Qingdao chronic disease management – Comprehensive prevention and treatment integrated care system development

Qingdao HFPC
Renmin Wei
2016-07-28
Qingdao

• China middle east area and south of Shandong
• Important sea-side city
• 6 district, 4 cities
• Area 11282 m²
• 2015 population 9,097,000
• 2015 GDP 960 billion
• Financial income 100.6 billion
**Qingdao**

- 2015
- 65 and above: 1,097,100 (12.06% of total), increase 1.8% compared to 2010, annually increase by 0.36
- LE 80.76 year-old
- Maternal and child death rate at middle income country level
Hospital beds

• 2015
• Actual number of beds: 48,601
  • Hospital 37,342
  • Township health center 7,724
• 5.34 beds /1000 population
2015 outpatient

2015
• Outpatient volume 52.297 million person times (include town health center 9.606 million )
• Hospital: 23.8106 million (45.6% of total)
2015 inpatient

• Inpatient number 1.326 million
  • Hospital 1.086 million (81.9%)
• Emergency admission 3.88 people/100days
  • Hospital 4.64, township health center 5.07, public health center 1.81
2015 Qingdao infant mortality 2.88‰; Maternal mortality 2.88/100000
Qingdao healthcare HR

2015

• Healthcare staff 66164, village doctors and healthcare staff 7049
• 7.27 healthcare staff/1000
• 2.97 licensed doctor (incl assistants)/1000
• 3.12 registered nurse/1000
### 2006-2015 Qingdao CVD mortality trend

(1/100, 000)

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### 2006-2015 AMI mortality

### 2006-2015 MI mortality (1/100,000)

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1990~2014 China CVD mortality (1/100000)
2002~2014 China AMI mortality
1980~2014 China CVD discharged patient number

2014
China CVD discharged patient 1793.86 person-times (12.75% of total discharge)
• Coronary artery disease 6.63% of total discharged
• Cerebrovascular disease 6.12% of total discharged
• Ischemic heart disease 36.53% of CVD patients
• Cerebral infarction 29.66% of CVD patients

2013 diabetes discharged patient 3.2044 million person times
1980~2014 China CVD and diabetes discharged patient number

1980 ~ 2014 China CVD discharged patient annual growth: 10.10%, faster than total discharged patients (6.33%)

Annual growth ranking

Infarction (12.30%), ischemic heart disease (11.74%), intracranial hemorrhage (9.76%), AMI (8.12%), hypertension (8.06%), hypertensive heart disease and kidney disease (5.82%)

1980-2014 diabetes annual growth 14.18%
2004~2014 CVD inpatient total cost

2014 total cost

- AMI ¥ 24706.0
- Intracranial hemorrhage ¥ 15929.7
- Infarction ¥ 8841.4

Since 2004, annual growth 8.72%、6.63%、2.81%（respectively）

2014 average inpatient cost

- AMI ¥ 13.375 billion
- Intracranial hemorrhage ¥ 20.707 billion
- Infarction ¥ 470.35 billion

Since 2004, annual growth 32.02%、18.90%、24.96%（respectively）
2009~2014 China coronary intervention: number of cases and an annual growth rate

AMI annual average inpatient cost growth

AMI patient number annual growth 8.7%
Stroke 8.7%

Only 4.3% patients in Beijing big hospitals received thrombolysis treatment, only 5% of STEMI patients received early reperfusion therapy.
AMI mortality

3 types of CVD Inpatient cost

CVD discharged patient number
China chronic disease pandemic

• Future concerns:
  - more people become ill
  - obesity in children
  - weak economy
  - drained healthcare system

In terms of chronic disease prevention and monitoring, we have done a lot of work, including developing community service, public health service program and establishing national centers, however, we still have a lot more to accomplish.
Difficulty—Burden caused by chronic disease continued to increase

- 2010 estimated mortality 9.50 million
- Premature death 5.50 m, 57.8%
- Within premature death: chronic disease 75.1%
Challenge — Chronic disease behavior risk factors

18+ behavior risk factors

- Male smoking: 47.0%
- Salt intake >5g: 80.9%
- Oil intake over 25g: 83.4%
- Vegetable intake <400g: 52.8%
- Heavy drinking: 17.4%
- exercise%: 11.9%

Data source: 2010 China Chronic Disease Behavior Risk Factor Monitoring

Exercise: At least 3 times per week, each session at least 10 minutes.
Challenge — *chronic disease burden*

69% of total disease burden

- 69% Chronic disease
- 18% Infectious, maternal, etc
- 13% injury

WHO: chronic disease best practice

• Population base intervention
  ➢ Smoking
  ➢ Salt
  ➢ Diet and activity
  ➢ Heavy drinking

• Interpersonal intervention in healthcare
  ➢ Promotion of essential medicines and technology
Create a healthy and harmonious life to contain China NCD epidemic《Worldbank report》2011

"Chronic disease management pyramid" model based on the degree of severity of illness and required clinical management to classify patients and provide corresponding medical and health services.
With out integration and continuity of chronic disease services, China’s health system will fail to combat the raising disease burden from both chronic and infectious disease.
Working with the foundation - Chinese government

