

# TCM and Diabetes Mellitus (Xiao Ke Bing)

By Huabing Wen

Wenacupuncture.com

Huabingwen12@gmail.com

310 360-7556

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# Introduction of Diabetes

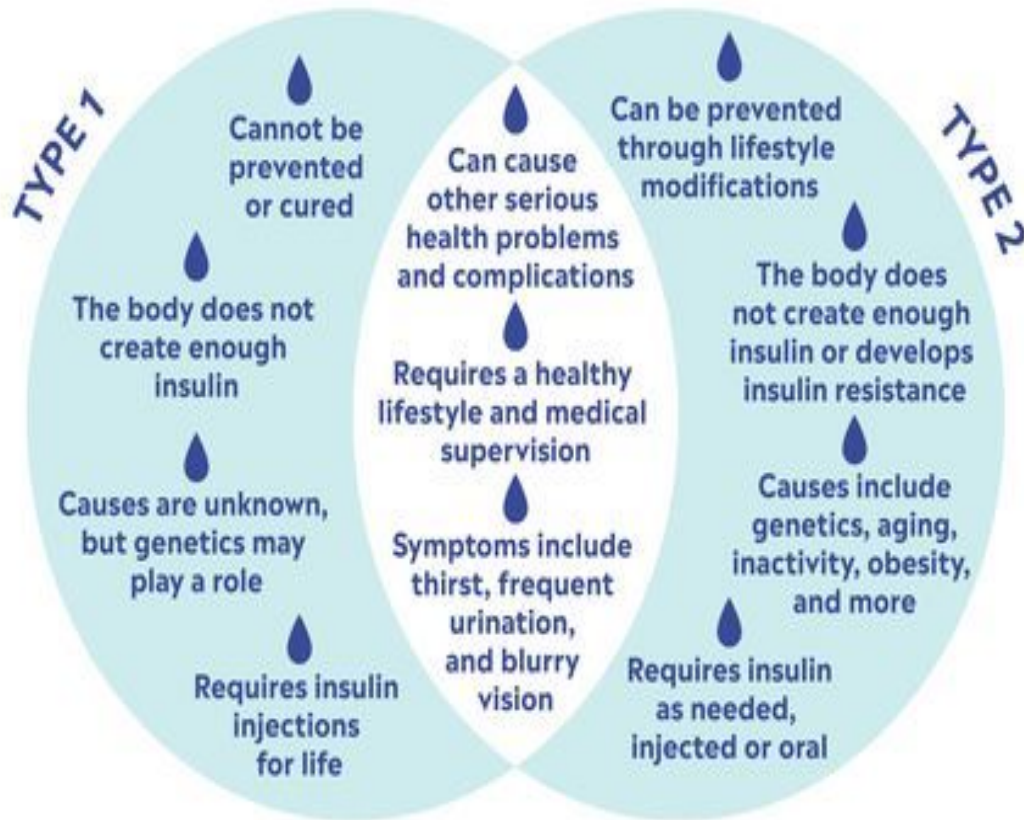
- Number 3 most common disease
  - After heart disease and cancer
- Number 4 leading cause of death
- 34.2 million people, or 10.5% of the U.S. population, have diabetes
- An estimated 26.8 million people - or 10.2% of the population - had diagnosed diabetes.
- Approximately 7.3 million people have diabetes but have not yet been diagnosed (2018).
- 1 million estimated new patient every year
  
- Disability and deadly secondary complications
  - Heart disease
  - Blindness
  - Kidney failure
  - Amputation
  - Stroke

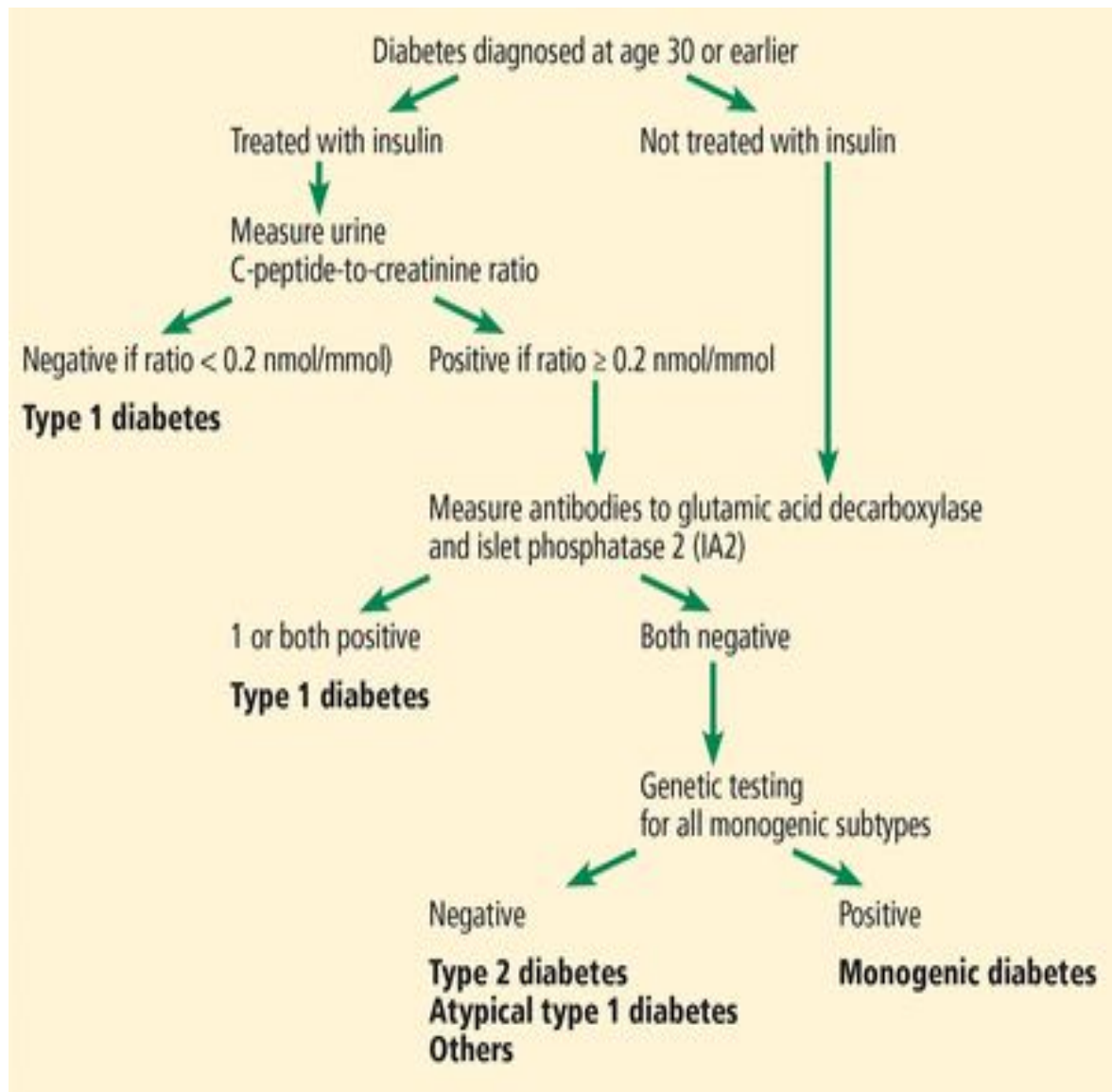
# What is diabetes?

- Diabetes is a number of diseases that involve problems with the hormone insulin.
- When the pancreas does not produce any insulin
- When the pancreas produces very little insulin
- When the body does not respond appropriately to insulin, a condition called "insulin resistance"

	Type 1	Type 2
Before onset	BMI within a healthy range (19–24.9)	BMI above the healthy range (25 or over)
At onset	<p>Appearance over several weeks of:</p> <ul style="list-style-type: none"> <li>increased thirst and urination</li> <li>increased hunger</li> <li>blurry vision</li> <li>tiredness and fatigue</li> <li>numbness or tingling in hands and feet</li> <li>sores or wounds that take a long time to heal</li> <li>unexplained weight loss</li> </ul>	<p>Development over several years of:</p> <ul style="list-style-type: none"> <li>increased thirst and urination</li> <li>increased hunger</li> <li>blurry vision</li> <li>tiredness and fatigue</li> <li>numbness or tingling in hands or feet</li> <li>sores or wounds that take a long time to heal</li> <li>unexplained weight loss</li> </ul>
Complications	<p>Risk of:</p> <ul style="list-style-type: none"> <li>cardiovascular disease, including a risk of heart attack and stroke</li> <li>kidney disease and kidney failure</li> <li>eye problems and vision loss</li> <li>nerve damage</li> <li>problems with wound healing</li> <li>ketoacidosis</li> </ul>	<p>Risk of:</p> <ul style="list-style-type: none"> <li>cardiovascular disease, including a risk of heart attack and stroke</li> <li>kidney disease and kidney failure</li> <li>eye problems and vision loss</li> <li>nerve damage</li> <li>problems with wound healing, which can lead to gangrene and the need for an amputation</li> <li>ketoacidosis</li> </ul>

