

# 有助推動本地中醫藥發展的 科研項目建議

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# Acknowledgement

(by groupings without order)

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# Content

- Inpatient clinical needs
- Different sectorial needs >>> Shared priorities
- Herbal research suggestions
- Diagnosis as basis of clinical research:  
Tradition & Big data

# Inpatient Clinical Needs

- Safety Evidence for Ceiling Dose Increases:
  - Different ceiling doses in different disease states
  - How can ceiling dose be safely extended when prescribed in herbal composite formulae or couplets?
- Herb - Drug Interaction Database:
  - Popular demands (from patients, WM & CMP's, herbal industry) on HDI information that is constantly updated, and both clinically & locally relevant
- Administration & Formulation Issues:
  - Different administrative routes and dosing intervals, e.g. Feeding tube in patients with swallowing problem
  - Different herbal formulations: Crude or granules
  - Increasing pCm demands (from both patients and clinicians)
- TCM Diagnosis Gap:
  - How to reproduce reliably, and communicate concisely by hospital CMP's?
  - How to inherit the rich clinical experience of CM masters with improved effectiveness & efficiency?

### Clinical

- Dosage Safety
- Herb - Drug Interaction
- Administration & Formulation

### Industry

- Crude Herbs
- HKP/7+1 → HKC
  - HKC+
- Granules
- Pharmacovigilance
- Facilities & Training

### Academic

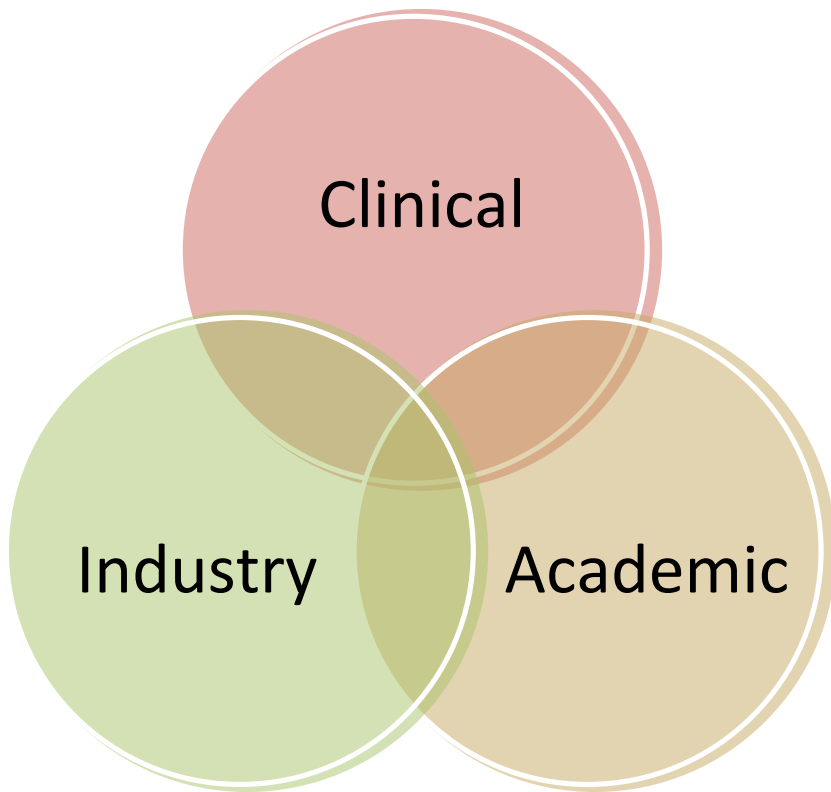
- Single Compounds / Mechanistic Studies
- Efficacy / Clinical Trials
  - Systematic Reviews / Meta-analyses
  - GLP

## Stakeholders' Different Priorities

# Herbal Research

# Can There be *Shared Perspectives*?

## Possible Examples for Collaboration



1	Dosage Safety	Herbal Ingredients / Mechanistic Studies	Pharmacovigilance (Herbal Granules)
2	Herb-Drug Interaction	Systematic Reviews & Mechanistic Studies	HKC+
3	Administer pCm via Feeding Tube	Adsorption Bioavailability Studies & Clinical Trials	pCm Formulation Improvement

# HDI & Herbal Safety Database

- **HA – FHB – DH – ITC**
- Systematic Reviews
- Mechanistic Studies of Herbal Ingredients
- GLP
- Pharmacovigilance
- HKC+ or pCm/Granules Product Improvement