- Pay more attention to people's livelihood
- LE increase 1 year
- Deepening medical reform
- Consensus at different social level
- Healthy City Construction

Chronic disease is a focus of “12-5” planning
中国的行动策略

1. Improve population health
2. Early diagnosis / treatment
3. Reduce incidence, mortality, disability
3.3.3 measures

Chronic disease prevention/management strategy

Action

3 groups:
- Normal
- High risk
- Patient

3 process:
- Risk factor:
  - Early diagnosis/treatment
  - Standardized management
- Health education/promotion
  - Health management
  - Disease management
### 4.4.4 Key Points

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<td>Chronic respiratory disease</td>
<td>Overweight/Obesity</td>
<td>Excessive drinking</td>
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Chronic disease (CD) concept

• A new phenomenon:
  ——life style change
  ——health technology improvement

• We focus in chronic disease – those that cause chronic health issue. Not all chronic diseases are non-communicable, not all communicable diseases are chronic.

• Global economy and social policies lead to epidemic of chronic diseases

• Ignoring chronic disease is a political failure
Chronic disease classification

- Intuitive Chronic Diseases
- Rules-Based Chronic Diseases
- Chronic disease management:
  1. Diagnosis and treatment plan;
  2. Help patients adhere to treatment
- Almost all decisions on health service are made by chronic patients themselves. 2/8758
Policy response to the challenges of chronic diseases -
Chronic disease prevention and treatment
Intellectual integrated health service system pilot project
Integrated Healthcare Delivery System (IDS) — a ordered, cooperative network that integrates different services at different level and their technology, process and structure, to provide and promote coordinated and continuous healthcare service, and achieve systematic improvement in efficiency. The core objective is to solve issues of healthcare system accessibility and comprehensiveness, and aggregate the health system.

“对体系内卫生服务所涵盖的各项资源进行组织和管理，使人们能够在需要的时候能够通过友好的方式获得其应得的系统性卫生服务，从而得到其想要的（健康）结果并产生经济价值” — WHO
Optimize health resource allocation, establish a comprehensive, coordinated healthcare service system that is compatible to national economy and social development, population health needs. (13-5 planning)

• Establish mechanisms for information sharing between public health agencies, hospitals, primary health care institutions to achieve combining prevention with disease control;

• Division of task among hospital and grassroots medical institutions, promote integrated care;

• Strengthen public and private collaboration;

• Open green channel for retirement service and health service for chronic disease management.
整合型医疗服务体系（IDS）core

——Community health centered
——Seamless continuum of care
——Management health with established resource
——and responsible for community

A comprehensive/organized service system is defined as: a coordinated and continuous service for a defined group of people, and a organized network that is responsible clinically and financially for the health outcomes of the group of people.

Organized service system can be established through “virtual" integration process
Intellectual integrated health service system

• Use evidence-based guideline, chronic disease as breaking point, internet as IT support, to explore within district prevention and treatment integration, health system horizontal integration, GP and specialist integration, health policy and insurance policy integration, optimize health resource allocation, improve overall efficiency, improve health service performance, and provide cost-effective “prevention – treatment – rehabilitation” integrated health service.
What is Intellectual integrated care?

- Intellectual integrated care is a new integrated care model
  - Use IT as technological foundation, GP assisted decision making as support, big data as analytical power, with remote clinic and wearable monitor device
  - Construct “pre-hospital prevention”, “inpatient clinical pathway”, “community rehabilitation pathway”
  - Build a “patient-centered” community and hospital collaboration, actively participating patient health management
Objectives

- Build system — Establish health education, screening of high-risk groups, clinical preventive interventions, acute phase standard treatment, rehabilitation care and disease management integrated chronic disease prevention and treatment of CVD and stroke service system;

- Improve ability — diagnostic ability of healthcare staff on heart and stroke identification, reduce the incidence, morbidity, improve the regional stroke and heart disease prevention capacity and efficiency;

- Public awareness — increase public management awareness of high risk factors, early CVD and stroke prevention, improve population health.
Chronic disease effective business model

- Chronic disease diagnosis and treatment plan design and practice
- Continue to treat and change behavior, prevent complications
- ——Two different tasks
- Today's healthcare business model rarely optimize diagnosis and treatment progress. There isn't any model that can improve patient adherence and treatment continuity.
Project

Pilot established a network system of “chronic disease and CVD stroke prevention – intervention – treatment” integrated care covering all healthcare resources within district.

Build system
Establish health education, screening of high-risk groups, clinical preventive interventions, acute phase standard treatment, rehabilitation care and disease management integrated chronic disease prevention and treatment of CVD and stroke service system;

Improve ability
Diagnostic ability of healthcare staff on heart and stroke identification, reduce the incidence, morbidity, improve the regional stroke and heart disease prevention capacity and efficiency;

Public awareness
Increase public management awareness of high risk factors, early CVD and stroke prevention, improve population health.