# TYPE 1 vs TYPE 2 DIABETES





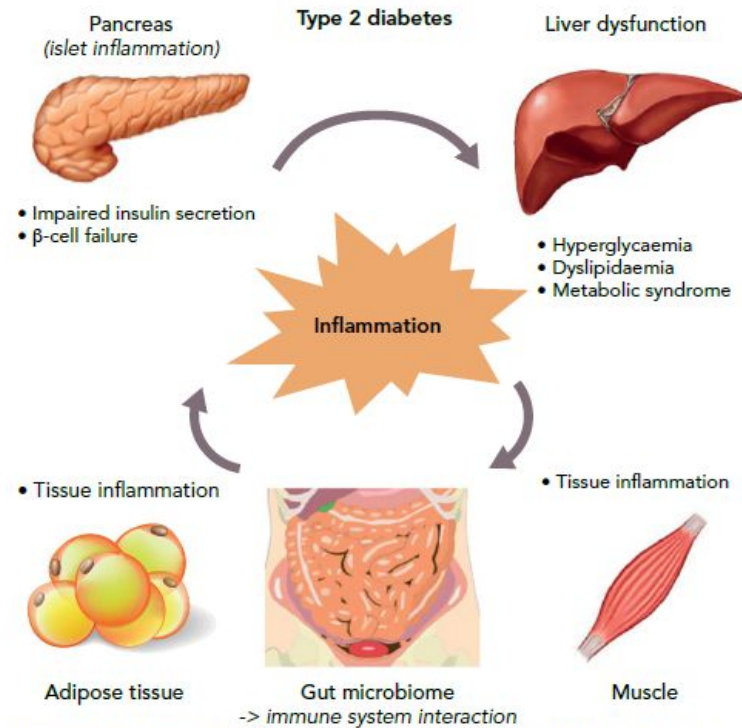
# Types of Diabetes

## **Type 1 diabetes**

- In autoimmune diseases, such as type 1 diabetes, the immune system mistakenly manufactures antibodies and inflammatory cells that are directed against and cause damage to patients' own body tissues.
- In persons with type 1 diabetes, the beta cells of the pancreas, which are responsible for insulin production, are attacked by the misdirected immune system.
- It is believed that the tendency to develop abnormal antibodies in type 1 diabetes is, in part, genetically inherited, though the details are not fully understood.



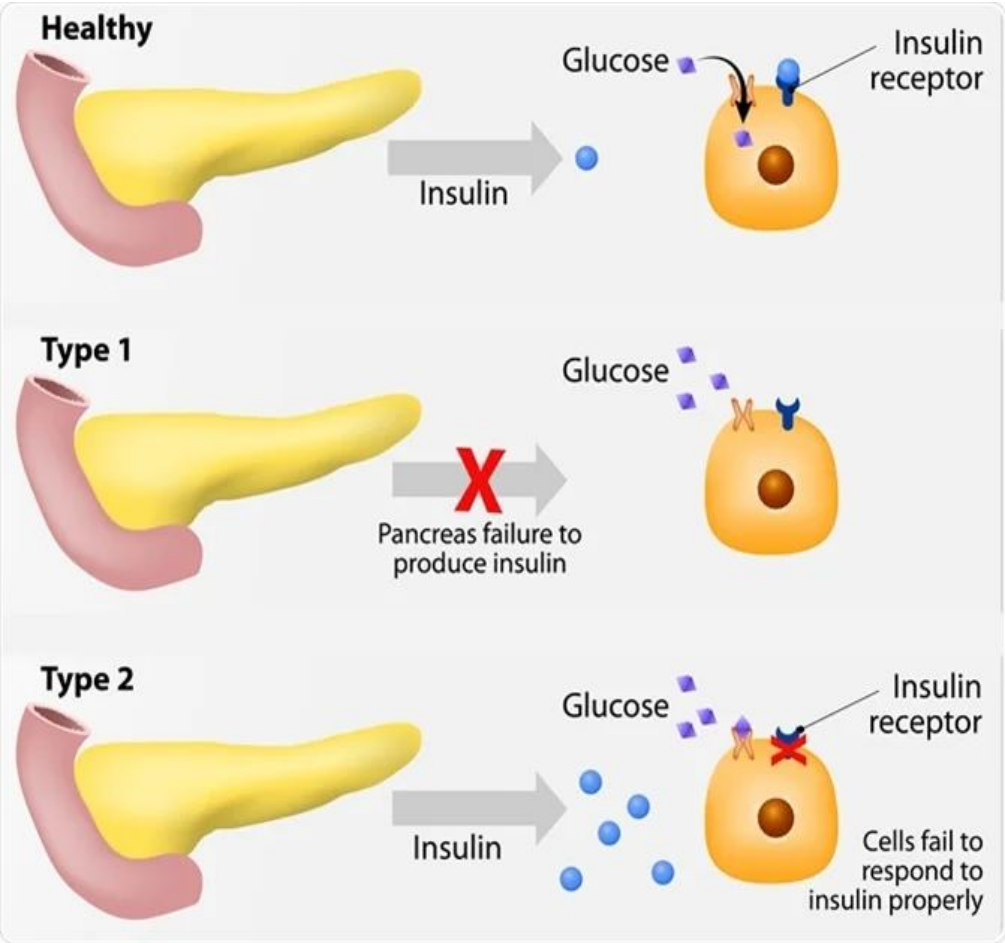
Figure 1: Inflammatory Mediators in Type 1 Diabetes

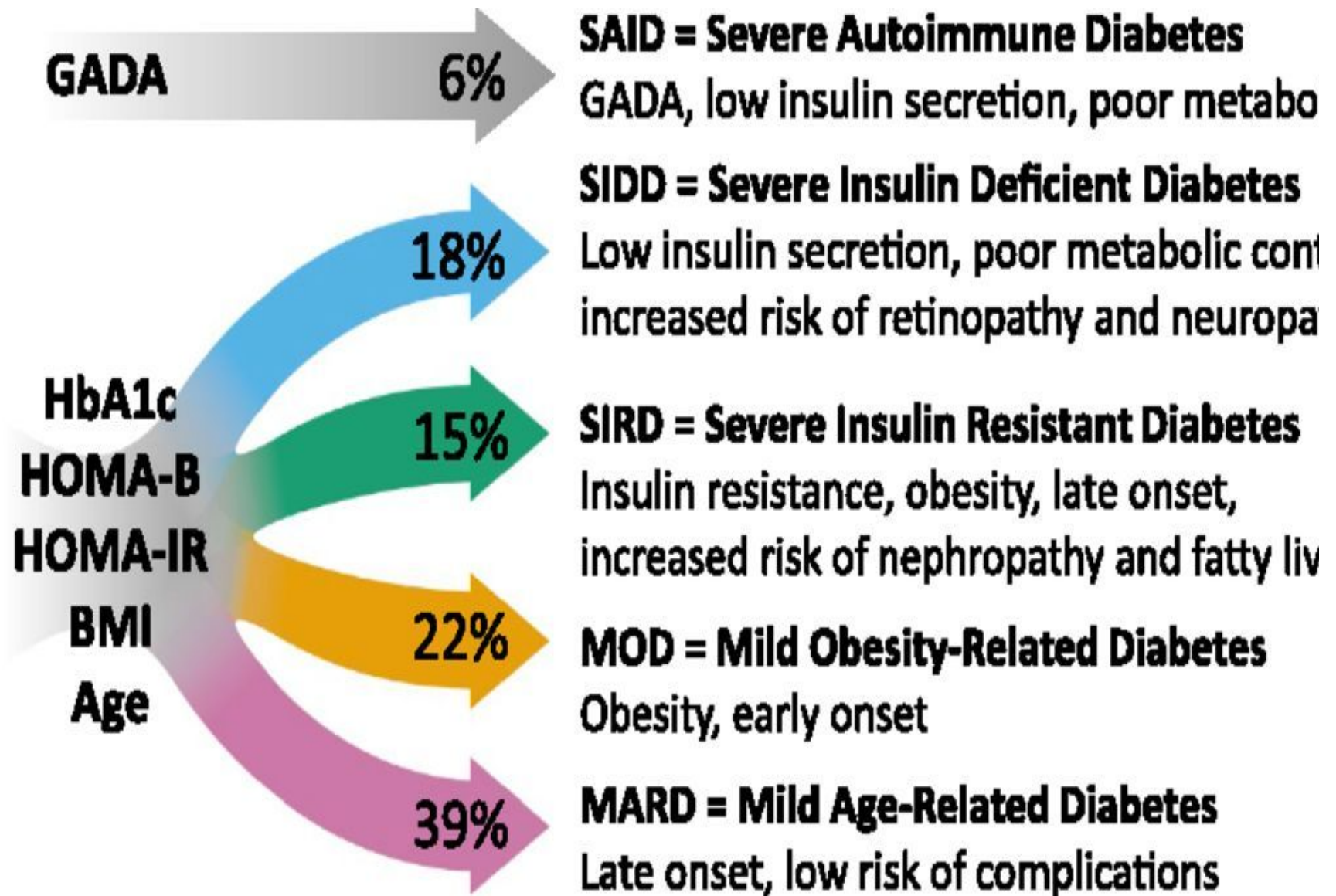


Activation of several immune cells are involved in pancreatic beta-cell death through a variety of inflammatory cytokines. Regulatory T cells are defective in this autoimmune disease, while effector T-cells (Teff) participate in the development of type 1 diabetes targeting several beta-cell autoantigens and related peptide epitopes. The profile of immune B cells also changes during disease progression and macrophages are also critical mediators of islet inflammation due to their direct toxicity on beta-cells by reactive oxygen species. Dendritic cells, natural killer cells and natural killer T cells may have a partial role in the process.

