2008~

A Community-Hospital Collaborative Approach for Diabetes Management in Beijing

BCDS study group
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Prevalence of Diabetes increasing in China

Year (diagnosis standard)	Sample (10 thousand)	Age (years)	DM prevalence (%)	IGT prevalence (%)
1980[a] (LanZhou)	30	-	0.67	-
1986 (WHO 1985)	10	25-64	1.04	0.68
1994 (WHO 1985)	21	25-64	2.28	2.12
2002 (WHO 1999)	10	≧18	Urban 4.5 Rural 1.8	IFG 2.7 1.6
2007~2008 (WHO 1999)	4.6	≧20	**9.7**	**15.5[b]**

a：fasting plasma glucose ≥130mg/dl, or (and) 2-hour glucose ≥200mg/dl, or (and) meet at least 3 points with OGTT (0′125，30′190，60′180，120′140，180′125 (mg/dl) ，Oral Glucose 100g)

b：prediabetes, including IFG、IGT、or IFG+IGT

China Society of Diabetes, China Guideline for Type 2 Diabetes (2013), Chin J Diabetes Mellitus, July 2014, 6(7):447-498.

Diabetes around the world

International Diabetes Federation

Top ten countries/territories for number of people with diabetes (20-79 years), 2015 and 2040

2015

Rank	Country/territory	Number of people with diabetes
1	China	109.6 million (99.6-133.4)
2	India	69.2 million (56.2-84.8)
3	United States of America	29.3 million (27.6-30.9)
4	Brazil	14.3 million (12.9-15.8)
5	Russian Federation	12.1 million (6.2-17.0)
6	Mexico	11.5 million (6.2-13.7)
7	Indonesia	10.0 million (8.7-10.9)
8	Egypt	7.8 million (3.8-9.0)
9	Japan	7.2 million (6.1-9.6)
10	Bangladesh	7.1 million (5.3-12.0)

2040

Rank	Country/territory	Number of people with diabetes
1	China	150.7 million (138.0-179.4)
2	India	123.5 million (99.1-150.3)
3	United States of America	35.1 million (33.0-37.2)
4	Brazil	23.3 million (21.0-25.9)
5	Mexico	20.6 million (11.4-24.7)
6	Indonesia	16.2 million (14.3-17.7)
7	Egypt	15.1 million (7.3-17.3)
8	Pakistan	14.4 million (10.6-20.4)
9	Bangladesh	13.6 million (10.7-24.6)
10	Russian Federation	12.4 million (6.4-17.1)

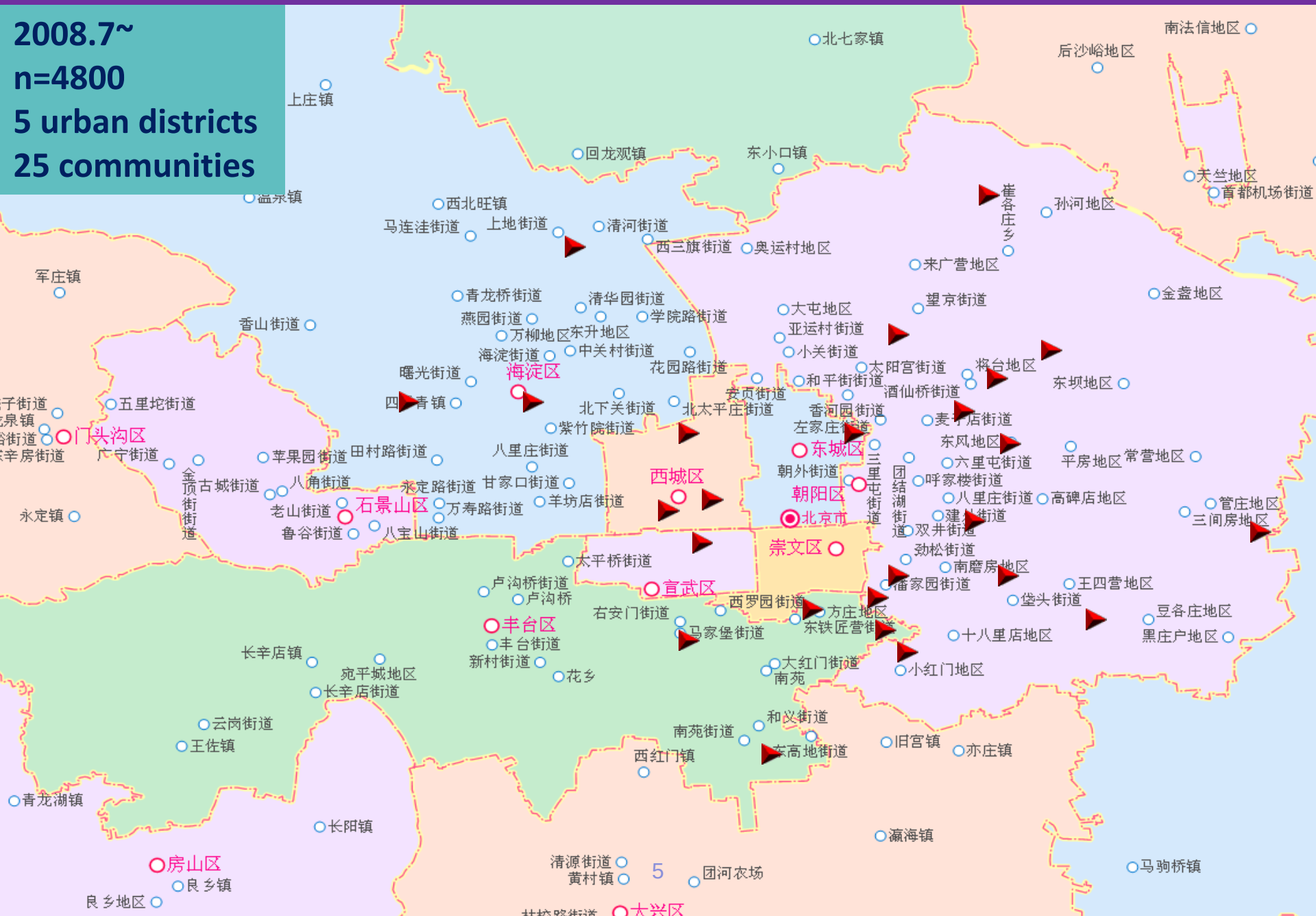
International Diabetes Federation. IDF Diabetes Atlas, 7th edition. Brussels, Belgium.

