9 THE MAAS CASE COMPLEXITY CODE ORDERS EVERY CASE

Each case carries a three-digit code: how many mechanisms of pathophysiology compete to explain the complaint, its nature, and its burdening contexts. Teachers make a case harder by raising one digit. Each case starts from one of the 55 complaints in the MAAS Review of Systems (maas-mi.eu), which maps every complaint to its mechanisms.

FIRST DIGIT · MECHANISMS	SECOND DIGIT · NATURE	THIRD DIGIT · CONTEXTS
1. One, as in reflux	0. Regular scheme	0. Regular
2. Two	1. Danger involved	1. One context
3. Three or more, as in fatigue	2. Vague or ambiguous	2. Two or more contexts
	3. Both	

CODE	PATIENT	WHAT CHANGES
1.0.0	Sarah, 42	One mechanism: reflux.
1.0.1	Sarah, two weeks later	One context added: unmentioned ibuprofen.
1.1.1	Rob, 58	Danger included: angina. He plays it down.

10 AI LITERACY IN PRACTICE: MAAS SOURCES STEER, AI TEST-STUDENTS CHECK

SOURCE	WHAT IT HOLDS	IN MAAS PRACTICE
MAAS-MI items	73 items in six scales.	Named in the feedback.
Review of Systems	55 complaints, 17 mechanisms, red flags.	Shapes the case.
Medical Interview handbook	Explore, take a history, present solutions.	Steers the patient.
Clinical Reasoning handbook	Complaint to mechanism; four patterns.	Steers the feedback.

Three AI test-students (strong, interrogator, early closer) then work each case; it reaches students only after it passes all 48 checks. Handbooks: maas-mi.eu › In context › Handbooks, password MAAS.

11 SEVEN HEURISTICS CHARACTERISE A COMPLAINT

From the Medical Interview handbook, chapter 2. The feedback names them, as in Rob's case (H2, H3).

	THE COMPLAINT ITSELF		ITS CONTEXT
H1	Complaint *What is the symptom like?*	H5	Psychosocial impact *How does it affect life and mood?*
H2	Time-intensity *When and how does it occur?*	H6	Staging *Where in the care journey?*
H3	Modifying factors *What affects it?*	H7	Risk and vulnerability *What increases risk?*
H4	Context *What accompanies it?*		

JOIN US & BUILD A CASE FOR YOUR COURSE

TRY A CASE

JUDGE THE FEEDBACK

REPORT EXPERIENCES

Questions? Ask Alfons Crijnen: info@maas-mi.eu

PRACTICE TEACHES CLINICAL REASONING. FEEDBACK LIFTS IT.

MAAS PRACTICE: AN AI PATIENT FOR CLINICAL REASONING

WHAT DO MY STUDENTS GAIN?	CAN I TRUST IT?	WHO DECIDES?
Calm, near-real practice from year 1, with feedback after every case.	Published MAAS sources steer the AI, and AI test-students check it.	The teacher, who chooses the case and its difficulty.

1 RESEARCH BARELY LOOKS AT EARLY PRACTICE

A 2025 review of 50 studies (Wark et al.) shows that explicit teaching of clinical reasoning works: 46 found improvement, with a significant effect in the clinical years. Only three studies looked at year 1, and all three reported improvement. The authors recommend a spiral: early, low-stakes practice of the reasoning framework, then intensive use in the clinical years.

MAAS Practice gives students that early practice. They meet an AI patient from year 1, calmly and as often as they need, and the patient gives each fact only when the student asks for it. Teachers adopt or build cases that suit their own curriculum, in the pre-clinical and clinical years and in residency.

2 A SESSION GIVES TIME TO THINK

STEP	WHAT THE STUDENT DOES
Brief	Reads the setting and the patient's opening line.
Case	Asks, links the answers to a mechanism, explains it, and agrees a plan. Thinking and formulating take time: the thinking we train.
Feedback	Reads the feedback and the next step. We are working on ways to deepen this phase.
Next	Runs the case again, or takes the same complaint one level up.

3 THE CASE CALLS FOR A REASONING PATTERN

The second digit of the case code (section 9), the nature, sets the pattern: a regular scheme (0) calls for the schema-based sweep, danger (1) for rule-out, a vague complaint (2) for branching, both (3) for branching, then rule-out. The first digit sets how wide the sweep runs.

