Supplemental Material

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Section 1 Study Organization

1. PARTICIPANT ORGANIZATION

1.1 *Participating Hospitals*

Participating hospitals included all the secondary and tertiary hospitals capable of providing diabetes care in the investigated 13 areas (listed in Section 2 of this document). Each participating hospital consists of endocrinologists and/or pediatricians (investigators) who provide diabetes care for diabetic patients and data necessary for the successful completion of the protocol.

Responsibilities of participating hospital included:

a) Identifying patients with type 1 diabetes mellitus (T1D) eligible for the study;

b) Collecting data in a standardized fashion consistent with the study protocol;

c) Clarifying the diagnosis and giving feedback on the diagnosis of T1D, providing any previously absent data related to diagnosis if available, when asked by the Data Coordinating Service Provider (DCSP);

The complete list of participating hospitals is attached at the end of this section. A total of 505 hospitals has participated in the Epidemiological study of Type 1 Diabetes Mellitus in China (T1D China), including 18 pediatric centers.

1.2 Coordinating Center

The coordinating center is located in the Third Affiliated Hospital of Sun Yat-sen University, Guangzhou, China.

The Coordinating Center (CoC) responsibilities include:

a) Preparing the protocol, registry forms and manuals of the study, with the guidance and assistance of Steering Committee;

b) Monitoring progress and quality of the study;

c) Providing data entry software (EpiData v.3.1, EpiData Association, Odense Denmark);

d) Providing training in data collecting, data entry for Data Coordinating Service Provider (DCSP);

e) Assuring data quality and study performance;

f) Providing reports regarding eligible participants and data collection;

g) Providing support for committee meetings;

h) Preparing the manuscripts of the study.

1.3 Data Coordinating Service Provider (DCSP)

DCSP responsibilities include:

a) Collecting the registry forms registered by the investigators from the participating hospitals;

b) Completing the double entry of the cases with the corresponding registry forms into EpiData;

c) Inspecting the submitted cases for any inconsistence between the electronic forms and the data input in EpiData, and for any missing data in mandatory fields and apparent mistakes;

d) Contacting the corresponding investigators to ensure the uncertain cases were eligible and to mend the data where accessible;

e) Anonymizing cases submitted by the investigators and sending them to Data Management Committee.

1.4 Funder

T1D China is authorized by the Bureau of Medical Administration, Inspection and Supervision of National Health and Family Planning Commission of the People's Republic of China (NHFPC), funded by China International Medical Foundation (CIMF), and supervised by Chinese Medical Association (CMA).

2. COMMITTEE STRUCTURE

2.1 Steering Committee and Consultant Committee

The chairman of main study-wide committees (see below), experts from the CMA, experts recommended by Chinese Diabetes Society (CDS), experts recommended by Chinese Society of Endocrinology (CSE), experts recommended by Chinese Pediatric Society (CPS), and Prof.

Elizabeth J. Mayer-Davis from the Departments of Nutrition and Medicine, University of North Carolina, Chapel Hill make up Steering Committee and Consultant Committee. The Steering Committee makes final decisions on scientific design of protocol, protocol changes, and gives final approval prior to submission for all manuscripts.

Consultant Committee

General Counsel

Zhu Chen, MD, PhD	President of CMA	China's Minister of Health

Consultants

Jialun Chen, MD	Ruijin Hospital Shanghai Jiao Tong University
Manyin Xu, MD	Ruijin Hospital Shanghai Jiao Tong University
Kunsan Xiang, MD	Shanghai Jiao Tong University Affiliated Sixth People's Hospital
Changyu Pan, MD	Chinese PLA General Hospital
Wenying Yang, MD	China-Japan Friendship Hospital
Xiujun Li, MD	West China Hospital, Sichuan University
Jiawei Chen, MD	Jiangsu Province Hospital

Steering Committee

Chairman

Jianping Weng, MD, PhD	Endocrinology	The Third Affiliated Hospital of Sun Yat-sen University

Members

Linong Ji, MD	Endocrinology	Peking University People's Hospital

Weiping Jia, MD, PhD	Endocrinology	Shanghai Jiao Tong University Affiliated Sixth People's Hospital
Dajin Zou, MD	Endocrinology	Changhai Hospital
Juming Lu, MD	Endocrinology	Chinese PLA General Hospital
Zhiguang Zhou, MD, PhD	Endocrinology	The Second Xiangya Hospital of Central South University
Dalong Zhu, MD	Endocrinology	Nanjing Drum Tower Hospital
Lixin Guo, MD, PhD	Endocrinology	Beijing Hospital
Yiming Mu, MD, PhD	Endocrinology	Chinese PLA General Hospital
Jianzhong Xiao, MD, PhD	Endocrinology	Beijing Tsinghua Chang Gung Hospital
Xiaoping Luo, MD, PhD	Pediatrics	Tongji Hospital of Tongji Medical College of Huazhong University of Science & Technology
Elizabeth J. Mayer Davis, PhD	Endocrinology	Departments of Nutrition and Medicine, University of North Carolina, Chapel Hill

2.2 Expert Committee on Diagnosis of Type 1 Diabetes Mellitus

The Expert Committee on Diagnosis of Type 1 Diabetes Mellitus is chaired by Professor Linong Ji and Professor Dalong Zhu. The committee is consisted of experts on type 1 diabetes, and the names of the members are presented as below. The chief responsibility of the committee is to make the final judgement of the case diagnosis based on the data submitted by Data Management Committee.

Chairman

Linong Ji, MD	Endocrinology	Peking University People's Hospital
Dalong Zhu, MD	Endocrinology	Nanjing Drum Tower Hospital

Members

Xiaohui Guo, MD, PhD	Endocrinology	Peking University First Hospital
Yu Zhu, MD	Endocrinology	Peking University People's Hospital
Zhongyan Shan, MD, PhD	Endocrinology	The First Hospital of China Medical University
Weiqiong Gu, MD, PhD	Endocrinology	Ruijin Hospital Shanghai Jiao Tong University School of Medicine
Qin Huang, MD	Endocrinology	Changhai Hospital, Shanghai
Tao Yang, MD, PhD	Endocrinology	Jiangsu Province Hospital
Xia Li, MD, PhD	Endocrinology	The Second Xiangya Hospital of Central South University
Di Wu, MD	Pediatrics	Beijing Children's Hospital, Capital Medical University
Le Huang, MD	Pediatrics	Tianjin Children's Hospital,
Xiaoping Luo, MD, PhD	Pediatrics	Tongji Hospital of Tongji Medical College of Huazhong University of Science & Technology
Xiuzhen Li, MD	Pediatrics	Guangzhou Women and Children's Medical Center

2.3 Data Management Committee (DMC)

The responsibilities of the committee include:

a) Collecting the anonymized data submitted by *DCSP* and storing them properly*;*

b) Examining the data, and sending the uncertain cases to the *Expert Committee on Diagnosis of Type 1 Diabetes Mellitus;*

c) Mediating case ascertainment supervised by the *Expert Committee on Diagnosis of Type 1 Diabetes Mellitus.*

Chairman

Lixin Guo, MD	Endocrinology	Beijing Hospital
Jinhua Yan, MD, PhD	Endocrinology	The Third Affiliated Hospital of Sun Yat-sen University