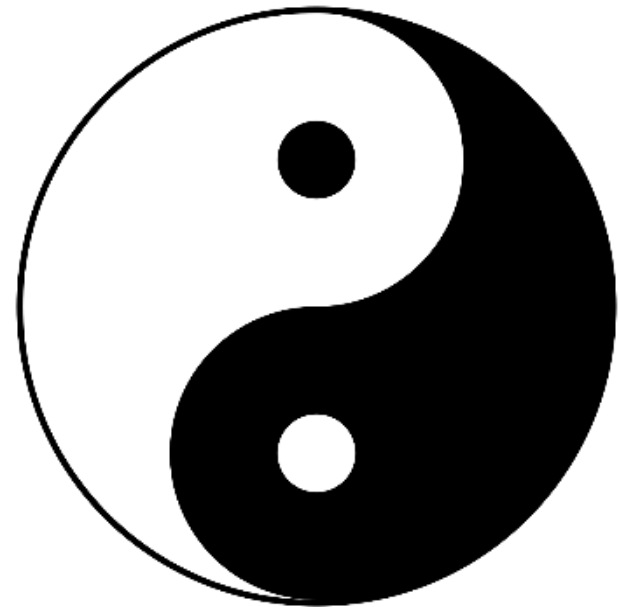
# pCm/Granule Research: some thoughts

- **\$\$\$:**
    - **Rarer** herbs, e.g. 麝香
  - **Safety:**
    - **Toxic** Herbs, e.g. Fuzi crude herbs vs granules
  - **Formulation Improvement**
  - **Industrial Quality Standards (GMP ...):**
    - Basic quality requirement for vigorous scientific studies
  - **Research & Practice:**
    - Herbal Couplets 藥對 in Traditional Formulae
- ? ***Prioritized researches towards pCm / Granules containing Rarer and/or Toxic herbs in Herbal Couplets***