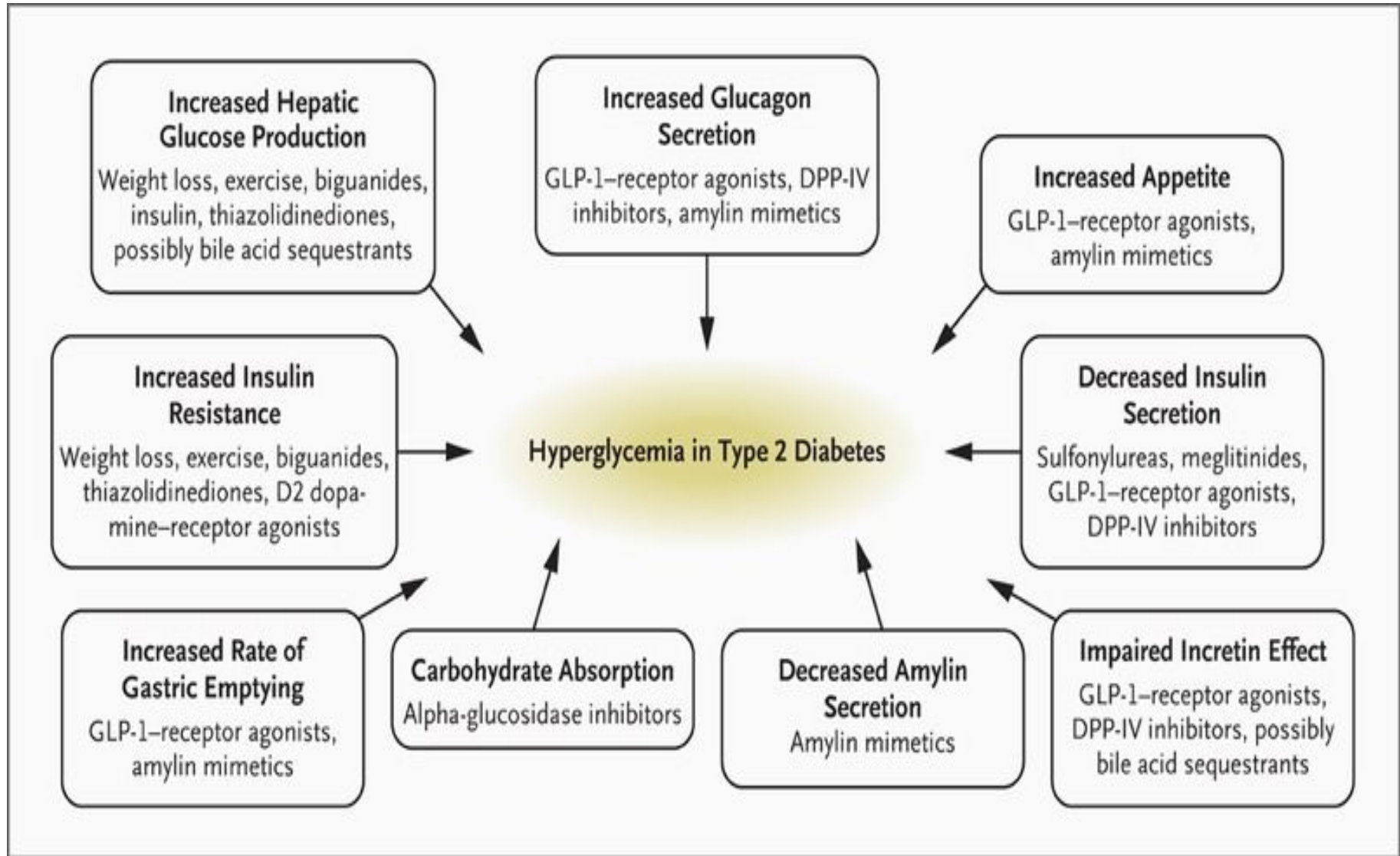
## Type 2 diabetes

- Type 2 diabetes was also previously referred to as non-insulin dependent diabetes mellitus (NIDDM), or adult-onset diabetes mellitus (AODM).
- In type 2 diabetes, patients can still produce insulin, but do so relatively inadequately for their body's needs, particularly in the face of insulin resistance.
- In many cases this actually means the pancreas produces larger than normal quantities of insulin.
- A major feature of type 2 diabetes is a lack of sensitivity to insulin by the cells of the body (particularly fat and muscle cells).