Background and Purpose

- the global epicenter (diabetes epidemic)
- “poor control” for diabetes (2.7%)
- poor compliance of patients
- GPs from the local community remain a relatively untapped pool of resources

Beijing Community Diabetes Study (BCDS)

2008.7~
n=4800
5 urban districts
25 communities



Collaborative team

- **Experts Panel : 15 Specialists**

(Endocrinology, Cardiology, Ophthalmology, General Practice, Nutrition, Epidemiology and Medical Statistics.)

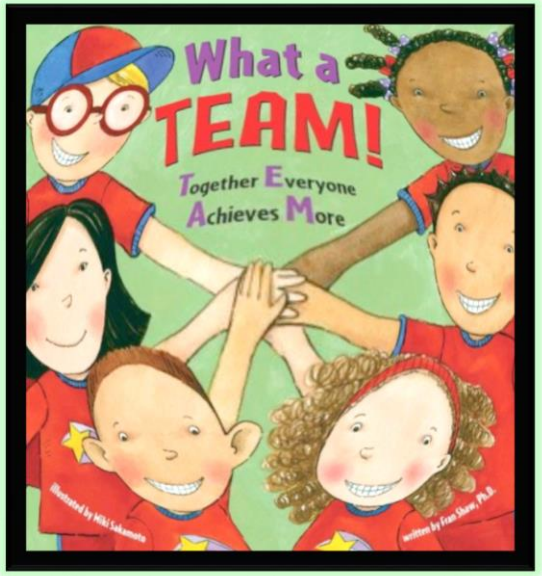
- **15 diabetologists/endocrinologists**

each certain specialist was responsible for certain communities.

- **150 GPs from 25 community centers**

- **A supervision team**

(four trained experts)



Intervention and the scheduled follow-up

- **Personal lifestyle education**

  (group classes, individual interviews)

- **Peer Support Groups**

- **Management adjustment strategies on guidelines**

- **Scheduled follow-up and Study Testing**

  Monthly interview
  Scheduled testing appointment:
  Questionnaire; Records of SMBG; exercise and diet records; Physical examination;
  Laboratory measurements (HbA1c was measured at least every six months); ECG;
  Fundus examination (once a year).

- **CRF record and data upload**

Training program for community GPs

- **Group training class**
  (application of agreed guidelines; a detailed curriculum with a fixed class schedule)

- **Interactive workshops**
  (case discussion monthly)

