The RIME framework (“reporter – interpreter-manager-educator”)

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What is RIME?

RIME is an acronym for “reporter-interpreter-manager-educator” and is used to foster and observe progress of medical students and residents from understanding into action.

RIME is a framework for observing what students do, how they progress, and for giving feedback on their next steps. RIME does this in a way that describes not abstract domains like *Knowledge*, *Skills*, and *Attitude*, but actual "roles" and "tasks." RIME asks at what level of function the student is consistently reliable.

Inherent to RIME is that each these "roles" (Reporter, Interpreter, Manager, Educator) *combines* knowledge, skills, and attitude. To be a reliable Reporter takes a little bit of knowledge. You have to know what to ask the patient on rounds in the morning. You have to have the skill to be able to talk to them and examine them. You have to have the confidence to tell the team what it is you found. You have to have something in the gut to get up very early in the morning and show up. So to be a Reporter on a surgical service means you are often getting up at 4:30 or 5:00 in the morning to get there, no later than 6:00. To go from Reporter to Interpreter takes more than knowledge. It takes confidence. To go to Manager takes more than knowledge - it takes the skill to work with a patient, the confidence to work with a patient, and an understanding that you serve the patient, and there has to be a certain ethical dimension to decision making.

To explain this in conceptual terms (Pangaro, 1999) RIME is a “synthetic” framework in which the dimensions of the “analytic” framework (“KSA”) have to be combined by the learner. Since RIME is intended to plot progress it does have aspects of a “developmental” framework, though it is not strictly developmental, since the learner does not stop reporting once she starts managing (Pangaro, Ten Cate, 2013).

How does RIME work? Problem RIME tries to solve

RIME works because it is not a rating scale, but a way to fit observations into patterns.

Overall, we conceptualize progression as moving *from understanding into action*. Students move from a pre-clerkship world that is primarily cognitive, thinking through problems of how the patient’s symptom could represent several possible diseases. We *think* through what is going on in the patient’s situation that is leading to their present situation. That's what we call "understanding" - that's Reporter/Interpreter. And then they have to move into the world of "action" - what we call Manager/Educator. As we all know, it's not sufficient to say to a patient, "You have diabetes, you will take insulin." There's a fair amount of education that goes into that process, activating the patient and seeing what the patient is capable of doing. The other part of Educator is to be *reflective* on what you as a clinician know and don't know about diagnosis and therapy, and what you need to do or your team needs to do.

What questions does the student take ownership of?

Paul Hemmer says, "a Reporter can answer the *WHAT* questions." What are the symptoms? What are the findings? What are the labs? What are the medications the patient's on? "An

Interpreter can answer the *WHY* questions." Why does my patient have a fever? And in Paul's terminology the *HOW* questions, is Manager. “How are we going to figure this out? How are we going to deal with it?” So those patterns are not difficult for clinicians to master.

Everybody knows what a SOAP note is. If you say to an intern, do you trust the S and the O written by the student? And if they say, "no, I don't trust that...it's nonsense," then they're not a reliable Reporter. They get this so very quickly that...I use this physiologic terminology - "Our teachers already have a cell surface receptor for this concept. When the body wants to communicate quickly, it uses small molecules like epinephrine and dopamine, which have a molecular weight of one hundred fifty. It does not use immunoglobulins which have a molecular weight of 150,000. (I am comparing competencies, sub-competencies, milestones and EPAs to immunoglobulins!). So I'm very interested in small molecules that have an intuitive understanding from my teachers.

The whole use of scales has been very difficult for graders, but there is an alternative - we are trained for a minimum of seven years in looking for patterns. Let's use examples from medicine...That's pneumonia...That's a pulmonary embolism...That's heart failure. And we have a prototype in our head of which each of those looks like. And by the end of our training, we've all seen so much pneumonia. We even know that atypical cases look like. RIME takes advantage of that skill already built into our faculty and saying, this is a Reporter, this is an Interpreter, this is a Manager or Educator. In other words, teachers are not asked to rate someone on a scale. They are asked to *classify* the trainee in terms of familiar patterns.

(This also makes RIME a simple way for faculty to transfer to the next teacher a student’s current level of proficiency and their next steps, similar to how we handoff/handover patient, using a diagnostic label.)

