



Schematify: Developing a web application to visualize medical diagnostic schemas

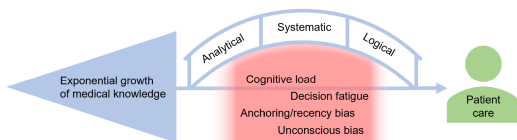
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INTRODUCTION

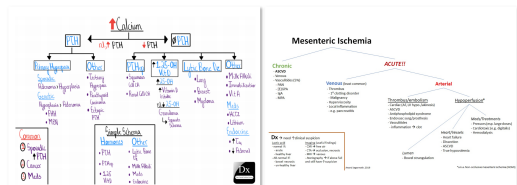
Medical knowledge is growing exponentially and we need better ways to:

- Organize and visualize personal medical knowledge
- Distribute, share, and facilitate teaching of medical knowledge to the greater community
- Create a knowledge base to test hypotheses about diagnostic and therapeutic reasoning



APPROACH

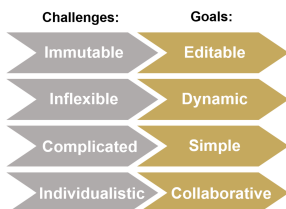
A **diagnostic schema** is a clinical reasoning tool that links diagnostic thinking to a systematic and logical organizational framework. It can provide a scaffold that allows diagnoses to be more easily remembered to reduce cognitive load, minimize anchoring bias towards common or recent diagnoses, and facilitate teaching.



Resources that use schemas include Clinical Problem Solvers, GrepMed, Manual of Medicine, dxdfx, The Calgary Guide Frameworks for Internal Medicine

CHALLENGES & GOALS

There is a lack of dedicated tools for creating diagnostic schemas. Existing mechanisms (handdrawing, PowerPoint) have serious drawbacks:



SCHEMATIFY: An interactive python-based web application to create, visualize, and share diagnostic schemas

Edit content

- Add new content with updated information
- Share google sheet with collaborators for edits
- Continually refresh in real time

Export

- Download as a PDF and share!

Open application

- Navigate to diagnostic-schema.herokuapp.com
- Detailed directions are available

Create schema

- Enter content in a google sheet template
- Copy and paste sheet URL and lab name into app

Adjust schema

- Customize visualization of schema (e.g., height, width)

Subcategory (between which nodes?)	Name (required)	Description (optional: definition, alternative names, etc. on pathogenesis)	Diagnostics (optional: to start with a "+" sign?)	Category (optional: will color the nodes)	Notes(s) (optional, off-enter for new bullet point)
Top node	Hypoglycemia		Whipple's triad (symptomatic, low glucose, relief with glucose or CA glucose > 40mg/dL)		
	Insulin-mediated	Hyperinsulinemic hypoglycemia	High results		
	Endogenous		High C-peptide		
	Exogenous		+ imaging		
	Insulin autoimmune hypoglycemia		+ antibodies		Neuroglucocorticoids
	Insulin administration				Antibody to insulin
	Functional Beta-cell disorder (Nesidioblastosis)				Antibody to insulin receptor
	Exogenous				Metabolic/Endocrine
	Not insulin-mediated				Neuroendocrine
	Not enough glucose consumed				Metabolic/Endocrine
	Not enough glucose produced				Metabolic/Endocrine
	Critical illness (Hypertic/paraneoplastic)	Inquired gluconeogenesis/hypoglycemia			Metabolic/Endocrine
	Hormone deficiency				Metabolic/Endocrine
	Inborn error of metabolism				Concurrent/Genetic

The "Name" column creates the nodes. You link one node to another with the "Subcategory" dropdown column. Other columns are optional and provide additional content or color.

NEXT STEPS

- User testing and live demonstrations to continue app development and improved user experience
- Generate a database of schemas organized by system
- Auto-tweet button for social media integration
- Support automatic hyperlinks to online resources for common concepts
- Implement interactivity with app for use in case conference
- Collaborations with the Vanderbilt Clinical Problem Solvers Student Interest Group