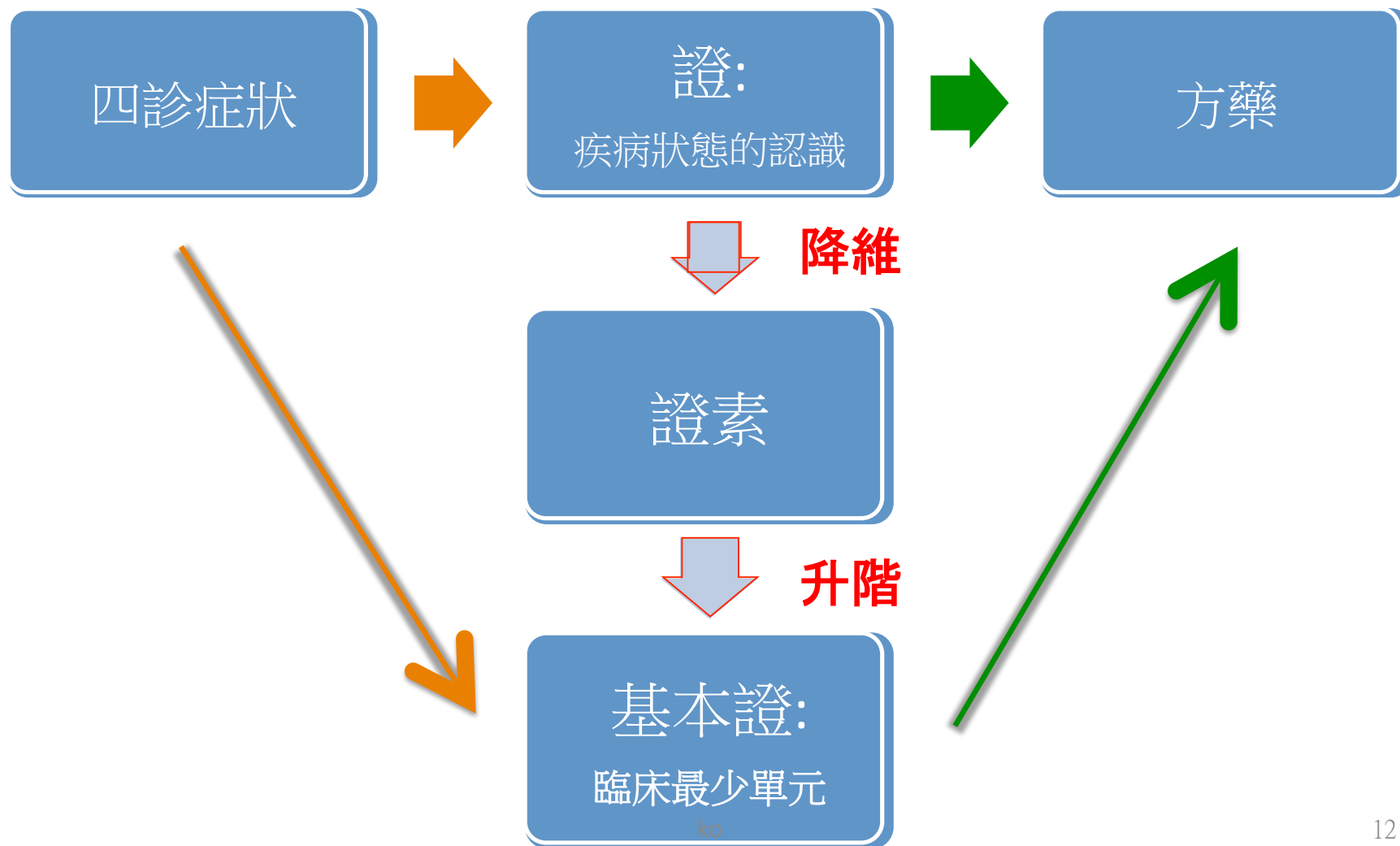
# Research on TCM Diagnosis

# Research & TCM Diagnosis

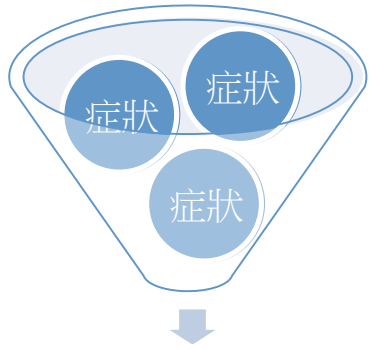
- TCM Diagnosis is the “Soul” of CM
- Ever-changing nature of CM clinical understanding of illness
- Disease state / pattern (證) of illness
- Too varied and complex to **reproduce reliably**
- Logical CM diagnostic framework
- Transformation of concept: Dimensional descent, followed by ascent (降維升階, 王永炎2004)



# Improve Diagnostic Reproducibility by CM Disease Pattern Transformation: Dimensional Descent followed by Ascent



腎臟陰液虧損，水不涵木，木少滋榮，肝陽偏亢，內風時起，症見偏枯、瘓中、口喎頰斜、舌強、肢麻、耳竅無聞、舌赤等，此証忌投攻風劫痰，宜益腎涼肝治本。如熟地磁石方;或用甘寒熄風方，如固本丸加減，或復脈湯去姜、桂。



複合症狀

偏枯、瘓中、口喎頰斜、舌強、肢麻、耳竅無聞、舌赤

• 偏枯、舌強、舌赤

**基本證**

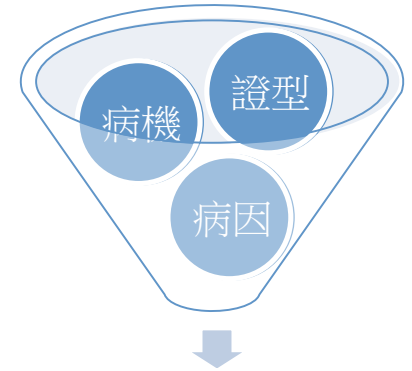
肝陽亢

• 偏枯、口喎頰斜、肢麻

肝風

• 偏枯、耳竅無聞

腎陰虛

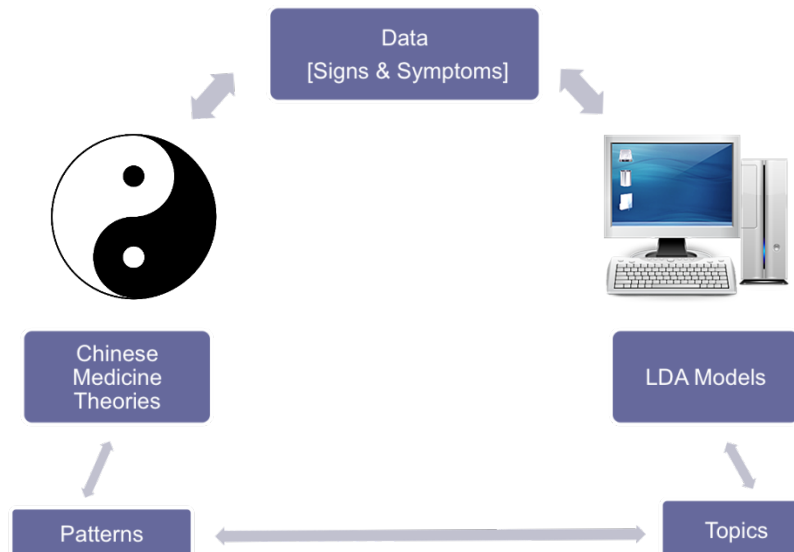


複合證

腎臟陰液虧損，水不涵木，木少滋榮，肝陽偏亢，內風時起

# CM Diagnostic Research: Overview

- Based on TCM diagnostic principles and practices
- Manually intense qualitative approach with dimensional descent, followed by ascent
- Focus on basic disease patterns
- Text-mining using generative probabilistic models on vast TCM literature
- Extract latent topics unsupervised
  - Focus on topics (rather than structures, trees, or networks)



# Summary

- Inter-Sectorial Collaboration with Academic
  - Clinicians & Service Providers
  - Herbal Industry
  - Computer Scientists & IT Industry
  - **Regulatory & Funding Institutions**
- Herbal Research
  - HDI & Herbal Safety
  - pCm
- CM Diagnostic Research
  - Compatible with TCM Diagnostic Principles
  - Basic Disease Patterns (Smallest, Discrete & Structured)
  - Symptoms & Signs (Unstructured) Analyzed using Big Data Technology
  - Manually-Intense Qualitative Complemented by Machine-Unsupervised Quantitative
  - For Easy Inpatient Communication, Effective Clinical Research, and Efficient TCM Learning

How to promote CM research strategically with persistence & resolve?

**INHERIT TCM MASTERS' CLINICAL EXPERIENCE  
FROM BAYESIAN PERSPECTIVE?**