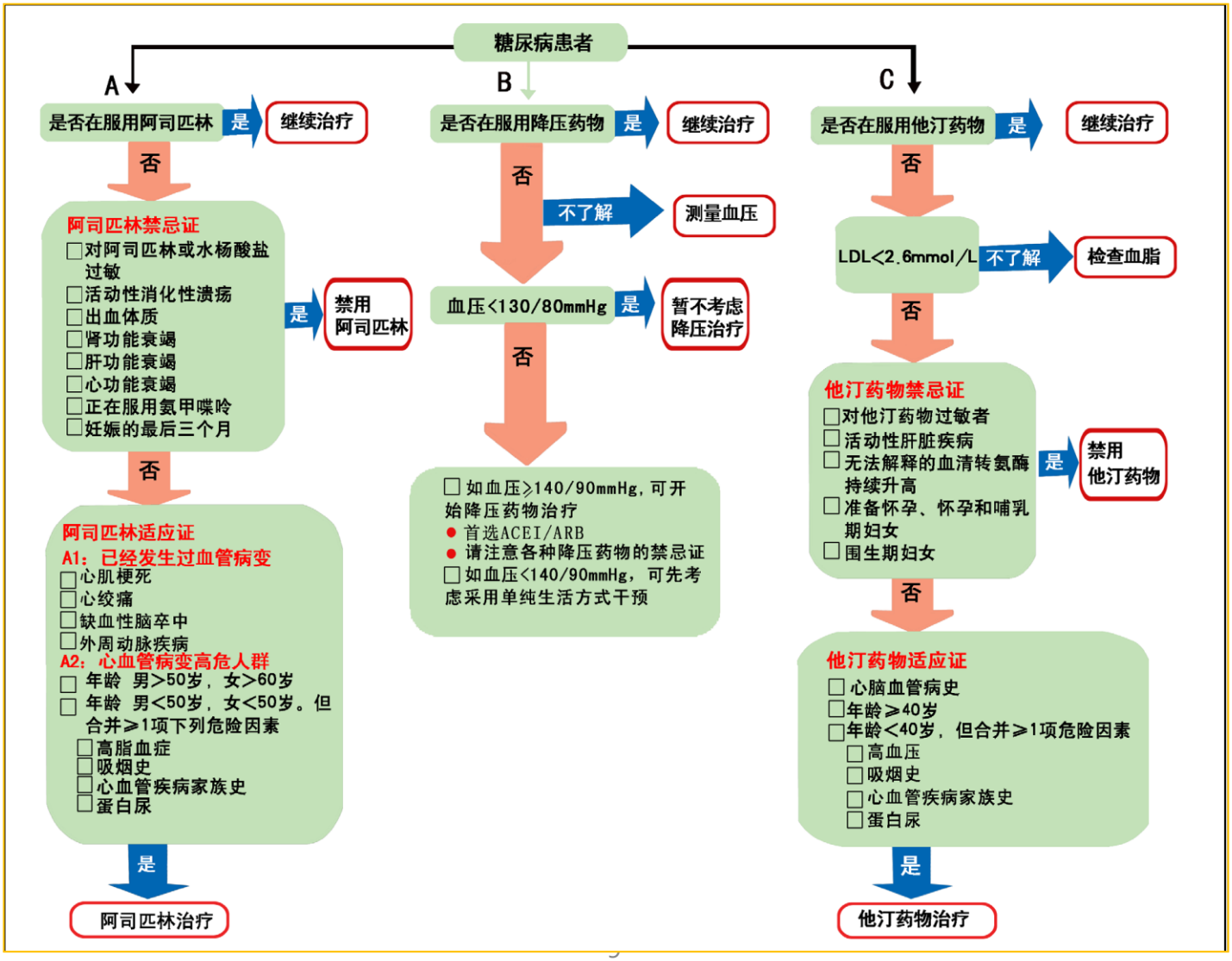
- **Specialist outpatient services in the community**
  (once a week during the whole period)

- **Cooperation**
  (Each specialist will supervise a fixed number of GPs, who are in turn responsible for a fixed number of patients. A computer network facilitates the rapid flow of information and feedback from specialists to GPs and patients.)

China Society of Diabetes, China Guideline for Type 2 Diabetes (2010)

Treatment algorithm for people with type 2 diabetes

(blood pressure control, lipid modifying therapy and anti-platelet therapy)



Online data platform and data upload

- **IE website：** http://www.askmedstat.com/t2dmdata/login.asp

evaluation

- ***Primary outcomes***

  the percentage of patients reaching target control

  (glycaemia, blood pressure and lipid)

- ***Secondary outcomes***

  Incidence and progress of diabetic microvascular complications

  (diabetic retinopathy and albuminuria)

- ***Other outcomes***

  Major vascular events

  (cardiovascular death; myocardial infarction; or stroke)

  All-cause mortality

  self-efficacy: activity, diet, self-monitoring, perceptions and knowledge

  (validated questionnaires and records)

