Driving Student Success with Teaching and Assessment: A Conversation with Marshall University

Amy: Hi, everyone. We're really happy you've joined us today. My name is Amy Gilthorpe, the outreach manager at NBME.

We had a chance last week to sit down with three members from Marshall University to hear their challenges and tailored approach to helping students succeed in medical school and prepare them for practicing in West Virginia. Let's go ahead and watch that recording and then we'll come back for some Q&A.

Amy: Hello, thank you for joining us today. My name is Amy Gilthorpe, the Outreach Manager at NBME. I'm here with representatives from Marshall University, Joan C. Edwards School of Medicine, who will share the tailored approaches they've developed to meet their mission, support their students, and create a skilled physician workforce for the population of West Virginia. Let's get started with some introductions.

On-screen: [Marie Frazier, MD, Associate Dean of Academic Affairs, Professor of Pediatrics, Marshall University, Joan C. Edwards School of Medicine.]

Dr. Marie Frazier, Associate Dean of Academic Affairs, Professor of Pediatrics.

On-screen: [Robert Nance, MBA, Program Coordinator, Office of Medical Education and Academic Affairs, Mashall University, Joan C. Edwards School of Medicine.]

Mr. Robert Nance, the Program Coordinator for the Office of Medical Education and Academic Affairs, and Dr. Nitin Puri, the Associate Dean of Medical Education and an Associate Professor of Biomedical Sciences.

On-screen: [Nitin Puri, MD, PHD, Associate Dean of Medical Education, Associate professor of Biomedical Sciences, Marshall University, Joan C. Edwards School of Medicine.]

Robbie, we'll start with you. Would you provide an overview of the mission and goals of Marshall?

Robbie: Absolutely. We are a community-based veterans affairs affiliated medical school located in Huntington, West Virginia. We are dedicated to providing top-notch medical education and postgraduate training programs to foster skilled physician workforce to serve the healthcare needs of our communities.

We aim to address the unique needs of West Virginia and Central Appalachia, the learning and training challenges that our students face, and we are committed to developing centers of excellence, promoting diversity, inclusivity, and fostering in an environment of lifelong learning.

Amy: That's a very commendable mission and ties in nicely with the next question. I'd like to ask you, Nitin, how you approach teaching and assessment, as well as the challenges you've faced. Robbie mentioned the unique learning and training challenges of your students. Would you elaborate on that for us?

Nitin: Yes, of course. Thank you, Amy. As Robbie has mentioned, we have a student population that is very unique and different from some of the other schools in our state, in fact, some of the other schools in the country. Our incoming students are not at the same level of academic preparedness. Our incoming matriculating student data is very different than our neighbors, and Robbie can speak to the unique demographic nature of West Virginia.

Robbie: Our state has a declining population. The latest census results show that we're just shy of 1.8 million people. 93% of our population identifies as Caucasian, 4% identify as African American. 18% of our state lives at the poverty level. The median household income is 50,000, 51,000. 88% of our population has graduated high school and 22% of our population has a BA or higher.

Nitin: So with this socioeconomically disadvantaged population, we have some unique challenges. Our incoming students all do not have the same level of proficiency, but we do have to prepare the physician workforce that will serve in West Virginia, and that physician workforce has to be proficient at the same level. So, bringing up everybody up to the same level is one of our challenges.

One of our other challenges in the past has been the validity and reliability of our assessments. Our assessments have been reliable, but they have not been valid. Our team has looked closely at our assessment data from the past, and although students continue to do really well on in-house assessments, our students struggled with the standardized examinations, either it could be licensure examination or the shelf examinations in the third year. That has been one of our challenges.

One of our other challenges has been the binge and purge. Our assessment protocol was designed in such a way that promoted more binge and purge and probably less problem solving and critical thinking.

So, keeping in mind the different levels of preparedness of our incoming students, lack of validity of our in-house assessments and licensure examination pass rate not where we would like it to be were some of the challenges that we were trying to address when we did a curriculum redesign not too long ago.

I would say now we are an assessment-focused curriculum. An assessment sits at the center of our curricular design. So these are some of the challenges we have faced. And by focusing more on assessment, we are trying to address some of these challenges.

Amy: Would you share some of the recent curricular changes you've made and the rationale behind those changes?

Nitin: Happy to. The recent curricular changes that our team has made, the Curriculum Committee has made, by following the lead of some of the leaders in education, and also by following some of the recently published literature on medical education, we made four significant changes to the MD curriculum at Marshall University, Joan C. Edwards School of Medicine.

On-screen: [Educational Reform.