When we teach something about RIME, students and teachers already know what a History and Physical is, an Assessment and a Plan. Everybody knows what a SOAP note is. They already have this basic idea in their heads of what physicians, clinicians or any profession does. You see something. You think about it. And then you do something. So that basic rhythm is just is the heart of RIME. In more technical terms, RIME has construct alignment with a mental model (observation-reflection-action) that is already in the head of students and faculty; so less work is needed to achieve consistent assessment across students and over time.

The essence of RIME is that it is a small ‘molecule’ for communication. It is a "package of meaning" that is readily understood and for which residents, faculty and students already have cell surface ‘receptors’ built in to how they think.

When I was a medical student, it was a crapshoot what your grade was going to turn out, because it really depended on who your resident, who your attending was, despite there being a checklist of ten things that looks just like EPAs. There are numerous papers from Tonesk’s paper in the 80s, and Williams and Klamen and others 10-15 years ago, about the bad reputation that teacher's evaluations of students have as being unreliable...poor inter-rater agreement. Poor feedback, poor validity agreement on how you are measuring what you want.

Then there is the emotional barriers of evaluation. Teachers do not like to “give grades”. They don't like to fail students. And the literature is replete, not just with *halo effect*, but what's called *hedging* sometimes, or trying to minimize criticism using certain circumferential language to say, “well, the student is...the student...this student can be really good.”

RIME asks teachers to classify the level at which the student is functioning. Is the student a Reporter, an Interpreter or a Manager overall? And just as we know that not every patient with pulmonary embolism has every symptom, every physical finding, not every student who is a Reporter has absolutely every one of the Reporter dimensions of performance, whether you use the 4 EPA's from the AAMC..."Gather a History...Document an encounter...Given an oral presentation...Be a member of the team."

The RIME scheme should be part of a system, RIME is just one part of a system of assessment (Pangaro, 2015). You can't just have a vocabulary. You've got to have a way of calibrating the faculty and making sure they're using it correctly.

Does RIME work?

RIME uses categories, rather than a scale, but if you were say that a Reporter is going to be assigned a 1, an Interpreter a 2, and a Manager a 3, and then you look at the observations of interns, residents, faculty working with medical students across the internal medicine clerkship. And you look at the inter-class correlation using 1, 2, and 3 for RIM. Then, the reliability of the RIME scheme is 0.82 over a 12-week medicine clerkship. The reliability of the NBME shelf exam is about 0.75.If you wanted to say which was more reliable, you'd have to say the RIME terminology was more reliable than the shelf exam.

If you look at people who do not progress satisfactorily in the clerkship, in the RIME scheme, in other words, by the end of the clerkship, they are not reliable Reporters moving to Interpreter, then these people are 10 times more likely to have problems during internship (Lavin, 1998; Hemann, 2005). When Battistone used RIME in his clerkship at the University of Utah when he changed from Honors, High pass, Pass, Low pass system to RIME, the grade distribution went from predominantly high pass and honors (in other words, skewed towards the high end of the spectrum) to the median grade being a pass. And they actually began to get low passes and fails, which they never had before.(Battistone, 2001). These studies use RIME as the overall grade for the clerkship and using it using some indication of validity. Now, there have been other studies using RIME in OSCEs and in single observations how well faculty can look at a student interacting with a patients (see annotated bibliography.

Most clerkships have used checklists since the '70s, and these have reappeared recently as pre-graduation entrustable professional activities (EPA). These EPAs are similar to RIME in that they are synthetic, but are a list rather than a framework .We can organize the EPAs as performance dimensions within the RIME framework (Meyer, 2019). EPAs numbers 1, 5, 6 and 9 are reporting ; number 2, 3, and 10 are “interpreting”.etc .

We have data on how our system yields inter-site reliability. Durning (2003) looked at the grading patterns across over ten years, 1600 students, 8 sites, and 22 clerkship directors: *None* of the variance in grading could be explained by the site. The principal determinant of what explains variance in grading across students was their grade point average before they started the clerkship. I take that to mean...I would like to take it to mean that it's not a popularity contest. You actually have to know something to go from Reporter to Interpreter.

And I say, well, let me show you our data on inter-site reliability. And one of the papers that we published, Steve Durning, was the first author when you looked at the grading patterns across over ten years, 1600 students, 8 sites, and 22 clerkship directors, NONE of the variance in

grading could be explained by the site. The principal determinant using RIME, of what explains variance in grading across students was their grade point average before they started the clerkship. I take that to mean...I would like to take it to mean that it's not a popularity contest. You actually have to know something to go from Reporter to Interpreter.