Members

Hongyu Kuang, MD	Endocrinology	The First Affiliated Hospital of Harbin Medical University
Yanli Cao, MD	Endocrinology	The First Hospital of China Medical University
Xiaofan Jia, MD	Endocrinology	Peking University People's Hospital
Jiemin Pan, MD, PhD	Endocrinology	Shanghai Jiao Tong University Affiliated Sixth People's Hospital
Lirong Li, MD, PhD	Endocrinology	Nanjing Drum Tower Hospital
Xinli Zhou, MD, PhD	Endocrinology	Shandong Provincial Hospital
Xinguo Hou, MD, PhD	Endocrinology	Qilu of Shandong University
Li Yuan, MD	Endocrinology	Union Hospital, Tongji Medical College, Huazhong University of Science & Technology
Zhen Wang, MD, PhD	Endocrinology	The Second Xiangya Hospital of Central South University
Hai Li, MD	Endocrinology	The First Affiliated Hospital of Sun Yat-sen University
Xingwu Ran, MD	Endocrinology	West China Hospital, Sichuan University
Tao Liu, MD	Endocrinology	Xijing Hospital
Jing Liu, MD	Endocrinology	Gansu Provincial Hospital

Lanjie He, MD	Endocrinology	General Hospital of Ningxia Medical University
Sihui Luo, MD	Endocrinology	The Third Affiliated Hospital of Sun Yat-sen University
Daizhi Yang, MD, PhD	Endocrinology	The Third Affiliated Hospital of Sun Yat-sen University

2.4 Statistics Committee

Statistics committee, consisting of statisticians and endocrinologist, will involve in all stages of study, from study design to co-authoring scientific presentation and papers. The responsibilities of the committee are to assisted study design including sample size calculations and compile the statistical analysis plan before the study, to monitor the data in the middle of the study, to develop statistics model, and to analyze and generate statistics reports.

Members

Xueqin Wang, PhD	Statistics	Sun Yat-sen University
Na You, PhD	Statistics	Sun Yat-sen University
Siting Liang, BS	Statistics	Sun Yat-sen University
Xueying Zheng, MD	Endocrinology	The Third Affiliated Hospital of Sun Yat-sen University

2.5 Executive Committee

The Executive Committee consists of the chairmen of Steering Committee, the Principal Investigators of 13 areas, members from CMA and CIMF officers, and members from the CoC. The

committee organize and attend face to face meetings and conference calls to troubleshoot administrative problems as needed.

Participating hospitals in T1D China in alphabetical order.

(* Tertiary hospitals.)

161 Hospital*; 202 Hospital*; 363 Hospital of Chengdu; 458th Hospital of PLA*; 463 Hospital*; 630 Hospital of Yanliang District, Xi'an City; Affiliated Hospital of Chengdu University*; Affiliated Hospital of Gansu College of Traditional Chinese Medicine; Affiliated Hospital of Sichuan Institute of Traditional Chinese Medicine*; Air Force General Hospital, People's Liberation Army of China*; Anning Branch of Lanzhou Military District General Hospital; An'ting Hospital; Authority Hospital of Hunan Province; Baiyun District People's Hospital of Guangzhou; Baoshan District Central Hospital; Bayan County People's Hospital; Beijing Aerospace General Hospital; Beijing Armed Police Corps Hospital*; Beijing Changping Hospital; Beijing Changping Traditional Chinese Medicine Hospital; Beijing Children's Hospital*; Beijing Chuiyangliu Hospital Affiliated to Tsinghua University; Beijing Electric Power Hospital*; Beijing Friendship Hospital, Capital Medical University*; Beijing Haidian Hospital (Beijing Haidian Section of Peking University Third Hospital); Beijing Hepingli Hospital; Beijing Hospital of Traditional Chinese Medicine; Beijing Hospital*; Beijing Huilongguan Hospital; Beijing Jianggong Hospital; Beijing Jishuitan Hospital*; Beijing Luhe Hospital, Capital Medical University; Beijing Mentougou District Hospital; Beijing Miyun Hospital; Beijing Pinggu Hospital; Beijing Puren Hospital; Beijing Shijingshan Hospital; Beijing Shijitan Hospital, Capital Medical University*; Beijing Tian Tan Hospital, Capital Medical University*; Beijing Tongren Hospital, Capital Medical University*; Beijing University of Chinese Medicine Third Affiliated Hospital; Beijing Wangfu Hospital of Integrated Chinese and Western Medicine*; Beijing Yanhua Hospital*; Beijing Anzhen Hospital, Capital Medical University*; Beijing Chaoyang Hospital, Capital Medical University*; BENQ Medicial Center*; Binxian Chinese Medicine Hospital; Binxian People's Hospital; Capital Institute of Pediatrics*; Cardio-cerebrovascular Disease Hospital of General Hospital of Ningxia Medical University; Ceneral Hospital of The Yangtze River Shipping (Wuhan Brain Hospital)*; Central Hospital Affiliated to Shenyang Medical College*; Central Hospital of Sujiatun District, Shenyang City; Central Hospital of the Yangtze River Shipping*; Changhai Hospital*; Changsha Central Hospital*; Changsha Hospital for Maternal & Child Health Care; Changsha Provincial Hospital of TCM; Chengdu Aerospace Hospital; Chengdu Fifth People's Hospital; Chengdu First People's Hospital *; Chengdu Hospital of Air Force*; Chengdu Military General Hospital*; Chengdu Railway Center Hospital*; Chengdu Second People's Hospital*; Chengdu Shang Jin Nan Fu Hospital*; Chengdu Tumor Hospital; Chengdu Women & Children's Central Hospital*; Children's Hospital of Fudan University*; Children's Hospital of Shanghai*; China Aerospace Science and Industry Corporation 731 Hospital; China Meitan Hospital*; China-Japan Friendship Hospital*; Chinese Medicine Hospital of A'cheng District of Harbin; Chinese People's Liberation Army General Hospital*; Chongming Central Hospital; Chongzhou People's Hospital; Civil Aviation General Hospital*; Clifford Hospital; Conghua Central Hospital; Dahua Hospital; Daxing Teaching Hospital of Capital Medical University; Daxing Traditional Chinese Medicine Hospital Affiliated to Beijing University of Chinese Medicine; Dongfang Hospital of Beijing University of Chinese Medicine *;