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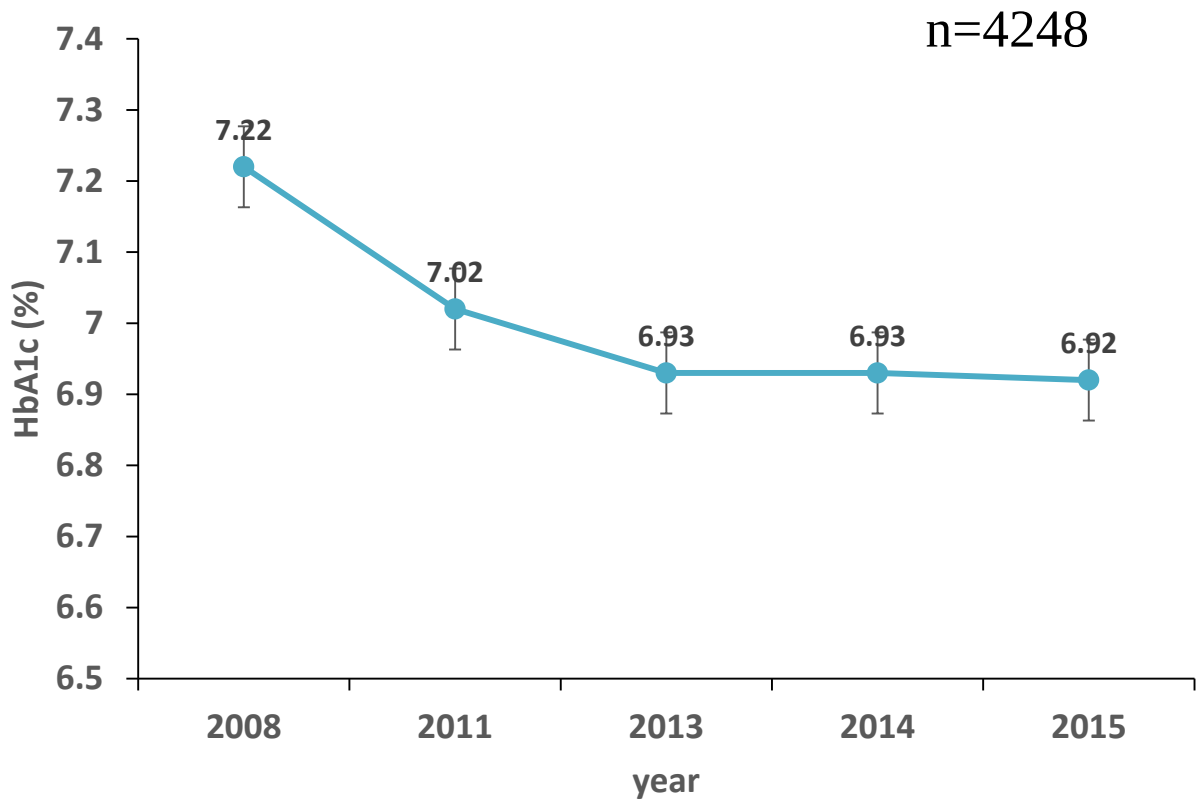
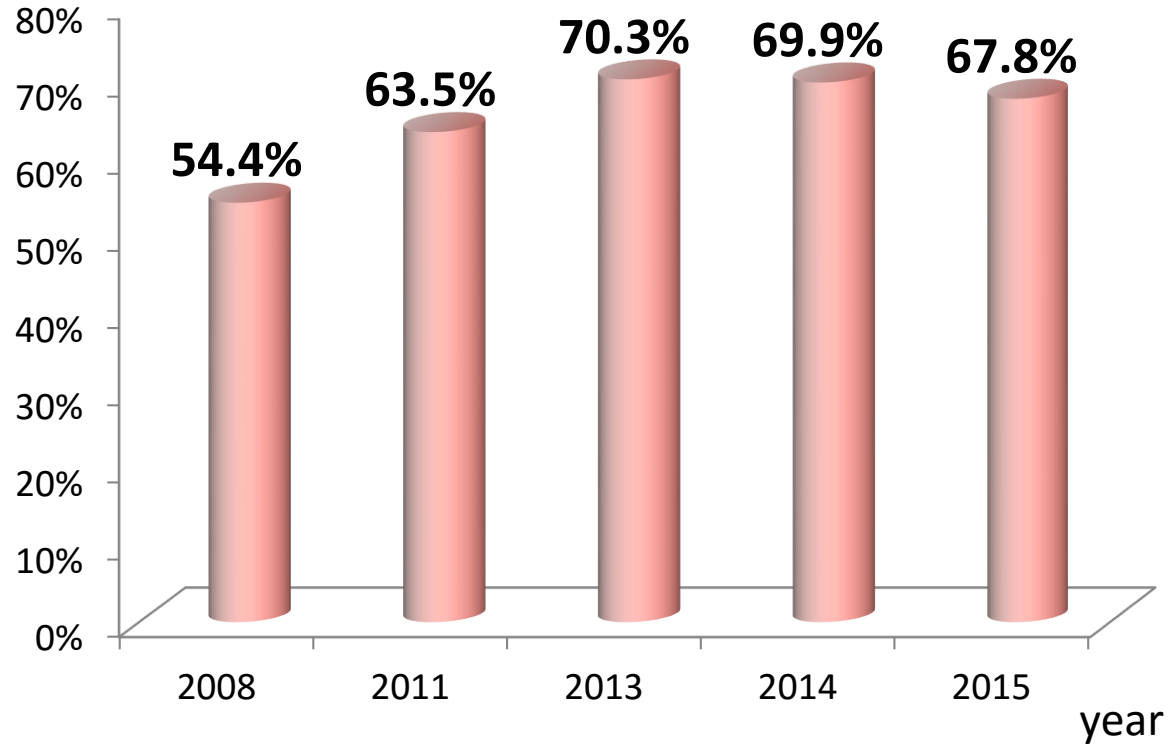
Changes of the mean HbA1c level over 7 years for the overall sample

