection and treatment system of CKD. High-risk populations and suspicious patients with CKD are screened out from municipal health platform networks and medical examinations at community health service centers. Then suspicious patients are upward referred to district-level hospitals, and patients who are eventually diagnosed with CKD will receive treatment and follow-up. CKD stage 4–5 patients or CKD 1–3 patients with critical conditions will be upward referred to municipal hospitals for comprehensive diagnosis and treatments. When CKD patients get clinical improvements at hospitals, they will be downward transferred to community health service centers for subsequent follow-up and management.

ESKD incidence of Shanghai decreased from 128 per million population in 2019 to 112 per million in 2021. CEDS may achieve a 10 percent reduction of ESKD incidence after estimation. This program could be used for reference to alleviate the CKD burden. Greater efforts against CKD are needed in the future.

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