Dongshan District People's Hospital of Guangzhou; Dongzhimen Hospital Beijing University of Chinese Medicine*; Dujiangyan Medical Center; Faku Central Hospital; Fangshan Traditional Medical Hospital of Beijing; Fangzheng County People's Hospital; Fangzheng Forestry Bureau Hospital; Fifth Hospital in Wuhan*; First Affiliated Hospital of People's Liberation Army General Hopital*; First Affiliated Hospital, Heilongjiang University of Chinese University; Fuxing Hospital, Capital Medical University*; Gansu Cadres Health Care Hospital; Gansu Provincial Hospital; Gansu Provincial Hospital of TCM; General Hospital of Armed Police Forces*; General Hospital of Beijing Military Region*; General Hospital of Guangzhou Military Command of PLA*; General Hospital of Heilongjiang Agricultural Reclamation Bureau; General Hospital of the Rocket Forces, People's Liberation Army of China*; Gongli Hospital; Guanganmen Hospital, China Academy of Chinese Medical Science*; Guangdong General Hospital of Chinese People's Armed Police Forces *; Guangdong General Hospital*; Guangdong Second Provincial General Hospital*; Guangdong Second Traditional Chinese Medicine Hospital*; Guangdong Traditional Chinese Medicine Hospital*; Guangwai Hospital of Xuanwu District, Beijing; Guangzhou Children's Hospital*; Guangzhou First People's Hospital*; Guangzhou Hospital of TCM*; Guangzhou Red Cross Hospital*; Guangzhou twelfth People's Hospital *; Harbin Geriatric Hospital; Harbin 242 Hospital; Harbin Boiler Hospital; Harbin Children's Hospital*; Harbin Electric Hospital; Harbin Medical University Cancer Hospital; Harbin provincial Chinese Medicine Hospital; Harbin Red Cross Central Hospital; Harbin Steam Turbine Hospital; Harbin The First Hospital; Heilongjiang Academy of TCM; Heilongjiang Electric Power Hospital; Heilongjiang Provincial Hospital; Heilongjiang Provincial Hospital in Nangang; Heilongjiang Ruijing Hospital; Hexian Memorial Affiliated Hospital of Southern Medical University; HIT Hospital (Harbin Institute of Technology Hospital); Hongxing Hospital of Daxing District,Beijing; Hospital of Chengdu Jinsha; Hospital of Chengdu Office of People’s Government of Tibetan Autonomous Region ; Hospital of China National Heavy Duty Truck Group Corporation; Hospital of Sichuan Highway Department; Huadong Hospital Affiliated to Fudan University*; Huadu District People's Hospital of Guangzhou; Huaiyin District People's Hospital of Jinan; Huangpu District Central Hospital; Huashan Hospital, Fudan University*; Huashan North Hospital of Fudan University, Baoshan Campus; Hubei Maternal and Child Health Hospital*; Hubei Provincial Hospital of TCM (Guanggu District)*; Hubei Provincial Hospital of TCM*; Hubei Provincial Hospital of the Chinese Armed Police Force*; Hubei Xinhua Hospital*; Huguo Temple Traditional Chinese Medicine Hospital Affiliated to Beijing University of Chinese Medicine; Hunan Aerospace Hospital; Hunan Children's Hospital*; Hunan Provincial People's Hospital*; Hunan Provincial Maternal and Child Health Care Hospital*; Hunan Provincial Mawangdui Hospital*; Hunan Provincial Wangwang Hospital*; Integrated Traditional Chinese Medicine and Western Medicine Affiliated to Hunan University of Traditional Chinese Medicine*; Jiading District Central Hospital; Jiangsu Hospital of Integrated Traditional Chinese Medicine and Western Medicine*; Jiangsu Province Hospital of TCM*; Jiangsu Province Hospital*; Jiangxia Traditional Chinese Medicine Hospital; Jinan 106 Hospital; Jinan Central Hospital*; Jinan Hospital; Jinan Hospital of TCM*; Jinan Military General Hospital*; Jinan Shizhong People's Hospital; Jing'An District Central Hospital of Shanghai; Jinjiang Maternity and Child Health Hospital; Jinniu Maternity and Child Health Hospital of Chengdu; Jinshan Hospital of Fudan University*; Jiyang People's Hospital; Jiyang Traditional Chinese Medicine Hospital; Kongjiang Hospital; Lanzhou Chengguan People's Hospital; Lanzhou Chengguan Train Station CHSC; Lanzhou General Hospital, Lanzhou Command; Lanzhou Specialized Hospital of Diabetic

Nephropathy; Lanzhou TCM Hospital; Lanzhou University Second Hospital; Liangxiang Hospital of Fangshan District, Beijing; Liaoning Diabetes Mellitus Center; Liaoning Electricity Central Hospital; Liaozhong People's Hospital; Licheng District Traditional Chinese Medicine Hospital of Jinan; Lingwu People's Hospital; Lingwu TCM Hospital; Liwan District People's Hospital of Guangzhou; Liwan District Second People's Hospital of Guangzhou; Lixia District People's Hospital of Jinan; Liyuan Hospital of Tongji Medical college of Huazhong University of Science & Technology*; Longhua Hospital, Shanghai University of Traditional Chinese Medicine*; Maigaoqiao Hospital; Maternal and Child Health Hospital of Pinggu District; Maternal and Child Health Hospital of Sichuan Province*; Maternal and Child Health Hospital of Xianxing District, Beijing; Medical Center Hospital of Qionglai City; Mulan County Hospital of TCM; Nanfang Hospital*; Nanjing Children's Hospital*; Nanjing Drum Tower Hospital*; Nanjing First Hospital*; Nanjing General Hospital*; Nanjing Jiangbei People's Hospital; Nanjing Jiangning Hospital; Nanjing Jianye Hospital; Nanjing Meishan Hospital; Nanjing Municipal Government Hospital; Nanjing Pukou Central Hospital; Nanjing Qinghuai Hospital; Nanjing Red Cross Hospital; Nanjing Tongren Hospital*; Nanjing Yangzi Hospital; Nanjing Yuhua Hospital; Nanxiang Hospital; Navy General Hospital*; Ningxia People's Hospital; No.3 People's Hospital of Chengdu Pujiang Hospital and Pujiang People's Hospital; No.4 West China Teaching Hospital, Sichuan University; No.414 Hospital; No.454 Hospital*; No.81 Hospital*; North Hospital of Xi'an City; Nuclear Industry 416 Hospital; Outpatient Department of Hebei Provincial Authorities; Panyu District People's Hospital of Guangzhou; Peking Union Medical College Hospital*; Peking University First Hospital*; Peking University Hospital; Peking University People's Hospital*; Peking University Shougang Hospital*; Peking University Third Hospital YanQing Hospital; Peking University Third Hospital*; People's Hospital of Changqing District of Jinan; People's Hospital of Daoli District of Harbin; People's Hospital of Dayi County; People's Hospital of Hannan District of Wuhan; People's Hospital of Lanzhou Honggu; People's Hospital of Xiangfang District of Harbin; People's Hospital of Yangcheng District of Harbin; People's Hospital of Pengzhou; People's Hospital of Wenjiang District, Chengdu; Pi County People's Hospital; Ping'an Hospital of Chengxi District, Beijing; Pingyin People's Hospital; Pingyin Traditional Chinese Medicine Hospital; Posts and Telecommunications Hospital *; Pudong District People's Hospital; Putuo District Central Hospital; Putuo People's Hospital; Qianfoshan Hospital*; Qilu Children's Hospital of Shandong University*; Qilu Hospital of Shandong University*; Qingyang Maternity and Child Health Hospital, Chengdu; Qixia City People's Hospital; Quyang Hospital; Renji Hospital of Shanghai Jiao Tong University School of Medicine, East Campus*; Rongcheng Hospital; Rongjun Hospital of Shandong Province; Ruijin Hospital, Shanghai Jiao Tong University School of Medicine*; Second Hospital of Chaoyang City; Second Provincial People's Hospital; Shaanxi Aerospace Hospital; Shaanxi Friendship Hospital*; Shaanxi General Hospital of the Chinese Armed Police Force*; Shaanxi Provincial People's Hospital*; Shaanxi Traditional Chinese Medicine Hospital; Shaanxi Traffic Hospital; Shandong Hospital of Endocrine and Metabolic Diseases; Shandong Jiaotong Hospital; Shandong Police General Hospital; Shandong Provincial Hospital*; Shandong Provincial Hospital, Western Campus*; Shanghai 2nd People's Hospital; Shanghai Changzheng Hospital*; Shanghai Dongfang Hospital*; Shanghai Eighth People's Hospital; Shanghai Fengxian District Central Hospital; Shanghai General Hospital*; Shanghai General Hospital, Baoshan Campus; Shanghai Gonghui Hospital; Shanghai Minhang District Central Hospital; Shanghai Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine*; Shanghai Northern Hospital; Shanghai Pudong Hospital; Shanghai Punan