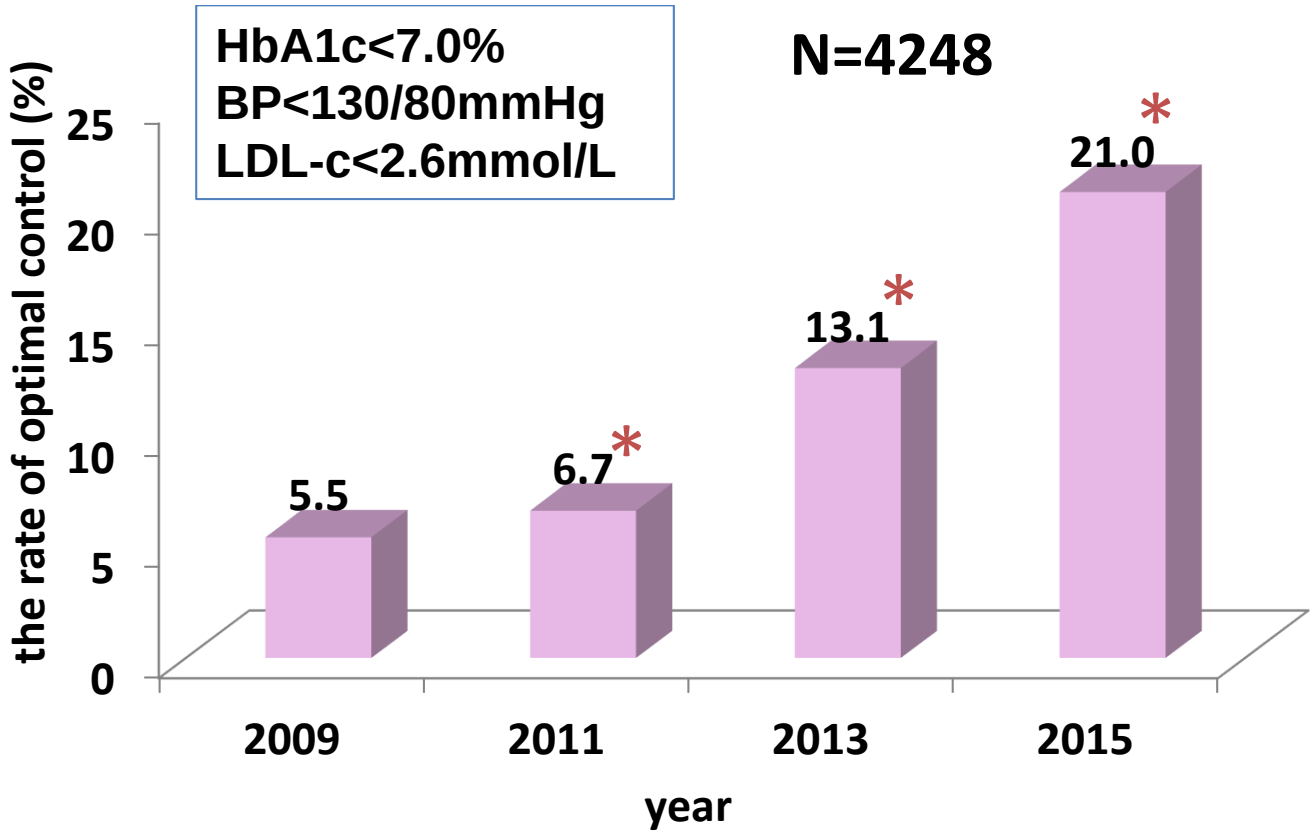


Percentage of patients who met HbA1c＜7.0% over 7 years



the rate of optimal control

(who met all the HbA1c, BP, and LDL-C target values)



vs 2009, *P<0.05

Sub-group analysis

Aim: To examine the influence of educational attainment on long-term glucose control and outcome events.

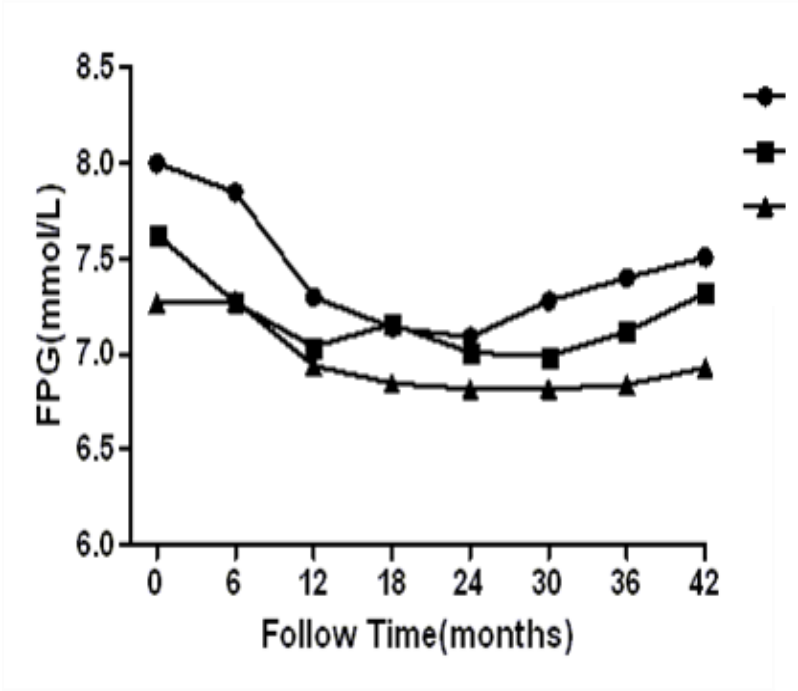
Educational attainment

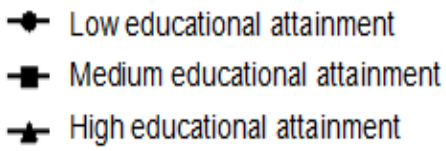
- low (illiteracy or elementary school)
- medium (middle school)
- high (college or academic degree)