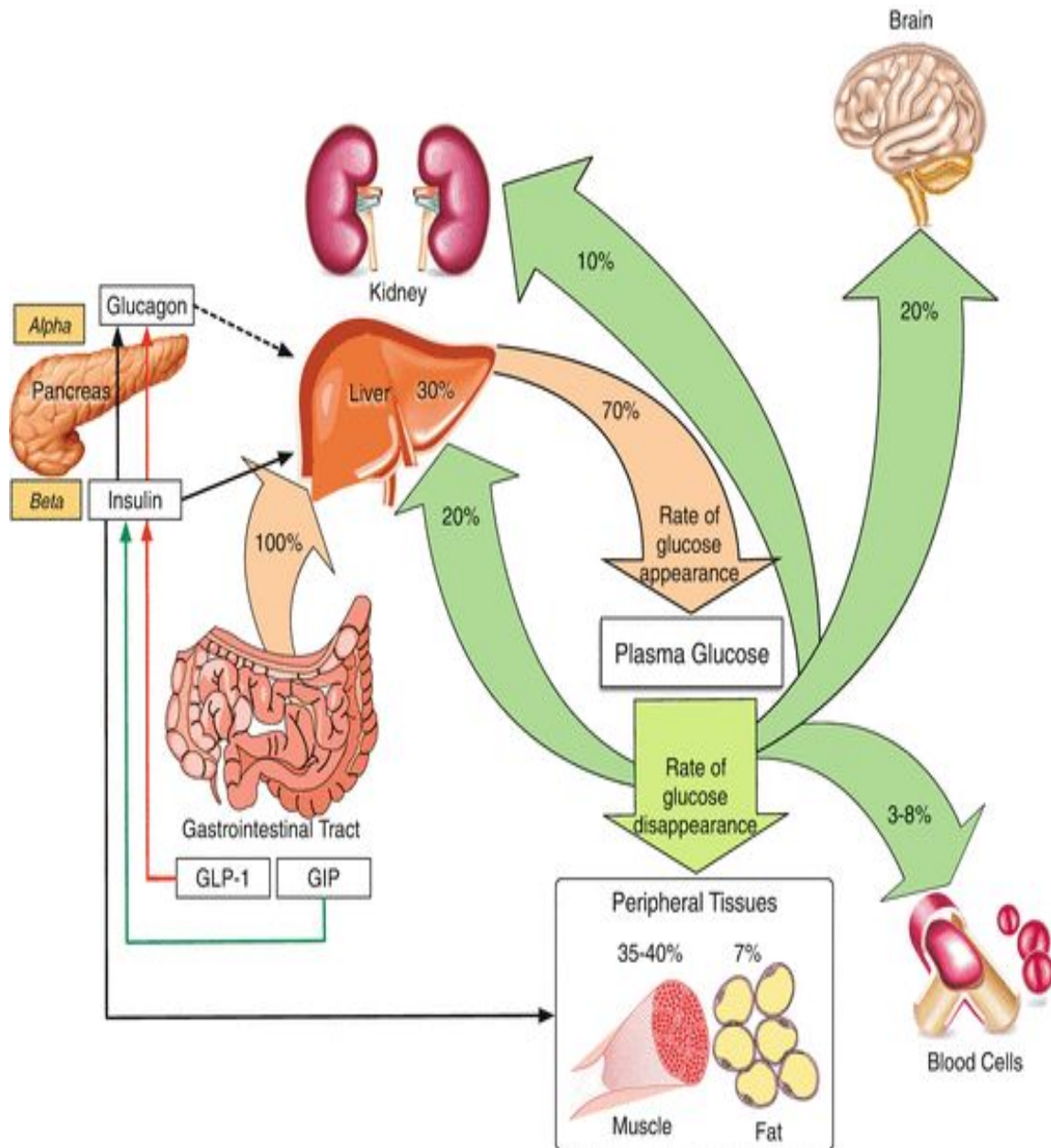


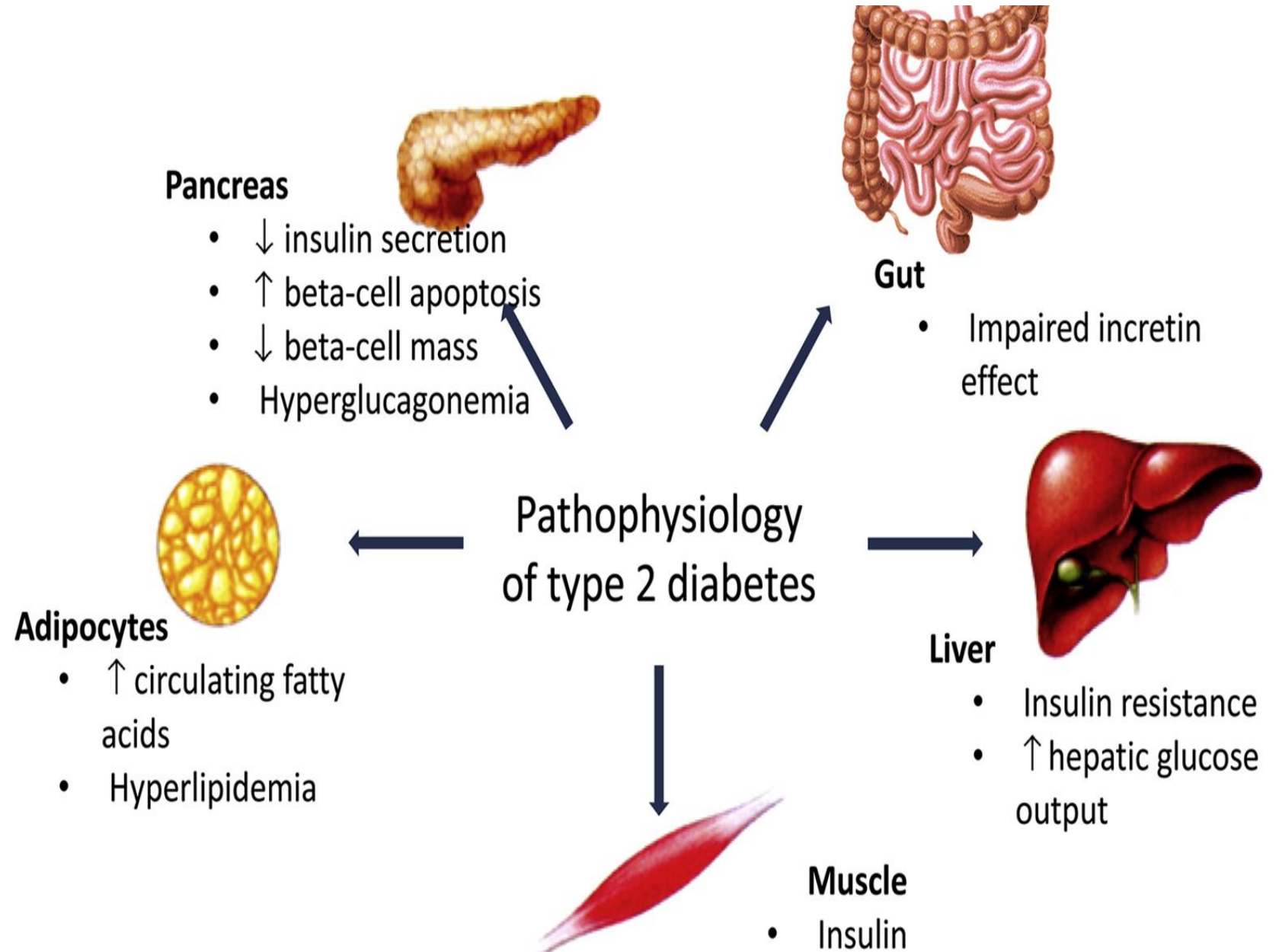


- Cluster 1: Severe autoimmune diabetes (SAID) ...
- Cluster 2: Severe insulin-deficient diabetes (SIDDD) ...
- Cluster 3: Severe insulin-resistant diabetes (SIRD) ...
- Cluster 4: Mild obesity-related diabetes (MOD) ...
- Cluster 5: Mild age-related diabetes (MARD) ...
- Pre-diabetes.











# Wasting thirsting disorder (Xiao Ke Bing )

- Definition
  - Pi Dan(脾瘵)
    - Spleen stagnation
    - Stagnant spleen heat or fire
  - Excessive thirst, excessive hunger, excessive urination, rapid weight loss
  - Xiao Ke
  - Xiao Ke Zheng
  - Xiao Ke Bing
  
  - WM related diseases
  - Diabetes and related complications, hyperthyroidism

# History of Xiao Ke Bing

- Wasting and thirsting disorder(Xiao Ke )
  - “Pi Dan” first recorded in “Nei Jing”
  - About 2200 years ago
  - “Xiao Ke” first appeared in “Jin Gui Yao Lue”
  - “Sweet urine” with related symptoms
  - Sweet urine disease
  - Xiao-Ke syndrome established in Tang dynasty
  - Detailed analysis of pathological change and patterns
  - Well-documented herbal and acupuncture treatment
  - Herbal dietary recommendations

# Hyperglycemia

- High blood sugar
- Frequent urination
- Increased thirst
- Dry mouth
- Blurred vision
- Fatigue
- Headache
  
- Excess Qi turns to fire
- Qi and Yin and Jing Ye Xu with heat

# Hyperglycemic hyperosmolar nonketotic syndrome (HHNS)

- This life-threatening condition includes a blood sugar reading higher than 600 mg/dL (33.3 mmol/L).
- Triggers are infection, take certain steroids or drugs that cause frequent urination.
- Signs and symptoms include:
  - Dry mouth
  - Extreme thirst
  - Drowsiness
  - Confusion
  - Dark urine
  - Seizures
- Bai Hu Jia Ren Shen Tang

# Diabetic ketoacidosis

- Ketones
- Triggers of diabetic ketoacidosis include certain illnesses, pregnancy, trauma and medications — including the diabetes medications called SGLT2 inhibitors.
  
- Nausea
- Vomiting
- Abdominal pain
- Shortness of breath
- Fruity-smelling breath

# Hypoglycemia

- Sweating
- Shakiness
- Weakness
- Hunger
- Irritability
- Dizziness
- Headache
- Blurred vision
- Heart palpitations
- Slurred speech
- Drowsiness
- Confusion

# Etiology of TCM

- Constitution
- Improper diet
  - Fatty food, sweets, alcohol, smoking
- Emotional distress
  - Stress
- Excessive sexual activities causing Kidney Xu
- Warm disease & dryness

# Etiology comparison of TCM and WM

## TCM

- Constitution
- Warm disease & dryness
- Improper diet
  - Fatty food
  - sweets
  - alcohol
  - smoking
- Emotional distress
  - Liver qi stagnation
- Excessive sexual activities

## WM

- Genetic factors
- Viral infections
- Stress
- Hormonal imbalance



# Risk factors

Overweight or obese is a main risk.

- Fat distribution.
- Inactivity.
- Family history
- Blood lipid levels
- Age.
- Prediabetes
- Pregnancy-related risks.
- Polycystic ovary syndrome
- Areas of darkened skin, usually in the armpits and neck. This condition often indicates insulin resistance.

# Pathology of TCM

- 1. Zang Fu and San Jiao Theory
  - Lung, Spleen, Kidney
- 2. Qi, Xue, Yin, Yang Theory
  - Qi Xu, Qi and Yin Xu, Yin and Yang Xu
- 3. Yin, Yang, fire, water
- 4. Root vs. branch; xu vs. shi