Hospital; Shanghai Putuo District Liqun Hospital; Shanghai Seventh People's Hospital; Shanghai Sixth People's Hospital*; Shanghai Sixth People's Hospital, Jinshan Campus; Shanghai Tenth People's Hospital*; Shanghai Third People's Hospital, Shanghai Jiao Tong University School of Medicine*; Shanghai Yangsi Hospital; Shanghe Traditional Chinese Medicine Hospital; Shangzhi People's Hospital; Shengjing Hospital of China Medical University*; Shenyang Children's Hospital*; Shenyang CRRC Hospital; Shenyang Fifth People's Hospital*; Shenyang First People's Hospital*; Shenyang Fourth People's Hospital*; Shenyang Red Cross Hospital*; Shenyang Seventh People's Hospital*; Shenyang Weikang Hospital*; Shenzhou Hospital of Shenyang Medical College*; Shidong Hospital; Shihua General Hospital of LPCC; Shuangcheng People's Hospital; Shuangnan Hospital of Chengdu*; Shuguang Hospital*; Sichuan Academy of Medical Science & Sichuan Provincial People's Hospital*; Sichuan Province Forestry Center Hospital; Songjiang District Central Hospital; Staff Hospital of Jinan Iron& Steel Group Corporation; Sun Yat-sen Memorial Hospital, Sun Yat-sen University*; Tangdu Hospital*; Teaching Hospital of Chengdu University of T.C.M*; The 157th Hospital of Chinese PLA*; The 211st Hospital of PLA; The 261st Hospital of the Chinese People's Liberation Army; The 263rd Hospital of the Chinese People's Liberation Army; The 2nd Affiliated Hospital of Harbin Medical University; The 305th Hospital of People's Liberation Army*; The 306th Hospital of Chinese People's Liberation Army*; The 309th Hospital of Chinese People's Liberation Army*; The 451 Hospital of Chinese People's Liberation Army *; The 455th Hospital of Chinese People's Liberation Army*; The 456th Hospital of Chinese People's Liberation Army*; The 457 Hospital of People's Liberation Army *; The 521 Hospital of Ordnance Industry; The 81th Hospital of Chinese People's Liberation Army*; The Affiliated Hospital of Ningxia Medical University; The Affiliated Hospital to Shandong University of Traditional Chinese Medicine*; The Central Hospital of Wuhan*; The Chinese People's Armed Police Corps Hospital of Hunan Province*; The Eastern Hospital of the First Affiliated Hospital, Sun Yat-sen University; The Fifth Affiliated Hospital of Guangdong Medical University; The Fifth Affiliated Hospital of Guangzhou Medical University; The Fifth Hospital in Harbin; The Fifth Hospital of Sichuan Province; The Fifth Hospital of PLA; The fifth People's Hospital of Jinan; The Fifth People's Hospital of Shanghai, Fudan University; The First Affiliated Hospital of Chengdu Medical College*; The First Affiliated Hospital of China Medical University*; The First Affiliated Hospital of Guangdong Pharmaceutical University*; The First Affiliated Hospital of Guangzhou Medical University*; The First Affiliated Hospital of Guangzhou University of Traditional Chinese Medicine*; The First Affiliated Hospital of Harbin Medical University; The First Affiliated Hospital of Hunan University of Chinese Medicine*; The First Affiliated Hospital of Jinan University*; The First Affiliated Hospital of Liaoning University of Traditional Chinese Medicine*; The First Affiliated Hospital of Xi'an Jiao Tong University*; The First Affiliated Hospital of Xi'an Medical University; The First Affiliated Hospital, Sun Yat-sen University*; The First Hospital of Tsinghua University*; The First Hospital of Central South University*; The First Hospital of Changsha*; The First Hospital of Fangshan District, Beijing; The First Hospital of Huairou District, Beijing; The First Hospital of Lanzhou University; The First Hospital of PLA; The First People's Hospital of Jiangxia District, Wuhan City; The First People's Hospital of Jinan; The First People's Hospital of Lanzhou City; The First People's Hospital of Longquanyi District, Chengdu; The First People's Hospital of Shuangliu County; The First People's Hospital of Yinchuan; The First People's hospital of Yuzhong County; The First Worker's Hospital of Eastern Suburbs of Xi'an; The Forth Affiliated Hospital of Harbin Medical University; The Forth Hospital of

Changsha*; The Forth Hospital of Harbin; The Fourth Affiliated Hospital of China Medical University*; The Fourth Affiliated Hospital of Liaoning University of Traditional Chinese Medicine*; The Fourth People's Hospital of Shaanxi; The Fourth People's Hospital of Sichuan Province; The General Hospital of Chinese People's Armed Police Forces; The General Hospital of Chinese People's Armed Police Forces, Jiangsu*; The General Hospital of Chinese People's Armed Police Forces, Shanghai*; The General Hospital of Shenyang Military*; The General Worker's Hospital of Wuhan Iron and Steel (Group) Company*; The Hospital of the Fifth Metal Construction Company of China; The No.123 Hospital of Chinese People's Liberation Army*; The No.163 Hospital of Changsha People's Liberation Army*; The No.2 Hospital of Harbin; The Panyu Hospital of the Second Affiliated Hospital, Guangzhou Medical University *; The People's Hospital of Deyang*; The People's Hospital of Dongxihu District, Wuhan City; The People's Hospital of Hannan District, Wuhan City; The People's Hospital of Huangbei District, Wuhan City; The People's Hospital of Liaoning Province *; The People's Hospital of Shanghe County; The People's Hospital of Wuhan University*; The People's Hospital of Xinjin; The People's Hospital of Yanliang District, Xi'an City; The People's Liberation Army National Defense University Hospital*; The Second Affiliated Hospital of China Medical University*; The Second Affiliated Hospital of Guangzhou Medical University*; The Second Affiliated Hospital of Heilongjiang University of Chinese Medicine; The Second Affiliated Hospital of Liaoning University of Traditional Chinese Medicine*; The Second Affiliated Hospital of Xi'an Jiao Tong University (Xibei Hospital)*; The Second Affiliated Hospital of Xi'an Jiao Tong University*; The Second Affiliated Hospital of Xi'an Medical University; The Second Affiliated Hospital to Shandong University of Traditional Medicine*; The Second Hospital of Nanjing Medical University*; The Second Hospital of Shandong University*; The Second People's Hospital of Hunan Province*; The Second People's Hospital of Jintang; The Second People's Hospital of Lanzhou City; The Second People's Hospital of Shaanxi Province*; The Second People's Hospital of Shuangliu County; The Second Worker's Hospital of Wuhan Iron and Steel (Group) Company*; The Second Xiangya Hospital of Central South University*; The Sixth Affiliated Hospital of Sun Yat-sen University; The Sixth People's Hospital of Chengdu; The Third Affiliated Hospital of Guangzhou Medical University*; The Third Affiliated Hospital of Southern Medical University*; The Third Affiliated Hospital of Sun Yat-sen University*; The Third Hospital of Central South University*; The Third Hospital of Changsha*; The Third Hospital of Jinan; The Third People's Hospital of Chengdu*; The Third People's Hospital of Chengdu,Dujiangyan Branch; The Third People's Hospital of Hubei Province*; The Third People's Hospital of Ningxia; The Third People's Hospital of Yinchuan; The Worker's Hospital of Xi'an Roiling Stock Works of China North Group; The Worker's Hospital of Qing'an Group Corporation Ltd.; The Worker's Hospital of Xi'an AERO-Engine Ltd.; The First People's Hospital of Jintang County; Third Hospital of Beijing Armed Police Corps*; Tieying Hospital of Fengtai District Beijing; Tonghe People's Hospital; Tongji Hospital of Tongji Medical college of Huazhong University of Science & Technology*; Tongji Hospital*; Tongren Hospital, Shanghai Jiao Tong Univeristy School of Medicine; Tongzhou Maternity and Child Health Hospital of Beijing*; Traditional Chinese Medicine Hospital of Sujiatun District, Shenyang City; Union Hospital of Tongji Medical college of Huazhong University of Science & Technology (West District) *; Union Hospital of Tongji Medical college of Huazhong University of Science & Technology*; University-Town Hospital of Guangdong Traditional Chinese Medicine Hospital*; West China Hospital, Sichuan University*; West China Second Hospital,S ichuan University*;