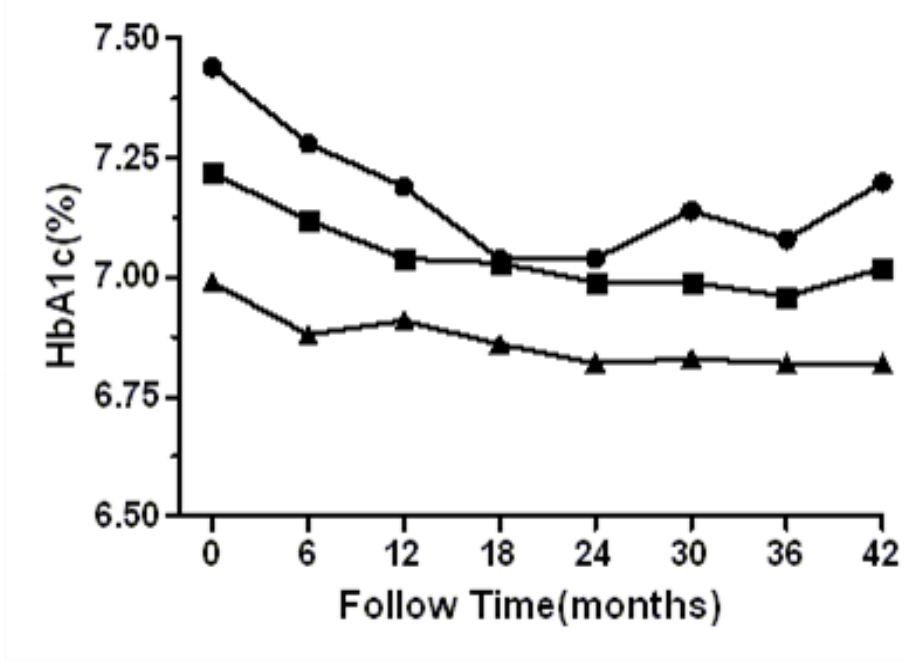
End Events

- **macrovascular complications** (such as myocardial infarction, heart failure, cerebral infarction and stroke)
- **newly-diagnosed microalbuminuria, aggravation of diabetic nephropathy** (clinical grade proteinuria or a twofold plasma creatinine increase or renal replacement therapy)
- **malignant tumors**

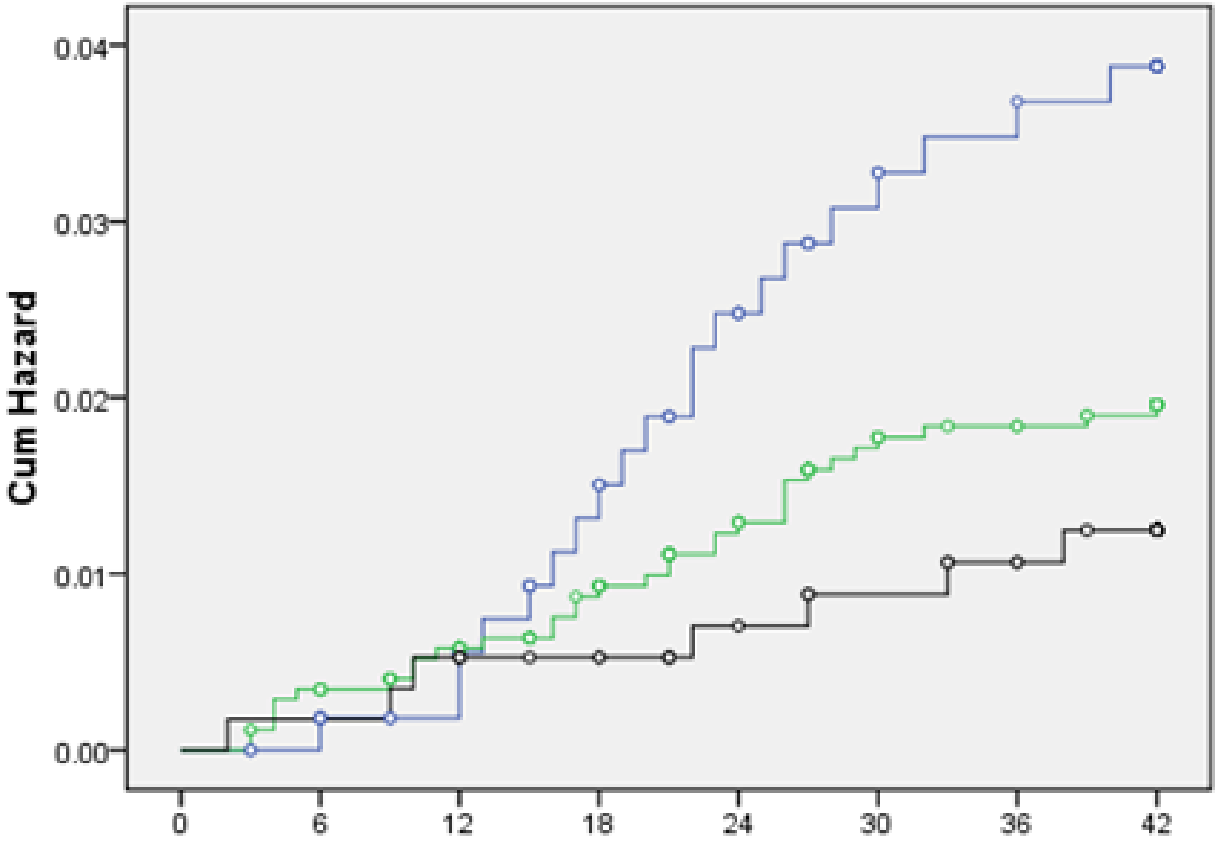
FPG and HbA1c in the different educational attainment groups during the 42 months intervention







Cox regression analysis for outcome events in various education attainment groups during 42-month intervention



Event	0	8	16	27	39	52	56	60
Censor	0	14	48	81	108	131	139	142
All	2866	2844	2802	2758	2719	2683	2671	2664

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summary

- educational level was associated with long-term glucose control, and seemed to be related to the incidence of combined morbid events in people with type 2 diabetes.