## Upper Xiao

- Lung
  - Lung heat or fire
  - Lung dryness

## Middle Xiao

- Spleen
  - Damp
  - Damp-heat
- Stomach
  - Excess heat
  - Deficient heat

## Lower Xiao

- Kidney
  - Kidney Yin Xu
  - Kidney Yang Xu
- Liver
  - Liver Qi Stagnation



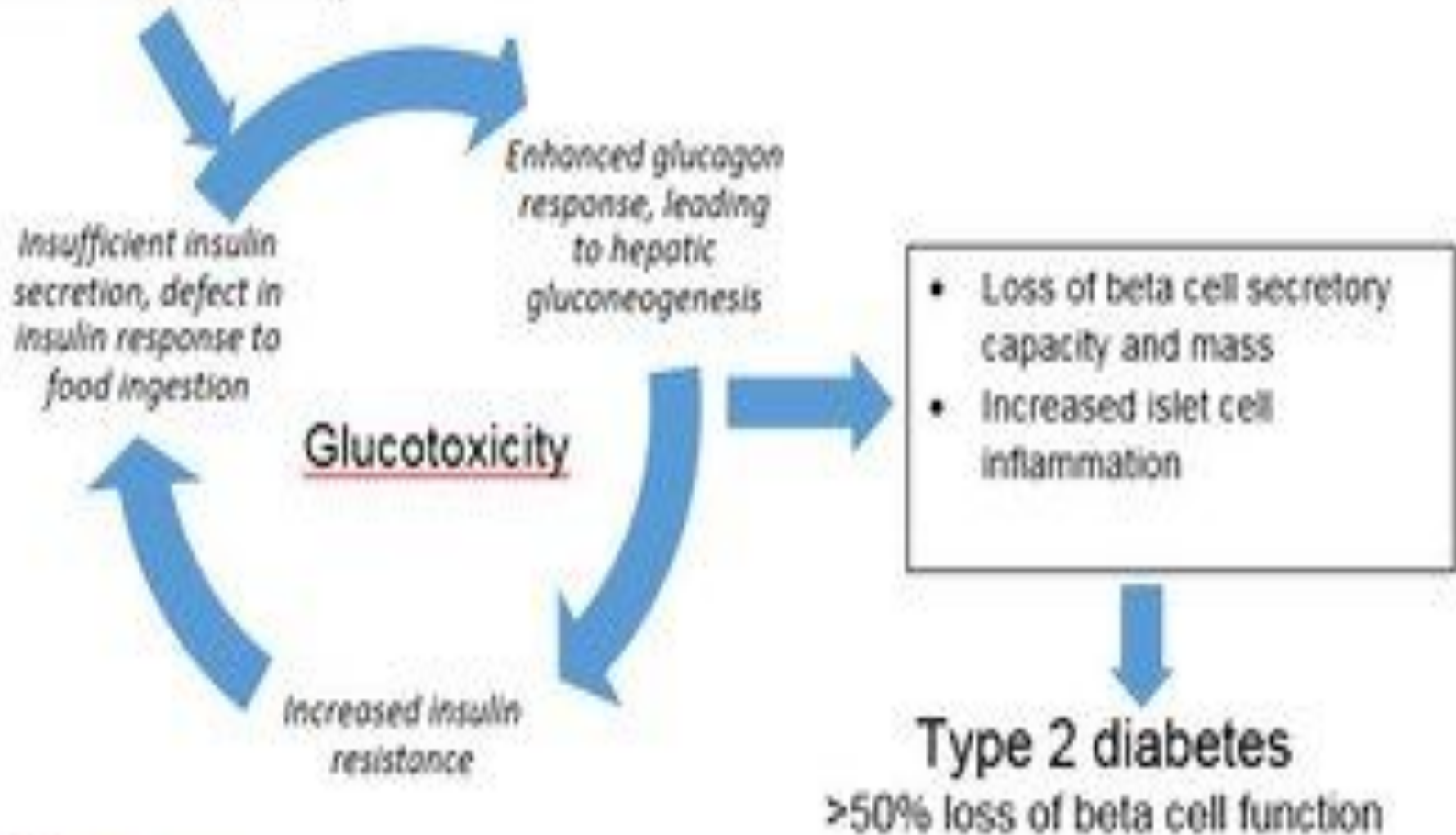
Yin Xu

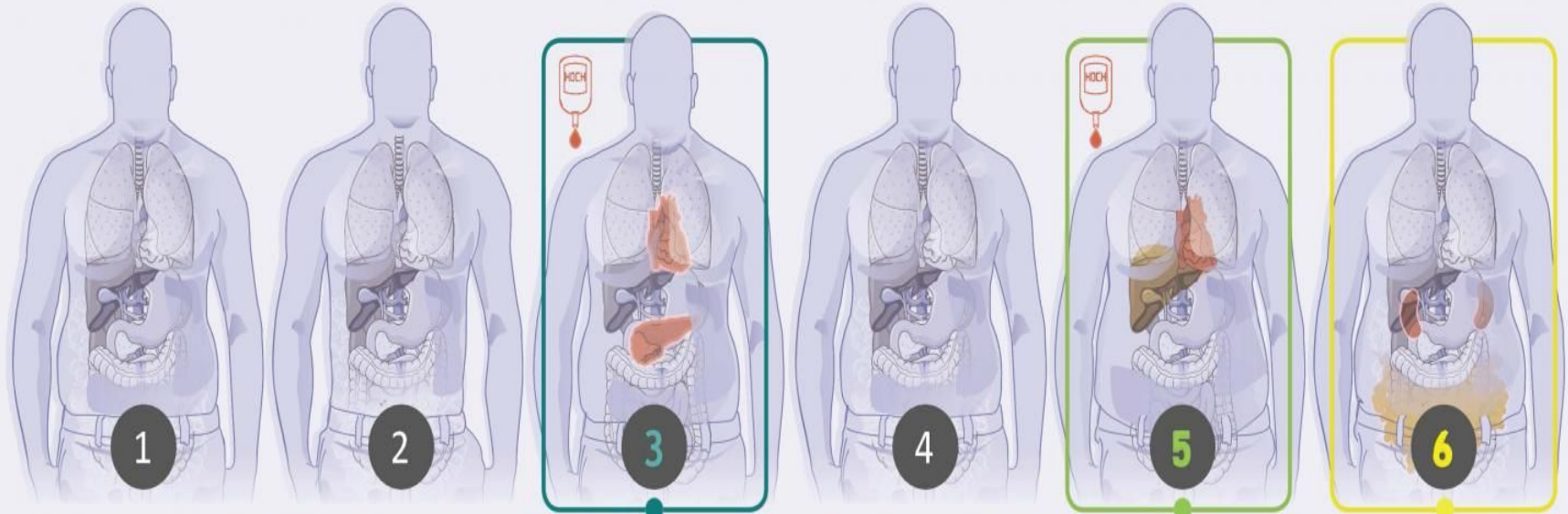
Qi & Yin  
Xu

Yin &  
Yang Xu

# Excessive nutrition/obesity

Genetic susceptibility





**CLUSTER 3 HIGH RISK LOW  
INSULIN SECRETION HIGH  
GENETIC RISK**

High diabetes risk  
High cardio-vascular risk  
Nephropathy risk

**CLUSTER 5 HIGH RISK  
HIGH LIVER FAT  
INSULIN RESISTANCE**

High diabetes risk  
High cardio-vascular risk  
High nephropathy risk  
Higher mortality

**CLUSTER 6 HIGH RISK  
HIGH VISCERAL FAT  
HIGH RENAL SINUS FAT**

Relatively low risk of diabetes  
High risk of nephropathy  
Higher mortality

Diet

Exterior condition

Xiao Ke Bing

Emotional distress

Kidney Weakness

# Signs and symptoms of type 2 diabetes

- Increased thirst
- Frequent urination
- Increased hunger
- Unintended weight loss
- Fatigue
- Blurred vision
- Slow-healing sores
- Frequent infections
- Numbness or tingling in the hands or feet
- Areas of darkened skin, usually in the armpits and neck



# Pathology of TCM

- 1. Zang-Fu pathology
  - Upper jiao---lung
  - Middle jiao---stomach
  - Lower jiao---kidney
  - 1.1 upper jiao---heat or fire w/dryness of lung
  - Lung qi xu
  - Lung fire
  - 1.2 middle jiao---excess stomach fire vs. deficient stomach fire
  - Excess stomach fire
  - Deficient stomach fire

# Pathology of TCM

- 1.3. Lower jiao--- kidney essence depletion and/or imbalance of kidney yin and yang
- Within Kidney
- Relationship to other organs
- 2. Yin, Yang, fire, water
  - 2.1. Yin xu w/ fire
  - Kidney yin xu---internal fire flaring up
  - 2.2 Kidney yang xu---fire can't transform water

# Pathology of TCM

- 3. Root vs. branch; xu vs. shi
  - 3.1. Root cause: yin xu
  - Branch: dryness & heat or fire
  - 3.2. Xu
    - Kidney xu: primary
  - 3.3. Kidney xu
    - Mostly kidney yin xu
    - Rarely kidney yang xu

# Pathology of TCM

- 4. Level of severity of three types of xiao ke zheng
  - Excess branch symptoms---mild
  - Deficient root symptoms---severe
  - 4.1. Within the Upper xiao, middle xiao, and lower xiao
    - Upper xiao: mild
    - Middle xiao: moderate
    - Lower xiao: severe

# Pathology of TCM

- 4.2. Between root and branch
  - Upper xiao:
    - Root cause: yin xu & qi xu
    - Branch: dryness & heat or fire of the lung
  - Middle xiao:
    - Root cause: stomach yin xu
    - Branch: excessive stomach fire
  - Lower xiao:
    - Root cause: original yin xu
    - Branch: deficient fire flaring up

# Pathology of TCM

- 5. Transformation between three xiao's
  - Upper xiao      Middle xiao      lower xiao
  - Upper xiao      ~~lower xiao~~       $\longrightarrow$
  - Middle xiao      lower xiao
  
- 6. Complications of xiao ke bing:
  - Boils       $\longleftarrow \longrightarrow$
  - Edema       $\longrightarrow$
  - Numbness and pain of the extremities

## Key Point to differentiate

- 1. Identify affected organs
  - Upper xiao---dryness of the lung
  - Middle xiao---stomach fire
  - Lower xiao---kidney xu w/ interior fire
- 2. Xu vs. Shi ( Xu fire vs. Shi fire)
  - Deficient fire
  - Excess fire
- 3. Fire vs. no fire
- 4. Level of severity & difficulty

# Key Point to treatment

- 1. Mainly nourishing; less reducing or clearing
- 2. Acute vs. chronic
  - Acute stage: lung; heart
  - Chronic stage: spleen; kidney
- 3. Three type of xiao ke bing:
  - Kidney: root cause
- 4. Prevent and treat complications
  - Edema; boils; blindness;



# Treatment ---excess type

- 1. Upper xiao
  - dryness & heat injured lung yin
  - Excessive thirst, dry mouth and tongue, restlessness, frequent urination
  - **Xiao Ke Fang**
  - Tian Hua Fen   Huang Lian   Sheng Di Huang  
Ou Zhi   Cow milk

# Treatment ---excess type

- 1. Upper xiao(dryness & heat injured lung yin)
- Related patterns:
  - 1.1. Lung & stomach fire:
    - **Bai Hu Jia Ren Shen Tang**
  - 1.2. Heat injured lung yin
    - **Mai Men Dong Tang**
  - 1.3. Lung qi & yin xu
    - **Sheng Mai San**
  - 1.4. Lung & kidney xu
    - **Bai He Gu Jin Tang**