Wuchang Hospital of Wuhan Railway Sub Administration; Wuchang People 's Hospital; Wuhan Asian Heart Hospital *; Wuhan Central Hospital of Zhengzhou Railway Administration*; Wuhan General Hospital of Guangzhou Military*; Wuhan Hospital of Traditional Chinese Medicine*; Wuhan Integrated Traditional Chinese Medicine & Western Medicine Hospital*; Wuhan No.10 Hospital; Wuhan No.13 Hospital; Wuhan No.6 Hospital *; Wuhan No.7 Hospital; Wuhan No.9 Hospital; Wuhan Puai Hospital*; Wuhan Puren Hospital*; Wuhan Red Cross Hospital; Wuhan Third Hospital *; Wuhan Women and Children Medical Care Centre*; Wuhan Xinzhou District People's Hospital; Xi'an 141 Hospital; Xi'an Aerospace Hospital; Xi'an Central Hospital of China Railway First Group Co., Ltd.; Xi'an Central Hospital of Zhenghou Railway Administration*; Xi'an Central Hospital*; Xi'an Chang'an Hospital*; Xi'an Children's Hospital*; Xi'an Electric Power Central Hospital; Xi'an Gaoxin Hospital*; Xi'an Hospital of Civil Aviation; Xi'an No.1 Hospital*; Xi'an No.4 Hospital*; Xi'an Traditional Chinese Medicine Hospital*; Xi'an XD Group Hospital*; Xianhua Hospital of Fengtai District, Beijing; Xigu Hospital of Lanzhou University Second Hospital; Xijing Hospital*; Xindu District People's Hospital; Xinhua Hospital Affiliated to Shanghai Jiao Tong University School of Medicine*; Xinmin People's Hospital; Xiyuan Hospital, China Academy of Chinese Medical Science*; Xuanwu Hospital Capital Medical University*; Xuanwu Traditional Chinese Medicine Hospital Beijing*; Xuhui District Central Hospital; Yangpu Hospital, Tongji University; Yanliang Hospital of Xi'an Railway Sub Administration; Yinchuan Women and Children Healthcare Hospital*; Yinchuan TCM Hospital; Yongning County People's Hospital; Yuexiu District People's Hospital of Guangzhou; Yuexiu District Second People's Hospital of Guangzhou; Yueyang Hospital of Integrated Traditional Chinese Medicine and Western Medicine, Shanghai University of Traditional Chinese Medicine*; Zengcheng District People's Hospital of Guangzhou; Zhabei Central Hospital; Zhabei Northern Hospital; Zhangqiu District People's Hospital of Jinan; Zhongda Hospital Southeast University*; Zhongnan Hospital of Wuhan University*; Zhongshan Hospital Affiliated to Fudan University, Qingpu Campus; Zhongshan Hospital, Fudan University*; Zhujiang Hospital of Southern Medical University*.

Section 2 Data Sources

1. Data source for denominator

The 13 areas participating in T1D China, selected based on geographical location and population size, are listed as follows: Harbin, Shenyang, Beijing, Shanghai, Nanjing, Jinan, Wuhan, Changsha, Guangzhou, Chengdu, Xi'an, Yinchuan and Lanzhou. The study population (denominator) is defined as the resident population in the study years in these areas.

We selected these 13 investigated areas based on the following considerations: (1) China is divided into 7 Administrative Regions (as shown in Figure 1, Northeast, North, Northwest, Southwest, Central, East and South) according to geographic location, climate, culture, ethnicity and population. We chose our investigated areas based on the representativeness of these Administrative Regions. We selected at least one investigated area from each of these Administrative Regions. Besides, considering the imbalance of population density, more than 90% of the population in China resides the southeast part. Moreover, we ensured that there was at least one investigated area every 5° of latitude (Table 1). Therefore, we selected 1 to 2 additional investigated area(s) in some of the Administrative Regions. (2) The investigated areas also consist of areas of different economic development levels as represented by gross domestic production (GDP) in 2010.[1] The investigated areas covered the less developed, moderately developed and well-developed areas in China. Overall, we could cover about 10% of the whole population.

The 2010 Chinese Census[2] conducted by the National Bureau of Statistics of China provides precise information on China's mainland population, which is essential for the calculation of denominator in a nationwide registry study. Therefore, our investigated period started on January 1st, 2010. The investigated period ended on December 31st, 2013, which allows us to have at least 18 months of diagnostic time window for cases in our study when we started the on-site inspection in June 2015.

The denominator was estimated yearly according to the 2010 Chinese Census[2] and annual government reports on natural population growth. Derivation of the appropriate denominators is a multistep process adjusted for gender categorization and the local population growth rate. For Shenyang, Beijing, Shanghai, Nanjing, Jinan, Wuhan, Changsha, Guangzhou, Chengdu, Xi'an, age- and gender- specific denominator were calculated based on government annual population reports from local bureau of statistics.[3-12] For Harbin, Lanzhou and Yinchuan, age-, and gender-specific denominators would be calculated based on projections from the China Census and China Population and Employment Statistics Yearbook 2011-2013[13-15] due to the absence of local government annual population report.

Table S1 shows the demographic details of the investigated 13 areas in 2010.

Table S1. Demographical information of the thirteen areas participating in T1D China.

Geographical Position	Area	Number of Population in 2010		Percentage of Urban Population*
		Age<15 years	All age	
Northeast	Harbin	1,170,201	10,635,971	61.1%
	Shenyang	791, 982	8,106,171	80.1%
North	Beijing	1,699,342	19,612,368	89.6%
East	Shanghai	1,982,859	23,019,196	93.1%
	Nanjing	761,536	8,003,744	81.3%
	Jinan	929,067	6,813,984	68.3%
Central south	Wuhan	976,947	9,785,388	80.5%
	Changsha	955,323	7,040,952	71.8%
	Guangzhou	1,456,352	12,701,948	87.9%
Southwest	Chengdu	1,536,850	14,047,625	68.1%
Northwest	Xi'an	1,091,264	8,467,838	72.7%
	Lanzhou	475,166	3,616,163	76.3%
	Yinchuan	329,902	1,993,088	72.5%
Total		14,156,791	133,844,436	77.0%

*The percentage of urban population in China according to 2010 China population census is 50.27%.

2. Data source for numerator

Numerator is defined as the number of the cases of T1D newly onset between January 1st, 2010 and December 31st, 2013 in the resident population in the investigated areas. The definition of resident population is consistent with that of the denominator.

2.1 Data Sources

Data on newly diagnosed T1D cases collected from any single source in the current systems, such as medical insurance database and inpatient database, may underestimate the incidence of T1D in China. Therefore, we had to utilize every possible data source we found feasible to collect data. Consequently, we decided to collect data from the following sources.

1) **The medical record databases from all the hospitals capable of providing diabetes care.** In China, every hospital maintains an independent medical record database (paper archives or electronic), where the records could be traced back up to 15 years or longer. The list of hospitals capable of providing diabetes care in the investigated areas was achieved from China Census and China Population and Employment Statistics Yearbook 2013. [13] The cooperation and assistance of the endocrinologists and/or pediatricians (investigators) from these hospitals were acquired through the administrative support from the Bureau of Medical Administration, Inspection and Supervision of National Health and Family Plan Committee of the People's Republic of China. The hospitals participating are listed in Section 1 of this document. The collection started in June 2014, and ended in June 2016.