So let me summarize by saying the idea of RIME is that it looks at roles - reporting, interpreting and managing - it doesn't look at abstractions like knowledge, skills and attitudes. And incidentally, I think you know that the ACGME moved from competencies to milestones, which is in effect a move from an analytic abstract framework to a developmental synthetic framework.

Misconceptions about RIME

RIME has a developmental aspect. For instance, we expect a finishing resident in medicine to be the Manager/Educator level for everything in the core for internal medicine. Pneumonia. Heart failure. GI bleed. They don't have to be at the M/E level for pheochromocytoma or malignant fibrous histiocytoma. But anything in the core, they have to be at the M/E level.

A clerkship student has to be completely reliable Reporter, otherwise they can't be a sub intern. We can't allow them to work without the backup of an intern if they can't trust what they tell us. For common problems an intern has to be an Interpreter, moving to Manager, otherwise they can't be a resident

There is a developmental aspect to RIME, but it is not a developmental scale in the following sense - when we see patients, we don't just interpret and manage. We also get the facts. We don't just interpret the facts, we manage and we educate. So, it is cumulative. It is not a classic pediatric type or psychiatric psychological development scale in which you leave behind earlier roles and phases.

And that's one of the misconceptions about RIME. These are not steps to be left behind. It's cumulative. And in fact, it's what some people would call "non-compensatory." You could be a really great scholar and have written case reports about a patient you saw...in other words be at the Educator level...But if the residents didn't trust what you told them about patients (“you weren't reliable”), you would not pass because you wouldn't be a reliable Reporter.

Most professionals agree on a non-compensatory evaluation process and think that it is fair. We don't allow excellence in knowledge to compensate for poor professionalism. We don't allow excellent interpersonal skills to compensate for poor knowledge. We all use a non-compensatory model. And I think RIME allows people to understand that.

RIME works readily for classifying a student’s ability on a particular patient in a particular setting, and feedback – what’s the next step - is simplified. It is important to remember that early in training - before the trainee leaves for independent practice - a learner may be at the reporter level for one diagnosis, interpreter for another, and manager for a third. This means that in translating observations in the RIME assessment scheme into a summative evaluation would require sufficient observations across many different problems.

Professionalism is built into RIME

This is interesting in how we think of RIME as synthetic in which professionalism is combined. To be a reliable Reporter means you show up every day. So if the intern were to say, “well, the student is really good at interpreting data when they're here,” we would say*, “you mean they're*

not here some days?" "Oh, yes, some days they just don't show up and we don't know why." "*So who tells you about their patients on those days?"* "Well, somebody else has to do it." Well we would say, *"they're not a reliable Reporter."* So this is what I mean by synthetic and for most, but not all, of what we call professionalism, RIME is adequate.

You can't be a Manager/Educator without having good interpersonal skills and working with a team and negotiating with patients. There are some exceptions in which...I have to be careful. Imagine a student who after hours came in and tried to sell the patients real estate. Or in off hours was selling drugs. Those would be professional lapses that would not be captured within RIME.

Some of my colleagues in pediatrics at USU and in internal medicine at Michigan State and at Boston University, like the acronym PRIME. They don't disagree with me that you can't be a Reporter, Interpreter, Manager without being professional. But in order to put it 'on the marquee', to make sure it's very clear they use " P-RIME".

RIME and grading

RIME is not a grading scheme, but an observational framework. We can use it as a grading scheme and say a reliable Reporter is a Pass; a consistent Interpreter is a High Pass; a consistent Manager-Educator is an Honors. But that allocation of grading equivalents is not inherent in RIME; it would be local use. RIME is an observational tool.

Here's an example.

Suppose you're watching a trainee interview a patient and they do a reasonable history and physical examination, gathering the facts in a patients with a fever. And then the attending says to the student, "what do you think the cause of the fever is?" And even though they've got all the basic facts, they can't come up with a differential. We have this learner who can get the facts and not interpret them. They are a "reporter" but not yet an "interpreter" - that's the observation. That's what I will call an assessment. But now suppose I told you it was a first year medical student who was just beginning clinical experience. Would we say that this is acceptable? Probably . But suppose I told you it was a PGY2 in internal medicine? Probably not.
In other words our own successful interpretations of our observations requires a context.

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For more resources on RIME Annotated Bibliography of related papers

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