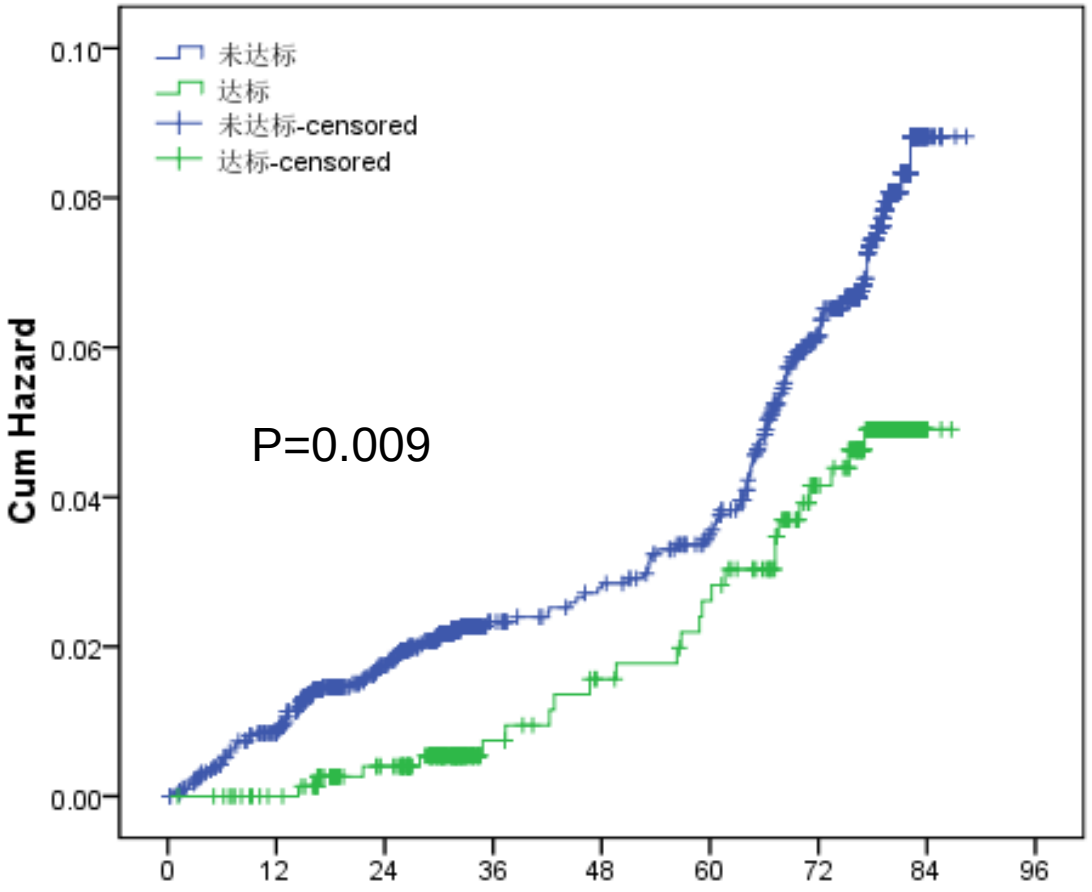
- Extra care may be necessary when treating diabetic patients with low educational attainment.

CVD took up to 44.9% of all end events (327/729)