2) **Temporary registry system of outpatient-based pharmacies in tertiary hospitals.** The hospitals participating are listed in Section 1 of this document with a * mark. Most of the hospitals do not track or share outpatient-based pharmacy data. We were not able to track the history data of outpatient-based pharmacy. But as most of the regulations of government funded medical insurance in different regions in China require, the medicine prescribed in a single prescription should not exceed 1 month's quantity. This means most of the T1D patients on such medical insurance plan have to come back to the hospital to acquire a new prescription every month for insulin. Therefore, we constructed a temporary registry system in the outpatient-based pharmacies of the listed hospitals, reporting any previously diagnosed T1D patients visiting for insulin. The temporary registry system lasted for a time span of 3 – 6 months in each participating hospital. Information of these patients was collected by investigators from participating hospitals in a predefined electronic form and reported to the Data Coordinating Service Provider (DCSP). This process started in June 2015, and ended in June 2016.

3) **Government medical insurance databases.** After examination of the nationwide database in Ministry of Human Resources and Social Security of the People's Republic of China, we decided that

we were only able to use the data from the database of government funded medical insurance in Shanghai, because we could not distinguish type 1 diabetes and type 2 diabetes from the data in the databases in the other areas. The collection started in June 2014, and ended in June 2016.

4) **Patient self-reports from diabetes communities.** These diabetes communities are spontaneously established by patients or their family members online or offline, independent of hospitals. We contacted the founders and the persons currently in charge of the management of these communities. We released a questionnaire containing necessary information asking for volunteer self-report in the members of these communities in June 2015 – June 2016.

2.2 Identification markers

We used identification makers to identify each T1D case, and to match cases within the same sources and across different sources. They include mandatory markers and optional markers. Mandatory markers were necessary for each case considered to be eligible. Cases reported with absence of any mandatory marker after on-site data inspection were excluded.

Mandatory markers include initials of each Chinese character of the name, gender, date of birth, registered residential address, primary residential address, date of diabetes diagnosis, date of insulin treatment initiation, hospital(s) where treated (with inpatient and/or outpatient status specified), and ethnicity. For cases from diabetes communities, the hospital where diabetes was first diagnosed was collected as mandatory marker, also with inpatient and/or outpatient status specified.

Optional markers include birth place; the last 4 digits of the citizen ID; height, weight, hip circumference, and waist circumference at onset.

Section 3 Case Ascertainment

Case ascertainment was aimed to ensure the diagnosis of the included cases was T1D. This process was supervised by the Expert Committee on Diagnosis of Type 1 Diabetes.

Before the study started, we instructed the participating investigators (endocrinologist and pediatricians) on the diagnosis of T1D. We asked them to make judgement based on American Diabetes Association descriptions of T1D[16] and World Health Organization reports for the classification of diabetes.[17] Also, based on available guidelines[18,19] and data availability in China, patients with following history and lab results were diagnosed as DKA: (1) hyperglycaemia (glucose >11.1mmol/L) or know diabetes mellitus; (2) ketonemia: elevated blood ketobody level as judeged by participating investigators or significant ketonuria (more than 2+ on standard urine sticks); (3) acidemia: bicarbonate($HCO3^-$) <15.0mmol/L and/or venous pH<7.3. We adopted a searching strategy with ICD codes for cases from medical record databases and medical insurance database. We established a temporary registry system for cases outpatient-based pharmacies. We collected self-reports from patients in diabetes communities with a conformation from the hospitals where they were first diagnosed.

Previous studies on diabetes differential diagnosis found that the diagnostic time window from first time patient seeing a doctor to final diagnosis clarification was about 18 months.[20] To ensure the accuracy of T1D diagnosis, our data collection ended in June 2015, which allowed us to have no less than 18 months of diagnostic time window for cases diagnosed by December 31st, 2013.

1. Case Registry

1.1 Medical Record Databases

In the source of medical record databases, endocrinologists and/or pediatricians (investigators) screened for potentially eligible cases from the hospital quality monitoring system in the medical record database of each participating hospital. This system is organized in a nationwide standardized formation with diagnosis of diseases coded with ICD 9 or ICD 10.

Cases with the ICD code of 250.xx for patients aged <30 years; and 250.x1, 250.x3 for patients aged ≥30 years in ICD 9; and E10, E08.1-2 in ICD 10 initially diagnosed between January 1st, 2010 and December 31st, 2013 were picked out. Also, all the cases under 15 years of age with the diagnosis of 'diabetes' regardless of classification were picked out. We did not include ICD codes for 'type 2 diabetes' (e.g., E11.x in ICD 10). Due to the large diabetic population in China (approximately 100 million of adults over 20 years reported in 2010 with nearly 90% of them were type 2 diabetes[21]), it is technically infeasible to include ICD codes for 'type 2 diabetes' in our searching strategy. But according to a report,[22] the prevalence of latent autoimmune diabetes in adults with low-titer GAD who are most often misdiagnosed as type 2 diabetes at onset, is no more than 5% of all the prevailing diabetes. Therefore, we could not completely avoid missing cases due to excluding E11.x, but the actual missed case number would be extremely low.

With the medical record database, the investigators were able to navigate all the hospitalization episodes for a particular patient in the same hospital, as well as the details of each admission (all including present history and past medical history). Investigators then scrutinized the corresponding medical records and laboratory test results of the picked-out cases to identify potentially eligible T1D cases and determined whether the diagnosis is T1D according the case definition mentioned above.

Potentially eligible cases judged by the investigators were registered in predefined electronic forms. Entry file were submitted to the Data Coordinating Service Provider (DCSP) and input into a file coded with EpiData (v3.1, EpiData Association, Odense Denmark).

1.2 Temporary registry system of outpatient-based pharmacies

During the scheduled period of 3- 6 months, in each of the participating hospitals, investigators were asked to collect the data of any patient with a previous diagnosis of T1D who came for prescription of insulin in the outpatient-based pharmacies. They would determine the eligibility of a case based on interviewing the patient and medical records. The data were registered in a pre-defined electronic form. At the end of the registry period, investigators submitted the forms to the DCSP. The data of eligible cases were input into a file coded with EpiData by the DCSP.

1.3 Medical insurance database

In the source of medical insurance database, the data were first anonymized by DCSP and then provided to data managers in Data Management Committee. Data managers screened for potentially eligible cases from the database. Cases with the ICD code of 250.xx for patients aged <30 years; and 250.x1, 250.x3 for patients aged ≥30 years in ICD 9; and E10, E08.1-2 in ICD 10 initially starting insulin prescription between January 1st, 2010 and December 31st, 2013 were picked out. Also, all the cases under 15 years of age with the diagnosis of 'diabetes' regardless of classification initially starting insulin prescription during this period were picked out. These potentially eligible cases were reported to DCSP. DCSP contacted the clinician of the corresponding medical facility to ensure the case was diagnosed as T1D during the investigated period based on the definition mentioned above and collected any further data if available. Eligible cases were registered by the DCSP.

1.4 Diabetes Communities

Questionnaires asking for T1D patients' self-report were released to the diabetes communities' websites during the scheduled period. The questionnaire is attached as appendix at the end of this section. The patients were asked to confirm that the diagnosis of T1D was initially made between January 1st, 2010 and December 31st, 2013 in a hospital capable of diabetes care, and the name of the hospitals where the patients were first diagnosed was

collected. Then the details of the collected cases would be sent to the corresponding hospitals to be validated by the DCSP. Once it was found that the case could not be matched with medical record database, the participating investigator modified the record according to the medical record if it fitted the inclusion criteria, or excluded the case if it was not eligible. The feedback would be sent to the DCSP, the latter registered the eligible cases.

Any cases submitted by the investigators, after data validation and inspection, were anonymized by the DCSP and sent to the Data Management Committee.

2. Case Ascertainment

All potentially eligible cases were examined by data managers in the Data Management Committee. Data managers confirmed whether the diagnosis of T1D of all the submitted cases was reliable through the following process.