## Treatment ---excess type

- 2. Middle Xiao
- 2.1. Excess stomach fire
  - Excessive appetite, easily get hungry, rapid weight loss, constipation
  - **Bai Hu Tang**
  - **Da Chai Hu Tang**

# Treatment ---excess type

- 2. Middle Xiao
  - 2.1. Excess stomach fire
  - Related patterns
  - Yang Ming excess heat
  - **Tiao Wei Cheng Qi Tang**
  - **Da Huang Gan Cao Yin Zi**
  - 2.2. Excessive fire injured stomach yin
  - **Zhu Ye Shi Gao Tang**
  - 2.3. LI fluid depletion
  - **Zeng Ye Cheng Qi Tang**

# Treatment ---excess type

- 2. Middle Xiao
- 2.2. Spleen & stomach qi xu
  - Excessive appetite without eating much, easily get tired when hungry, thirst without drinking much, fluid retention when drinking too much, loose stools
  - **Qi Wei Bai Zhu San**
  - Si Jun Zi Tang plus Ge Gen MU Xiang Huo Xiang
  - **Shen Ling Bai Zhu San**

# Treatment ---excess type

- 3. lower Xiao
  - 3.1. Kidney yin xu w/ internal fire
  - Frequent, Excessive urination, sticky or sweet smell of the urine
  - **Liu Wei Di Huang Wan**
  - **Zuo Gui Yin**
  - Related pattern:
    - Deficient fire attacking the lung:
      - **Mai Wei Di Huang Wan**
    - Fire attacking yang ming:
      - **Yu Nu Jian**

# Treatment ---excess type

- 3. lower Xiao
  - 3.2. Kidney yang xu
  - Frequent, Excessive urination, clear or turbid urine
  - **You Gui Wan**
  - **Jin Gui Shen Qi Wan**

# Treatment ---complications

- 4. complications
  - 4.1. Boils:
    - **Wu Wei Xiao Du Yin**
    - **Xi Huang Wan**
  - 4.2. Edema
    - **Shen Ling Bai zhu San**
    - **Wu Ling San**
  - 4.3. Blindness, hearing loss
    - **Qi Ju Di Huang Wan**



# Current theory & treatment of diabetes in TCM

- Commonly used theories
  - Yin xu with heat
  - Qi xu & yin xu
  - Spleen xu with damp
  - Blood stagnation
  - Yin xu & yang Xu
  - Liver repression
- Basic patterns
  - Qi & Yin Xu with blood stasis

# Current major issues in TCM

- TCM vs. WM
- Quantifying Diagnosis
- Standardized patterns
- Objective Pattern identification

# Old vs. new strategies in case management in TCM

- Old strategy of case management
  - Chief complaints based differentiating system
  - Based on symptoms & signs
  - Reliability of symptoms
  - Reliability of the tongue
  - Reliability of the pulse
- Suitable for simple pattern, simple disease.

# Old vs. new strategies in case management in TCM

- New strategy of case management
  - Pattern based differentiating system
  - Based on Pattern instead of symptom
  - Focus more on changes and development of patterns instead of symptoms
  - Based on Zang-Fu system instead of Zang-Fu organ
  - Zang-Fu system includes: Zang-Fu organ, Channel & collateral system, Zang-Fu related tissues, sense organs, and openings of Zang-Fu.
- Suitable for multiple patterns, multiple diseases, one disease with multiple complications.

# Old vs. new strategies in case management in TCM

- Current pattern identification
  - Importance of tongue & pulse reading
  - Distinguish false tongue reading from the real ones
  - Distinguish false pulse reading from the real ones
- Management of Multi-pattern involvement
  - Concept of Zang-Fu system vs. Zang-Fu organ
  - Major pattern vs. minor pattern
  - Appropriate pattern identification approach
  - Shang Han Lun approach
  - Six stage pattern ID

# Old vs. new strategies in case management in TCM

- Appropriate pattern identification approach
- Three-step approach
  - Every diagnosis consists of deficiency part & excess part
- Step one: identify the deficiency part
  - Qi, xue, yin, yang, zang, fu
- Step two: identify excess part
  - Heat, cold, damp, blood stasis, qi stagnation, phlegm, toxin,
- Step three: identify channel & collateral involvement
  - Regular channel, eight extra channel

# Old vs. new strategies in case management in TCM

- Final diagnosis of TCM
  - Combining step one,two,and three
- Identify major pattern & minor pattern
  - Based on the severity of each pattern
  - Focus on the major & minor
  - Find two herbal formulas targeted on both pattern
- Change of pattern predicts prognosis
- Change of pattern determines the methods for disease prevention

# Recap of TCM Pathology of Xiao Ke Bing

- Kidney, Spleen, and Lung systems involved
- Yin deficiency as the major initial deficiency pattern
- Qi and Yin deficiency with heat as primary pattern
- Blood stagnation as the major excess pattern for secondary complications
- **Qi & Yin Xu with Blood Stagnation as an overall primary pattern**



## Diagnosis of Blood stasis

- Diagnosis of blood stagnation: by Zhu Shen-Yu
- At least three or more of the following
- 1. Purple spots on the face
- 2. Fixed arm or leg pain
- 3. Cardiac pain
- 4. Numbness or paralysis of extremities
- 5. Menses: black in color with clots
- 6. Purple spots or patches on the tongue
- 7. Purple tongue
- 8. Enlarged veins

# Basic formula for Xiao Ke Bing

- Based on the pattern of qi & yin xu with blood stagnation
- Ge Gen, Tian Hua Fen, Di Gu Pi
- Augment Qi:
  - Huang Qi, Dang Shen, Ren Shen, Sha Shen, Xi Yang Shen, Tai Zi Shen, Bai Zhu
- Nourish Yin:
  - Shan Zhu Yu, Sheng Di, Zhi Mu, Mai Dong, Xuan Shen, Huang Jin, Yu Zhu, Shi Hu, Wu wei Zi, Shi Hu
- Invigorate blood:
  - Chi Shao, Mu Dan Pi, Tao Ren, Hong Hua, Dan Shen, Yu Jin

# Tao He Cheng Qi Tang

- Improve insulin receptor function
  - Improve membrane function of the cell overcome insulin resistance

## **Tao He Cheng Qi Tang** modified

- Effective lipids control
- Improve blood pressure and lipid profile

# New Integrated classification of patterns by Pro.

## Lin Lan

- Western TCM
- Diabetes Xiao Ke Bing
- Early Stage Yin Xu with heat
- Middle stage Qi & Yin Xu
- Late stage Yin & Yang Xu

# Survey of Patterns in Xiao Ke Bing

- Diabetes randomized 91 cases
- TCM patterns: Yin Xu with Heat was not the primary pattern
- Damp in the MJ                      39 42.9%
- Blood stasis                              27      29.7%
- Spleen & Kidney Xu 9                      9.9%
- Yin Xu W/heat                      16      17.6%

# New theory one: Spleen school I

- Spleen (pancreas), kidney, blood collateral.
  - Expel or transform damp
  - Invigorate blood
  - Fortify the root (spleen and kidney)
- Pancreas as part of the spleen system
  - Damp as a major indicative of the function of pancreas
  - Digestion, absorption of nutrients
  - Elimination, breaking down the wastes
  - Production, secretion, transportation, utilization of insulin
  - Causing qi and blood stagnation in channels

# New theory one: Spleen school II

- Spleen Xu and /or damp is the key factor
- Damp-congestion
  - **San Ren Tang** or **Wei Ling Tang**
- Liver-spleen disharmony
  - **Xiao Yao San** or **Chai Hu Shu Gan San**
- Blood stasis
  - **Xue Fu Zhu Yu Tang**
- Kidney Xu
  - **Liu Wei Di Huang Tang** or **Jin Gui Shen Qi Wan**

# New theory two: liver school

- Liver qi stagnation is the key factor
- Yin Xu with liver qi stagnation
  - **Yi Guan Jian** modified
- Liver & GB damp-heat
  - **Long Dan Xie Gan Tang**
- Liver-spleen disharmony
  - **Xiao Yao San** or **Chai Hu Shu Gan San**
- Blood stasis
  - **Tao Hong Si Wu Tang**



# New theory three: obese vs. non-obese

- Obese type
  - Spleen system as primary
- Non-obese
  - Liver system as primary
  
- Under obese type
- True obese type
  - Stomach heat
- False obese type
  - Spleen deficiency

## Review of TX principles of Xiao Ke Bing

- 1.nourish yin & clear heat
- 2.tonify qi & nourish yin
- 3.nourish yin & tonify kidney
- 4.invigorate blood & remove stasis
- 5. tonify qi & nourish yin & regulate qi & invigorate blood
- 6.tonify kidney & invigorate blood

# Commonly used patent herbs

- **Xiao Ke Wan**

- Huang Qi Sheng Di Tian Hua Fen

- **Jiang Tang Shu**

- Ren Shen Sheng Di Shu Di Huang Qi Huang Jin Ci Wu Jia Li Zhi He Dan Shen

- **Yu Quan Wan**

- Classic Yu Quan Wan plus Ge Gen Tian Hua Fen Sheng Di Wu Wei Zi

- **Jiang Tang Jia Pian (Pro.Lin Lan)**

- Sheng Huang Qi Huang Jin Tai Zi Shen Sheng Di Tian Hua Fen

# Commonly used patent herbs

- **Gan Lu Xiao Ke Jiao Nang**

- Shu Di Sheng Di Dang Shen Tu Si Zi Huang Qi  
Mai Dong Tian Dong Xuan Shen Shan Yu Dang  
Gui Fu Ling Ze Xie

- **Liu Wei Di Huang Wan**

- **Jin Gui Shen Qi Wan**

# Classic formula used for Xiao Ke Bing III---Yu Quan Wan

- Ingredients:
- Ge Gen 150g Tian Hua Fen 150g Sheng Di Huang 60g Mai Men Dong 60g Wu Wei Zi 30g Fu Xiao Mai 60g Gan Cao 25g
- Yin Xu with heat
- Powder or tablet form
- 6-9g T.I.D.