（updated by 11/06/2015）

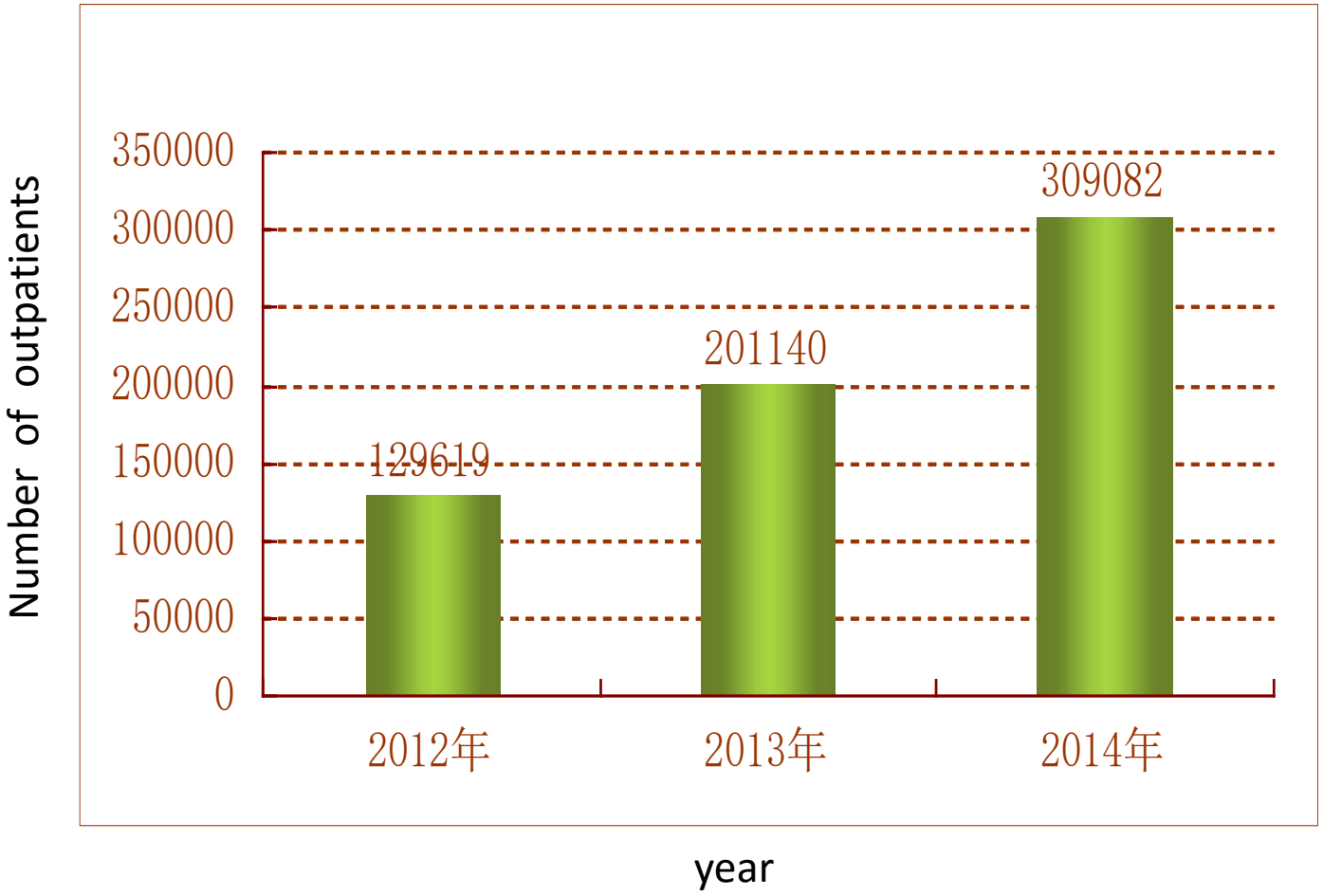
Coronary heart disease	number	Cerebral vascular Disease	number
Myocardial infarction	53	cerebral infarction	94
Coronary Stent/CABG	16	stroke	30
Unstable angina	93	TIA	23
Heart failure	18		
Total	180	Total	147

Cum Hazard of CVD in different groups



未达标	0	26	50	63	70	81	120	144	144
达标	0	0	3	5	9	14	21	24	24

Number of Outpatients in Xinjiekou Community during 2012-2014



Publications

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summary

- ***Community based Collaborative Approach***
  - Collaborative team
  - Multiple centers
  - more than 4000 patients
  - Longitudinal, 7 years
  - Lower cost
  - Strict supervision system
- ***Meaningful effects***
  - Optimal target control
  - GPs obviously improved their knowledge and skills
  - guidelines implementation
  - outpatient services increase
  - self-management of patients

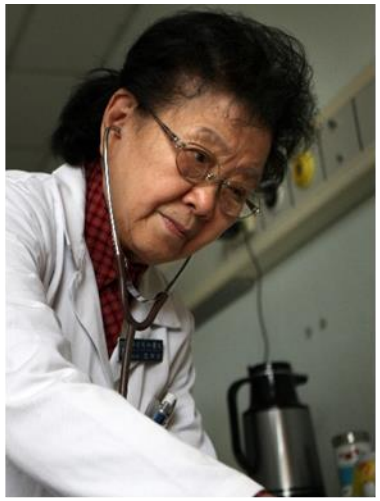
This ongoing project:

- next 3 years follow-up study
- Optimal target control
- CVD risk analysis
- Cost-Effectiveness evaluation

The project has been supporting by

- **the Capital Health Science Development funding (2007-1035)**
- **Special Scientific Research on Capital Health Development (2011-2005-01, 2016-1-2057)**
- **IDF-BRIDGES funding (ST12-024)**

Experts Panel and Principal Investigators



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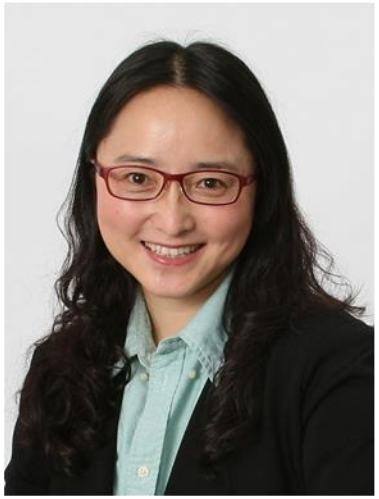

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Thanks!

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TEAM-Together Everyone Achieves More