A case with a definite diagnosis of T1D should at first meet at least 2 of the 3 following criteria (A).

a) Age at onset ≤30 years old and <6 months old;

b) Insulin dependent at time of registry;

c) With diabetic ketoacidosis (DKA) / diabetic ketosis (DK) at diagnosis.

Cases failed to meet the criteria above would regarded as uncertain cases.

Further scrutiny was done in the cases which met criteria (A). Among them, cases that fulfilled one or more of the following conditions (criteria [B]) were also regarded as uncertain cases.

a) BMI ≥ 25kg/m^2 at onset;

b) C peptide >500pmol/L at any time after diagnosis;

c) Use of any oral anti-diabetes drugs at any time after diagnosis.

All the uncertain cases were sent back to DCSP. DCSP staffs asked the corresponding investigators to clarify the diagnosis, and to give feedback on the diagnosis of T1D by “agree”, “disagree”, or “uncertain”, and to provide any previously absent data related to diagnosis if available. The DCSP informed the data managers on the feedback.

3. Confirmation of T1D Diagnosis

Data managers excluded any cases with a negative feedback from the count of cases of T1D. The cases with an “uncertain” feedback were submitted to an independent diagnosis committee (the Expert Committee on Diagnosis of Type 1 Diabetes) chaired by Professor

Linong Ji and Professor Dalong Zhu. The committee is consisted of experts on T1D and the name of the members are presented in Section 1 in this document. The chief responsibility of the committee is to make the final judgement of the case diagnosis based on current data available. The committee provided the feedback on the final judgement of the diagnose of the submitted uncertain cases to the data managers.

The data managers recorded the results and removed any cases the committee decided that the diagnosis was not T1D from the count.

4. Case deduplication

Matching within the same source and across sources to identify potential duplicate records was performed at area level using identification markers by data managers. The matching process including matching the mandatory markers in all the cases, within the investigated region, as well as across the investigated regions. If all the mandatory markers were identical in any two or more cases, we regarded that these records were duplicates. The optional markers, when available, would also be compared to assist the matching process. After this, if there was any doubt, the data managers contacted the DCSP to ask the investigators from participating hospitals to confirm if they were duplicates.

Appendix:

Questionnaire Released in Diabetes Communities

For Patient Self-Report

A. Data Source*

A1. Investigated area code: _____

A2. Data sources: 0□others；1□Pharmacy；2☒diabetes communities

A3. Record No. □□□□□□

B. Medical record

Part 1 Demographic information (B1, B3-B7 Mandatory markers)

B1. Name □□□□□□; Initials of each Chinese character of the name □□□□□□;†

B2. Last 4 digits of the citizen ID □□□□;

B3. Gender: 1□male, 2□female;

B4. Date of birth: □□□□year/□□month/□□day;

B5. Registered residential address: _____(province)_____(city) ____(district/county);

B6. Primary residential address: _____(province)_____(city)____(district/county);

B7. Ethnic groups: 1□Han; 2□**others go to B7.1**;

B7.1. Name of ethnic groups_____

Part 2 Diabetes Diagnosis and insulin treatment initiation (Mandatory markers)

B8. Date of diabetes diagnosis: □□□□year/□□month/□□day;

B9. Date of insulin treatment initiation: □□□□year/□□month/□□day;

Part 3 Somatometry at onset

B10. Height: □□□cm;

B11. Weight: □□□.□kg;

B12. Hip circumference: □□□cm;

B13. Waist circumference: □□□cm;

Part 4 Hospital Information (Mandatory markers)

B14. Hospitalization at diabetes onset: 0□No；1□Yes；

B15. Does registered residential city match with the hospital city of diabetes first diagnosed:

0□Yes(**Go to B15.1**)；1□No

B15.1. City name where diabetes was first diagnosed: _____

B16. The hospital name where diabetes was first diagnosed: _____

DOI1 Date*: □□□□year/□□month/□□day

*Automatically generated in the electronic questionnaire.

†The data coordinating service provider (DCSP) could reveal the full name, and it was anonymised into initials when the data was sent to the data managers.

Section 4 On-Site Inspection: Data Authenticity and Accuracy

To ensure the authenticity and accuracy of data, on-site inspection was conducted in all 13 participating areas. According to the random numbers generated in IBM SPSS Statistics (Version 20.0. Armonk, NY: IBM Corp), a random sample (10% of all validated cases) at area level was reviewed by data managers independent of the Data Coordinating Service Provider. The on-site inspection was based on original medical records. The following items were reviewed: mandatory markers, optional markers and clinical information (see Protocol). During the inspection, a case was regarded authentic when it could be traced back to original medical records; and a case was regarded as accurate when there was no difference between the original medical records and the previous reported data. The on-site inspection was performed during July 2016 and December 2016.

Table S2. Summary of on-site authentication.

Areas	Number of validated cases	Number of on-site reviewed cases	Authenticity* (%)	Accuracy† *(%)
Harbin	634	63	100	100
Shenyang	337	34	100	100
Beijing	740	75	100	100
Shanghai	783	78	100	100
Nanjing	335	34	100	100
Jinan	209	20	100	100
Wuhan	434	43	100	100
Changsha	181	19	100	100
Guangzhou	478	48	100	100
Chengdu	296	30	100	100
Xi'an	300	30	100	100
Lanzhou	223	23	100	100
Yinchuan	68	7	100	100

*Authenticity was calculated by the number of authentic cases divided by the number of on-site reviewed cases. †Accuracy was calculated by the number of accurate cases divided by the number of authentic cases.

Section 5 Estimation of Completeness

The capture-mark-recapture (CMR) method[23] is commonly used in ecology to estimate an animal population size, and it has been applied extensively to human disease situation. The unknown total population size of T1D is estimated based on the number of cases found in more than one source (e.g., duplicate records from different independent sources, such as hospitals, medical health care insurance, and other sources) by using CMR method.

1. Assumption

The classic CMR method is based on the following assumptions:

1) From a closed population;

2) Markers of cases are correctly recorded and can be identified in each data source;

3) Every case has the same probability of being identified;

4) Patients can be ascertained and be validated by separate modes.

2. Patterns of accessing to medical service of newly diagnosed T1D patients in China.

1) The acute onset, and the general tendency of developing diabetes ketoacidosis of T1D drives newly onset T1D patient to seek for medical service (outpatient and/or inpatient) soon after the onset of T1D;

2) Medical record systems are independent among hospitals, medical insurance systems and pharmacies. Information is not shared between inpatients' and outpatients' department in the same hospital during the study period (2010-2013) in China.

3) Patients of T1D depend on insulin to survive. Insulin are commercially available only when the doctor's prescription or diagnosis certificate of diabetes is present. Sometimes T1D patients can purchase insulin anonymously because many medical facilities accept walk-in patients without registry of their citizen ID.

4) Other diabetes medical supplies (e.g. strips, needles for insulin injectors and so on) are commercially available without doctor's prescription or diagnosis certificate of diabetes.

5) T1D cases could only be diagnosed in the hospitals with qualified endocrinologists and/or pediatricians. Qualified endocrinologists could only be found in government funded hospitals.

6) As T1D patients sometimes face education and employment discriminations,[24,25] it is not uncommon for T1D patients to conceal their disease from their schools or employers at the time of diagnosis.[26]

3. Method

In each of the areas, cases were identified from multiple sources as noted in section 2 in this document. A source was defined as any location where cases were reported. Matching across sources was done based on identification markers on a regular basis at area level to identify potential duplicate records. Once matching was accomplished across sources, the sources were further grouped into two 'modes' of ascertainment. Such grouping was done according to the inpatient and/or outpatient status in mandatory identification marker of hospital(s) where treated or the hospital where diabetes was first diagnosed (for cases from diabetes communities). Once the two modes were identified and their duplicate noted, log-linear models were fit to the data to estimate the total (unknown) population. These estimates were computed separately for incidence from 2010 to 2013 by area, gender and age group.