# Classic formulas for Xiao Ke Bing

- **Liu Wei Di Huang Wan**
- **Qi Wei Bai Zhu San**
  - Bai Zhu Ge Gen Fu Ling Ren Shen Gan Cao Mu Xiang  
Huo Xiang
- **Yu Nu Jian**
  - Shi Gao Zhi Mu Niu Xi Mai Dong Shu Di Huang
- **Sha Shen Mai Dong Tang**
  - Sha Shen Mai Dong Tian Hua Feng Yu Zhu Bian Dou  
Gan Cao Sang Ye
- **Zeng Ye Tang**
  - Sheng Di Mai Dong Xuan Shen

## Classic formulas for Xiao Ke Bing

- **Bai Hu Tang**
- **Zhu Ye Shi Gao Tang**
  - Zhu Ye Shi Gao Mai Dong Ban Xia Ren Shen  
Zhi Gan Cao Gen Mi
- **Zi Cui Tang**
  - Huang Qi Shan Zhu Yu Sheng Di Huang Shan  
Yao pig's pancreas
- **Zuo Gui Yin**
- **You Gui Yin**

## Classic formulas for Xiao Ke Bing

- **Wu Mei Wan**
- **Da Chai Hu Tang**
- **Chai Hu Gui Zhi Gan Jiang Tang**
- **Dang Gui Liu Huang Tang**
- **An Gong Niu Huang Wan**
- **Da Bu Yin Wan**
- **Sheng Mai San**



# Commonly used single herbs

- Rou Gui
- Ren Shen Powder
  - 0.5g T.I.D.
- Di Gu Pi
  - 9g serves as herbal tea
- Bai Jiang Chan powder
  - 2-4g T.I.D.
- Pumpkin powder
  - 6g T.I.D.
- Bitter melon tablet
  - 0.5g, 15 tablets, T.I.D.

# Diabetes Materia Medica

The most frequent used single herbs in traditional formulas for Xiao Ke Bing by Dr. Zhang Hong-Ying published in 1998.

Covered over five dynasties---Tang, Song, Yuan, Ming and Qing dynasty

Including 1282 formulas  
covered 275 herbs

# Diabetes Materia Medica

Herb	Frequency	Herb	Frequency
Ge Gen	44%	Sheng Di	10%
Gan Cao	32%	Da Huang	9%
Mai Dong	21%	Shan Zha	8%
Tian Hua Fen	18%	Chai Hu	8%
Ren Shen	17%	Huang Qi	7%
Fu Ling	17%	Rou Gui	7%
Huang Lian 1	6%	Zhi Ke	7%
Huang Qin	15%	Di GU Pi	7%
Shi Gao	12%		

# Diabetes Materia Medica

The following list in order of the frequency of use.

Wu Wei Zi

Chai Shao

Ku Shen

Dang Gui

Mu Li

Xi Jiao

Chen Pi

Xing Ren

Lu Gen

# Diabetes Materia Medica

- The following list in descending order of the frequency of herb categories.
  1. Heat-clearing herbs
  2. Qi-tonifying herbs
  3. Dispersing wind-heat herbs
  4. Yin nourishing herbs
  5. Clearing damp-heat herbs
  6. Tonifying spleen & drying damp herbs
  7. Moving qi herbs
  8. Dispersing wind-cold herbs

# Diabetes Materia Medica

Based on pharmacological studies, the following herbs all have lowering blood glucose effects.

Sheng Di Huang

Shu Di Huang

Sang Bai Pi---delay glucose absorption in LI

Ren Shen---improve metabolism

Sang Ye

Zhi Mu

Tian Hua Fen Tvichosan A、B、C、E

Huang Lian

Da Huang

# Diabetes Materia Medica

(Cont.,)

Cang Zhu

Mai Ya

Jie Geng

Huang Qi---dual regulating effect

Shan Yao

Mai Dong

Yu Zhu

Huang Jin

Gou Qi Zi

Nu Zhen Zi

Shan Zhu Yu

Gui Jian Yu

# Herbal treatment strategy fallacy

Diabetes is considered as multiple metabolic disorder including imbalance of glucose, protein, fat, water, and electrolytes metabolism.

- Misconception I: The more aggressively reducing blood glucose, the better management of DM
  - Glucose control is a small part in long term care
- Misconception II: searching for the strongest single herbal extract



# Herbal treatment strategy fallacy

Misconception III: combining all the strongest herbal extracts will be the best formula

- Hypoglycemia is more dangerous than hyperglycemia
- Possible NHHHC---nonketotic hyperglycemic hyperosmolar coma
- increase the risk of insulin resistance

# Factors that affect management of blood glucose

- Difficult factors
- 1. Insomnia
- 2. Constipation
- 3. Emotional distress
- 4. Toxin (infections)
- 5. Irregular menstruation
- 6. Drinking alcohol
- 7. Chronic pain

# Factors that affect management of blood glucose

## 1. Insomnia

- Huang Lian Er Jiao Tang
- Qi Ju Di Huang Wan
- Huang Lian Wen Dan Tang
- Xiao Ban Xia Jia Fu Ling Tang

# Factors that affect management of blood glucose

## 2. Constipation

- Da Cheng Qi Tang
- Da Chai Hu Tang
- Ma Ren Rong Chang Wan, Zeng Ye Cheng Qi Tang
- Liu Jun Zi Tang

## 3. Emotional distress

- Jia Wei Xiao Yao San
- Jia Wei Bao He Wan
- Zheng Gan Xi Feng Tang
- Dang Gui Lu Hui Wan
- Long Dan Xie Gan Tang ◦

## Factors that affect management of blood glucose

4. Toxin (infections)
  - Respiratory infection
  - UTI
  - Skin infection
  - Chronic gum disease
5. Irregular menstruation  
hormonal imbalance
6. Drinking  
liver damage
7. Chronic pain

# Insulin Resistance (Syndrome X)

- First described by Dr. Gerald Reaven in 1988
- Include six metabolic abnormalities
  - Glucose intolerance
  - Insulin resistance
  - Hyperinsulinemia
  - Hypertriglyceridemia
  - Low high-density lipoprotein
  - Hypertension
- Also include
  - Dysfibrinolysis (blood-clotting)

# Insulin Resistance (Syndrome X)

- Current diagnosis of syndrome X
- At least three out of the following five items
  - Obesity: waist circumference
    - male >102cm, female >88cm
  - Triglyceride > 150 mg(1.7mmol/l)
  - HDL:
    - male <40mg/dl(1.0mmo),
    - female <50mg/dl(1.3mmol)
  - Blood pressure > 130/85mmhg
  - Fasting glucose > 110mg/dl(6.1mmol)

# Insulin Resistance in TCM

- Basic patterns **Insulin Resistance** for Obesity----damp, phlegm, qi xu, blood stasis
- High Triglyceride---turbid damp, turbid phlegm
- Low HDL--- essence xu, qi xu or yang xu
- High Blood presser---wind, yin xu, blood stasis
- High blood glucose---yin xu, heat



# Insulin Resistance and TCM

- Blood stagnation
- Spleen deficiency
- Damp and phlegm
  
- Islet cell repair therapy
  - Invigorating blood
  - Transform damp
  - Tonify spleen

# Case Study 1

Male, 65-year-old, with history of diabetes for 32 years, chronic sinusitis for 10 years, chronic cough for 3 months, chest X-rays showed massive shadow in the lower right lobe of the lung, using insulin injection.

- Cough, nasal congestion with yellow discharge, chest tightness, fatigue, depressed, red tongue with white-yellow greasy coat, wiry, slippery, and thready pulse.
- Heat, phlegm-heat, lung qi & yin xu
- Ma Xing Shi Gan Tang + Cang Er Zi San + Sheng Mai San

## Case Study 2

Female, 35-year-old, history of diabetes for 25 years, using insulin pump for 6 years, blood glucose level keep rising up after increasing insulin dose.

- Fatigue, loose stools, pale tongue, white greasy coat, wiry & slippery pulse.
- Spleen qi xu with dampness
- Shen Ling Bai Zhu San

# Case Study 3

Female, 81-year-old, history of diabetes for 18 years, using insulin injection, started having TIA episodes from once every 3 months to 3 times a week, headaches, dizziness, vertigo, numbness and weakness of the extremities, taking blood thinner, smoking cigarettes for 50 years.