1. Regional chronic disease, heart and stroke prevention and treatment integration base
2. 3-level hospital advanced CVD and stroke treatment center
3. 2-level hospital basic CVD and stroke treatment center
4. Community chronic disease management, CVD and stroke outpatient center
Project

- CVD stroke pre-hospital emergency service specification
- CVD stroke emergency service specification
- CVD stroke special outpatient service specification
- Risk screening clinic service specification

CVD stroke inpatient service standards and insurance payment methods

Community service specification high-risk individuals

Strengthen personnel training and technical support

Integrate health education and network resources to jointly carry out health education campaigns for the prevention of stroke

Improve case reporting system, and establishment of IT management and reporting systems:
1. MI and stroke inpatients report system.
2. CVD stroke screening of high-risk individuals registration system.
3. CVD stroke clinical treatment centers IT support.
Objectives

Chronic disease “prevention, treatment, rehabilitation” integration: the use of advanced IT technology systems, medical technology and service model for Qingdao to build multi-level, multi-mode, wide coverage, a full range of integrated and comprehensive chronic disease system. Specifically in FIVE dimensions

**Treatment technology**: Drug + life style intervention + health education + indicator monitoring

**Treatment facility**: Primary, secondary, tertiary hospital collaboration, integrated two-way referall

**Service technology**: internet of things, internet, cloud technology, support internet, mobile sand face-to-face services

**Population user**: provide service to healthy, at-risk, high risk and patients

**Place and time**: patient receive care in or out hospital at anytime

目标
Services and processes

- **5 forces**: diet, activity, education, drug, self monitoring
Service model

Health, sub-healthy and high-risk groups: multilevel prevention

2/3rd prevention

Primary prevention

Data upload

Data center

Secondary hospital

Community

Service model to all population

patients: integrated care

first diagnosis at grassroots

Two-way referral

Acute chronic separate care

integration
Pilot established a network system of “chronic disease and CVD stroke prevention – intervention – treatment” integrated care covering all healthcare resources within district.

1. Composition of the institution, issued a document to start the implementation (2015.1–4)

2. An expert team to determine the mechanism, research and development of specification documents (2015.5–12)

3. Development of various types of institutions and personnel Manual (2016.1–12)

4. Summary assessment and comprehensive promotion (2017.1–6)
Intellectual integrated care system

1. Self-awareness of abnormal status and automatic health alarm platform as basic pathway;
2. Actively book for diagnosis;
3. GP using assessment and diagnosis assistant system, upper level hospital specialist use remote assistance, to determine disease types (primary or severe) and set pre-diagnostic plan.

Health record centered

Wearable device-based, intelligent, real-time, dynamic, full monitoring, early warning of abnormal indicators, reducing the risk of disease.

Family doctors contracted services - main mode

Provide medical advice, medication reminders, personalized information push and interactive features between patients, personalized health management services.
Project initiation
——Qingdao west coast new district

West of Qingdao
area 2127 m²
2015 population 1.48 million
GDP 260 billion
30% of Qingdao
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治疗：按门诊总额付费 + 慢病门诊付费
预防：按人头付费（一、二级预防）
政府资金激励：
基本药物补偿资金和公共卫生均等化资金作为一、二级预防激励手段

医保支付：
住院：单病种定额结算 + 院内病种总额付费
门诊：慢病门诊支付
社保资金激励：
定额结算，结余归医院，按绩效分配
(2) Hospital clinical management pathway
Remote two-way cooperative pathway

Use a platform to connect center and community hospitals, through integrating patient health record, establish management system for two-way referral.
Two-way referral path with IT Innovation

1. Technology
   - build an internet-based IT platform, standardize electronic health record, improve community doctor's IT skills.

2. Standard guideline
   - build a standard plan for chronic disease management

3. Software notice and monitor
   Through new technology to build a two-way referral system, notify doctor and patient, at the same time monitor if big hospitals achieve the standard for downward patient referral

4. Two-way coordination
   Follow up of down-referral patients, complete treatment.
Chronic disease prevention and management system

Use chronic disease and cvd stroke as pilot diseases, use medical insurance payment system, two-way referral incentive system, define all levels of healthcare institutions’ tasks

Form a system with health education, population screening, prevention-intervention, standard treatment, rehabilitation

Integrated modal with grassroots diagnosis, two-way referral, acute/chronic separation, integrated care

Improve health service system’s cost-effectiveness, utilization of health resources, and reduce patient’s financial burden

Chronic disease prevention and management system

Adequate technology: combine drug and life style intervention, form an adequate system of prevention and treatment
Next step

• Systematically integrate BMJ best practices, develop local family doctor decision making system, continue to expand diseases types and realize standardization and transformation.
• Establish family doctor incentive mechanism – contract service signing fee
• Develop public/private insurance to fulfill all needs
Future health service trend:

- “防、治、康、养” 一体化模式
- 智慧分级诊疗模式
- 人口健康管理模式
Future

- To provide universal healthcare to all population, is the solemn commitment made by the government to build a moderately prosperous society.
- Family doctor system is an important cornerstone of this commitment.
- General Practice is not only a concept of discipline, it is also a transformation of health service concept.
- To change patient's behavior, we must first change the health care delivery model and physician practice patterns
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