PATTERN	WHEN TO USE IT	HOW IT RUNS
1. Schema-based	A regular scheme, as in abdominal pain.	The full sweep and the red flags; short with one mechanism.
2. Branching	A vague complaint: sub-mechanisms compete, as in dizziness.	Follow the branch that the nature or the triggers point to.
3. Rule-out	Danger: a likely mechanism and a cannot-miss one, as in chest pain.	Exclude the dangerous one first, or in parallel.
4. Pattern recognition	A classic picture.	Grows with experience.

4 THE FEEDBACK CHECKS FOUR POINTS

After each case the student reads at most 250 words of feedback. It names what went well, asks four questions and ends with one next step. The questions build on what expert teachers do on rounds (Houchens et al.), and teachers use them to judge the AI.

POINT	WHAT THE FEEDBACK ASKS
The telling question	Did the student organise and prioritise, and ask the question that tells the options apart?
The mechanism	Did the student explain how the complaint comes about?
The reasoning in words	Could someone follow the reasoning, thought aloud or written?
The danger kept open	Did the student keep the cannot-miss open until it was actively ruled out?

Houchens N, Harrod M, Fowler KE, et al. Am J Med 2017;130(9):1113.e1–8. Wark S, Drovandi A, McGee RG, et al. Perspect Med Educ 2025;14(1):1021–42.

5 WE SET LIMITS ON PURPOSE

CHOICE	WHY	LATER
Text only	Typing slows thinking down.	Voice at proficient levels, to train listening.
No names	Practice stays the student's own; no reports go to teachers.	Login by confirmed email, so feedback can follow progress.
Cases resolve	Each case ends in a mechanism.	Unresolved cases, as in practice.
Feedback always	Every case ends with feedback.	Students choose how much they get.

6 THE FEEDBACK COACHES AN EARLY CLOSER: ROB, 58 · 1.1.1

Rob	*I get this burning, here, behind my breastbone. I thought it was heartburn, but the tablets don't do much.*
Student	*Burning behind the breastbone, that does sound like heartburn. Is it worse after meals?*
Rob	*Sometimes after a big dinner, if I go out walking the dog.*
	…
Student	*Right, that's reflux. The chemist's tablets are quite weak, so I'll prescribe omeprazole, once a day for four weeks, and try smaller dinners. Anything else?*

FROM THE FEEDBACK

[…] The start was good. You asked about meals (H2) and lying down (H3), and Rob's answer, "if I go out walking the dog", held the key. "The tablets don't do much" was a finding as well.

The case called for rule-out, run alongside heartburn. You used pattern recognition and settled on the first label, "that does sound like heartburn", before testing anything. The two routes split at the dog walk; one H3 question, "What brings it on, and what stops it?", would have brought them back together. […]

Your next step: when a harmless-sounding word sits on a dangerous mechanism, ask what brings it on and what stops it, and rule out the danger before you make the plan.

7 WE BUILD CASES WITH TEACHERS AND MEDICAL SCHOOLS

Teachers start small: one case before a lecture, a case pack for a skills lab, or this week's complaint in a block. With teachers we choose complaints, build and test cases, and tune the feedback to their goals; with departments and medical schools we set the codes per year and study learning over the years.

8 A TENTATIVE CURRICULUM CLIMBS FROM SIMPLE TO COMPLEX

SIMPLE TO COMPLEX

Each step raises one digit of the case code; earlier levels keep coming back, in a spiral.

EXPLICIT TEACHING FIRST

The framework comes before the skills: book, Prep, Practice, then the clinic. Explicit teaching works (section 1).

FLUENCY BY PRACTICE

Many cases, until the student reasons from the head.

REALISM RISES

The AI patient first in text, then in speech; then the real patient.

A reasoned model that rises in a spiral: a starting point for discussion with teachers.

YEAR	FOCUS	MECHANISMS OF PATHOPHYSIOLOGY
Year 1	Method on clean complaints	One
Year 2	Breadth and danger	One to three
Year 3	The person and the cause	One to three
Year 4	Continuity: treatment as a test	Any
Year 5	Hard and unresolved cases	Any
Year 6	Integration and fluency	Mixed

Each year sets which codes its cases may carry (key in section 9). We can build cases for every phase.

NATURE	CONTEXTS	EXAMPLE CASE
Regular, danger or vague	None or one	Sarah 1.0.0 · Rob 1.1.1
Regular, danger or vague	None or one	Mr Lee, chest pain · 2.1.1
All four	One or two	Mrs Okafor, breathless · 2.1.2 · to build
All four, across visits	One or two	Mrs Okafor, follow-up visit · to build
Vague, or vague and danger	Two or more	Mr Haddad, chest pain · 1.3.2 · to build
Mixed	Mixed	Unannounced, timed