- Abdominal distention, stomach pain, insomnia, purple spots on the lips, dark circles below the eyelids, deep-red tongue, dry-yellow coat, wiry & slippery, thin & slight rapid pulse.
- Phlegm-heat-toxin in the lung, qi xu & yin xu with blood stasis
- Wen Dan Tang+San Zi Yang Qin Tang+Bai He Wu Yao San+Sang Ye, Gou Teng

# Case Study 4

Female, 45-year-old, history of diabetes for 10 years, using insulin injection, started having pain, numbness and tingling sensation in an area lateral and inferior to the umbilicus between Ren and Sp15 down to St 28, trouble controlling blood glucose.

- Fatigue, depressed, left shoulder stiff and pain due to multiple injuries, feels puffy, dusky tongue with teeth-marks and purple spots on the sides, white wet slight greasy coat, wiry & slippery pulse.
- Spleen qi xu with dampness, blood stagnation in spleen and stomach channel
- Shen Ling Bai Zhu San + Gui Zhi Fu Ling Wan

# Case Study 5

Male, 64-year-old, history of diabetes for 12 years, hypertension for 5 years, using oral medication for both conditions, diagnosed with lung cancer 3 months ago, undergoing chemo and radiation therapy, started having nausea, vomiting, weight loss, tiredness, diarrhea, low blood pressure ranging from 100-90/60-50mmhg. After stop taking medication for 3 weeks from previous 150-160/80-90mmhg..

- Pale complexion, thin body build, fatigue, depressed, sharp pain in both upper arm and neck, purple burning scars on the left side of the neck caused by radiation, dryness of the skin, dusky tongue with slight greasy coat, wiry & slippery & thin pulse.
- Toxin heat, dampness congestion in the MJ, blood stasis, qi & yin xu with sinking spleen qi
- First phase: Hou Xiang Zheng Qi San + Bu Zhong Yi Qi Tang
- Second phase: Liu Wei Di Huang Wan + Bu Zhong Yi Qi Tang

## Case Study 6

Male, 47-year-old, history of diabetes for 6 years, using oral medication inconsistently, diagnosed with hepatitis C through annual checkup, liver panel showed SGPT414 and SGOT 272, fasting glucose 145mg/dl, heavy drinking for over 20 years.

- Red intoxicated, complexion, fatigue, angry, turbid yellow spots near outer canthus, deep-red tongue with dry thick yellow greasy coat, wiry & slippery & rapid pulse.
- Damp-Heat-Toxin accumulation in the liver & GB
- First phase: Xiao Chai Hu Tang + Huang Lian Shang Qing Wan
- Second phase: Xiao Yao Wan + Liu Wei Di Huang Wan

# Case Study 7

Male, 38-year-old, history of diabetes for 21 years, had 2 kidney transplant at age 14 and age 25, using immunorepresants and insulin injection, diagnosed with skin cancer 2 years ago, started with a small boil on the left cheek later turn into a open wound that never closed, choosing alternative treatment because of afraid of disfiguration of the face.

- Quarter sized open wound on the left cheek with profuse thick yellow discharge, swelling in surrounding areas, purple-red in color, thin body build, fatigue, deep-red tongue with dry yellow coat, slippery & rapid pulse.
- Damp-Heat-Toxin accumulation in the stomach, qi & yin xu
- Huang Lian Jie Du Tang + Sheng Mai San
- Huang Lian powder for external use



# Case Study 8

Male, 35-year-old, history of diabetes for 20 years, history of hypertension for 7 years and asthma for 3 years, had an auto accident 2 months ago resulted in broken left leg and ankle, was taking Tian Wang Bu Xin Dan and Wen Dan Tang for insomnia and asthma with satisfied results before the accident.

- Slow healing of the broken bone, insomnia, severe episodes of wheezing, depressed, mild stomach discomfort, thin body build, fatigue, dusky teeth-marked tongue with purple spots and yellow greasy coat, wiry, slippery & rapid pulse.
- Phlegm-heat in the lung, blood stasis, qi & yin xu
- First phase: Sheng Mai San+ Wen Dan Tang + San Zi Yang Qing Tang +Tao Hong Si Wu Tang
- Second phase: Huo Xiang Zheng Qi San + Xiang Sha Yang Wei Wan

# Interactions between Chinese herbs and western medicine

- Should we use Chinese herbs?
  - Benefits vs. side effects
  - Efficacy vs. safety
- What to use?
  - Raw vs. patent
- When to use it?
  - Based on different stages
- What are the cautions?
  - Hypoglycemic state

# TCM dietary recommendations

- General guidelines of TCM dietary recommendation
  - Matching meals with pattern identification
  - Protecting & nourishing spleen & stomach
  - Careful harmonization of the five flavors
  - Careful observation of food prohibitions
- Five flavor theory
  - Sour, bitter, sweet, pungent, salty.
  - Glucose: essence of the spleen
  - Hyperglycemia ---turbid sweets
  - Excessive sweets ----including high fat, high calories

# TCM dietary recommendations

- Relationship among the five flavors
  - The sour overcomes the sweet
  - Commonly used “Sour herbs”
  - Wu Wei Zi; Wu Mei; Shan Zha; Shan Zhu Yu; Bai Shao
  - Commonly used “sour food”
  - Tomato; lemon; pi pa; orange; shan zha; shi liu; plum; grape fruit; mungo; papaya; chi xiao dou; vinegar.

# TCM exercise recommendations

- General principle
  - Restore balance
  - Improve qi & blood circulation
  - Prevent secondary complications
- Commonly used methods
  - Breathing exercise
  - Meditation
  - Tai Ji
  - Qi Gong

# Acupuncture in diabetes

- Acupuncture treatment in diabetes
  - Primary vs. secondary
  - With or without complications
  - Channel theory vs. Zang-Fu theory
  - Regular channel vs. extra channel
  - Divergent channel vs. muscle region

# Acupuncture in diabetes

- Commonly used modalities
  - body acupuncture
  - Ear acupuncture
  - Electoral acupuncture
  - Moxabustion
  - Point injection
  - Tui Na therapy
  - Reflexology of the foot

# Acupuncture in diabetes

- Acupuncture treatment in diabetes
  - Common pattern: Qi Xu & Yin Xu & Xue Yu
  - Unblock channels & collaterals, circulate qi & blood, regulate yin & Yang
- A. diabetes without complications
  - Nourishing vs. reducing approach
  - Main point selection: back-shu points
  - UB14, UB 20, UB 23, St 36, K 3, K 5, Ren 3
  - Even technique



# Acupuncture in diabetes

- B. diabetes with complications
  - Based on affected areas and main symptoms:
  - Dizziness: GB 20, P 9, LI1, Tai Yang
  - Insomnia: An Mian, K 3, UB 18, Ren 4,
  - Profuse sweating: St 36, Ren 4, UB 23
  - Poor appetite: Ren 12, St 40, St 25, Ren 6
  - Diarrhea: St 36, Ren 8, UB 25, UB 20,
  - Decreased vision: UB 18, UB 23, K 3, GB 37, UB 2
  - Numbness & pain in upper arm: LI 4, LI 11, P6, SJ 5,
  - Numbness & pain in lower legs: GB 31, GB 34, Sp 9, St 41

# Acupuncture in diabetes

- C. based on the “three xiao” theory
  - Upper xiao: Lu 5, Lu 7, Lu 9,
  - Middle xiao: St 44, St 37, Sp 6, St 36
  - Lower xiao: K 3, K 6, K 7, K 9, UB 23, K 3, Du 4
- D. based on qi & xue theory
  - Ren 6, Ren 17, UB 17, Du 9, UB 22
  - Ren 12, Ren 9, SJ 4, Sp 10, UB 10, UB 18, UB 14
  - Wei Guan Xie Shu

# Acupuncture in diabetes

- E. based on channel theory
  - Yang channel
    - UB 17 UB 20 St 36
  - Yin Channel
    - Lu 5 Sp 6 Ren 12 Ren 6
  - Tonifying and sedating technique

# Auricular acupuncture therapy

- 1. Pancreas endocrine kidney San Jiao Shen Men heart liver
- 3-5 points
- 20 minutes
- 10 sessions
- 2. Main points: Pancreas GB liver kidney sympathetic
- Secondary points: San Jiao hunger point thirst point
- 5-6 point
- Manipulate 1 minute
- Every 30 minutes
- Retain 1-2 hours

# Acupuncture in diabetes

- Mechanisms of acupuncture
- Acupuncture treatment could improve insulin resistance
- A five-year study conducted by Dr. Zhang Zhi-long at TCM hospital of Tian Jing discovered that regulating spleen and stomach method using acupuncture to treat insulin resistance in 56 cases.
- Results: acupuncture could reverses or lessens insulin resistance and improve sensitivity of insulin receptor.

# Cautions of acupuncture treatment

- Do not use acupuncture treatment under the following conditions
- Diabetes with acute complications
- Diabetes with skin infection and /or ulcers, wounds
- On empty stomach
- Over exhaustion
- Extreme stress
- History of needle shock

# Diagnosis of diabetes in western medicine

- Normal blood glucose
  - FPG 70 – 110 mg/dl
  - PPG < 140 mg/dl
- WHO
  - FPG > 140mg/dl
  - FPG < 140mg/dl PPG > 200mg/dl
- ADA diagnosis
  - Symptoms of diabetes plus  
CPG ≥ 200mg/dl (11.1mmol/l)
  - FPG ≥ 126mg/dl (7.0mmol/l)