Finally, the percentage of completeness of ascertainment was taken as the number of observed cases divided by the number estimated from CMR method. Estimates of the ascertainment rates pooled across clinical sites were produced from a log-linear model.

4. Results

Table S3. Estimation of Completeness in investigated areas in T1D China by gender and age groups.

Areas	Overall (%)	Gender (%)		Age Group (years, %)		
		Male	Female	0-14	15-29	≥30
Chengdu	97.14	96.87	96.79	96.93	94.51	97.73
Jinan	97.50	97.49	96.56	97.43	94.81	97.25
Wuhan	97.43	97.00	97.46	97.91	97.70	95.98
Yinchuan	95.83	95.53	93.43	87.94	94.90	93.33
Shanghai	98.8	98.94	98.35	98.98	97.36	98.99
Lanzhou	99.05	98.85	98.26	96.73	98.55	98.6
Shenyang	97.54	97.25	97.33	98.55	94.83	96.8
Changsha	97.09	95.23	97.69	96.14	96.13	97.15
Beijing	99.19	99.38	98.59	99.41	98.48	98.7
Guangzhou	99.57	99.50	99.27	98.55	99.41	99.33
Harbin	99.14	99.16	98.74	99.27	98.86	98.33
Nanjing	98.85	98.21	99.00	98.53	98.47	98.19
Xi'an	98.68	98.83	97.56	98.09	98.05	98.45
Overall	98.84	98.96	98.64	99.33	98.42	98.82

5. Limitation

In the context of the current Chinese health care system, limitations of the method were encountered. These include: a) although it is not very likely, possible incomplete matching across sources might occur due to restrictions on access to names for matching in some states. This might violate the assumption that cases could be matched in all sources. b) There was high heterogeneity between different age groups and gender among modes mentioned above, which might violate the assumption that every case had the same probability of being identified.

Section 6 Estimation of T1D Incidence of Chinese Population from Investigated Areas and Related Factors

To estimate the nationwide incidence of T1D based on the data of the 13 areas we investigated, we analyzed factors that might contributed to the incidence of T1D with correlation tests based on currently available data, then a model based on Poisson distribution with correlated factors added as covariates was adopted to estimate the nationwide T1D incidence.

1. Analysis of related factors of T1D incidence

We reviewed literature on possible influencing factors on incidence of T1D. It is reported that apart from genetic background, latitude, ultra-violet exposure, air pollution level, 25-(OH)-vitamin D level, early exposure to dietary cow's milk proteins, viruses infection and etc. are possible influencing factors.[27-31] We did not collect blood sample, nutrition information, or detailed early history of the patients. Air pollution data was not available during our study period. Therefore, based on accessibility of data, we analyzed the relationship of T1D incidence and sunlight duration (as in average peak sunlight time [kWh/m^2/day]), birth rate, proportion of urban population (%), latitude(°N) and longitude(°E). Spearman and Kendall tau correlation analysis were applied. The results were as follow:

Table S4. Analysis of potentially contribute factors of T1D incidence with Spearman and Kendall's Tau correlation tests. (*P<0.001.)

Age group (years)	Estimates	Average peak sunlight time	Birth rate	Proportion of urban population	Longitude	Latitude
0-14	Spearman *P*	0.000223*	0.82334	0.667174	0.287883	8.06×10^{-5}*
	Spearman coefficient *r*	0.851243	-0.06878	-0.13205	0.31912	0.87758
	Kendall's τ *P*	0.000944*	0.854509	0.582248	0.19929	0.000774*
	Kendall's τ	0.701358	-0.03871	-0.11613	0.270973	0.709692
15-29	Spearman *P*	0.080891	0.957318	0.907661	0.67376	0.089405
	Spearman coefficient *r*	0.501379	0.016506	-0.03576	0.129299	0.489684
	Kendall's τ *P*	0.066193	0.951261	0.668754	0.759899	0.098879
	Kendall's τ	0.389643	0.012903	-0.09032	0.064517	0.348394
≥30	Spearman *P*	0.94303	0.262246	0.226417	0.324224	0.921824
	Spearman coefficient *r*	0.022039	-0.33563	0.360385	0.297112	0.030261

	Kendall's τ *P*	0.806496	0.245507	0.19929	0.19929	0.854509
	Kendall's τ	0.051952	-0.24517	0.270973	0.270973	0.03871
All	Spearman *P*	0.137135	0.565036	0.628132	0.469989	0.158063
	Spearman coefficient *r*	0.435263	-0.17607	0.148556	0.220083	0.415406
	Kendall's τ *P*	0.141645	0.668754	0.759899	0.426849	0.159777
	Kendall's τ	0.311715	-0.09032	0.064517	0.167745	0.29678

From the results of the analysis, it is notable that in age group 0-14 years, T1D incidence is strongly correlated with latitude and average peak sunlight time, while such correlation was not observed in the other two age groups or in the overall population. There was no other significant correlation was observed in the current analysis.

2. Estimation of nationwide T1D incidence

In this part, we aimed to estimate the nationwide incidence rate within each age group base on the incidence rate data achieved from 13 areas in T1D China. As has mentioned above, several factors were taken into consideration to improve estimation accuracy.

Potential contributory factors were first screened based on correlation tests to guard overfitting, see Table S6 for Kendall's Tau and Spearman's rank correlation coefficient and their *P*-values.

Based on the results of correlation test, we picked latitude and sunlight duration as covariants for incidence estimation of age groups 15-29 years, ≥30 years, and all age; while solely latitude for age group 0-14 years.

Assumed that the number of cases follows a poisson distribution with a parameter of $\lambda = \mathrm{N}e^{\boldsymbol{X'\beta}}$, that is:

$$\mathrm{n} \sim \mathrm{poisson}(\mathrm{N}e^{\boldsymbol{X'\beta}})$$

where n is the number of cases; N is total population in each investigated area, X is a vector of covariants.

Then the likelihood function can be given by:

$$\mathrm{L} = \prod_{i=1}^{13} \frac{e^{n_i(logN_i + \boldsymbol{X_i}'\boldsymbol{\beta})}}{n_i!} e^{-e^{logN_i + \boldsymbol{X_i}'\boldsymbol{\beta}}}$$

For age groups 15-29 years, ≥30 years, and all age, the maximum likelihood estimator (MLE) of parameters were $\beta_0 = -12.7067(\,0.2258)$，$\beta_1 = 0.0092(0.0079)$，$\beta_2 = 0.2006(0.0850)$, for intercept, latitude and sunlight duration, respectively; while for age group 0-14 years, $\beta_0 = -12.2877(\,0.2398)$，$\beta_1 = 0.03951(0.0067)$, for intercept and latitude, respectively. Then based on the value of $X'\hat{\beta}$, 31 provinces (Hong Kong, Macau and Taiwan excluded) were classified into 13 groups whose incidence rate have been known. Finally, incidence nationwide was given by:

$$\text{Incidence} = \boldsymbol{\omega}'\boldsymbol{r} = \sum_{j=1}^{13} \omega_j r_j$$

where $\omega_j = \frac{\sum_{i' \in group\ j} N_{i'}}{\sum N_i}$ was specified as the population weight of group j; N_i (or $N_{i'}$) is total population of the ith provinces; r_j was the known incidence rate of group j. The estimated nationwide incidence rate and its 95% confidence interval were 1.93 (0.83, 3.03), 1.28 (0.45, 2.11), 0.69 (0, 1.52) and 1.01 (0.18, 1.84) per 100,000 person-years for age group 0-14 years, 15-29 years, ≥30 years and all age, respectively.

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