- Structural: Integration of content
- Flexibility in clerkship phase
- Research focused
- Emphasis on attitudes and skills
- Faculty development

Pedagogical:

- Directed self learning: blended learning
- Problem solving and critical thinking
- Early patient exposure
- Workshops and simulations

Assessment and evaluation:

- Alignment with the competency framework
- Shift to AfL
- Frequent feedback
- Portfolio assessment

Student support:

- Mentorship program
- Increase academic support
- Life coach
- Peer-peer mentoring]

The first one was the structural change of the curriculum. We went from a traditional two by two curriculum to a more vertically integrated, shorter pre-clerkship and a longer clinical phase of the curriculum, giving our students the advantage to practice the medicine that they're here to learn.

The second change that we made to the curriculum was pedagogical, and this was accidentally also helped by the pandemic. The pedagogical change was driven away from lecture-based curriculum, more towards self-directed learning, problem-based learning, and team-based learning, again, following on the leads of the published work in medical education.

The third and the biggest change that we made to the MD curriculum that our Curriculum Committee made to the MD curriculum was change in assessment. Instead of looking at assessment in domains, we started looking at assessment as a program of assessment. We took a systems approach to assessment. We designed an assessment program that relies on not just one data point, but multiple data points ranging from very low stakes to very high stakes assessments. And all of these data points are collated in making the decision for promotion for the student that falls into the purview of academic affairs.

And last but not the least, such radical changes must also come with support. So, the fourth change that we made to the curriculum was to the student support services, to academic advising and to career advising. I'm happy to speak more on any one of them if you'd like.

Amy: You've mentioned the four pillars of change. Could I ask you to elaborate about your program of assessment?

Nitin: Of course, happy to. So what we have worked on with our faculty and our staff, and actually including students as well as a team, we have designed a program of assessment. So instead of having assessment and silos from course to course, we look at all assessments as a part or as a part of the same continuum. And that is the program of assessment we have.

Starting in the pre-clerkship curriculum, students are exposed to very low stakes assessments and formative feedback assessments on a daily basis. These are supplemented and complimented by low stakes assessments like team-based learning activities, problem-based learnings, and then medium stakes assessments that are in-state, in-house developed examinations followed by a comprehensive exam, which is typically a customized assessment from the NBME.

This program of assessment is continued through the clerkship phase of the curriculum where we use shelf examinations from the NBME complimented by in-house developed low stake assessments like quizzes.

We have a cutoff point between the pre-clerkship and the clerkship assessments, which is the CBSE, the comprehensive basic science examinations. We no longer have... Traditionally, we used to have a requirement for students to pass USMLE Step 1 to get promoted from pre-clerkship to clerkship phase of the curriculum. We no longer have that requirement. Given the changing nature of the learning process, and given the shorter timeframe of the pre-clerkship curriculum, we found it's better to use the comprehensive basic science examination as our promotion examination. And data has been nothing but encouraging in that aspect.

We have a similar approach at the end of the clerkship curriculum where we use comprehensive clinical science examination for students before they go on and take Step 2. So, looking at this whole thing, we have a systems or a program of assessment where every single data point feeds back into the growth and the academic development of the student.

We also have addressed... Other than the program of assessment, we also have addressed the assessments themselves. As you remember, I mentioned the lack of validity of our in-house assessments, and we have addressed this with robust faculty participation.

We have an assessment evaluation committee that has a mix of staff, biomedical science faculty and clinical faculty, that review every single assessment item that is delivered in the curriculum to ensure that the assessment item is not simply based on recall, but is also promoting problem solving and critical thinking. The Assessment Evaluation Committee is an ongoing process. They have done really good work on this aspect.

The other change that we have made is, as I mentioned, we don't look at assessments in silos anymore. We look at a collection of data points.

We have a 50% exam rule in the pre-clerkship curriculum. In other words, students and recognizing the needs of the students that we have, the different needs of the incoming students. Sometimes students may do poorly on assessments in one course, but have time to adjust their learning style and recover. So keeping this in mind, we have a 50% examination rule policy, which means a student may progress from academic level to the second as long as they pass at least 50% of the delivered examinations. So this takes away the binge and purge. This takes away the stress on any individual assessment and provides us a way to look at the assessment data point as a whole. We are really working hard to improve the validity of our assessments, as I said, and this 50% examination policy has helped us do that.

Amy: Nitin, thank you for that. Marie, let me bring you in now. There's obviously been significant changes along the way. How are you supporting the students through this change?

Marie: Yes, absolutely. We have developed a very robust academic advising program that begins day one of medical school and follows the student throughout the curriculum. This allows for early identification and risk stratification of our students based on factors that we've identified for those students that are at risk.

On-screen: [Student Wellness and Support from top to bottom:

- Data informed risk stratification
- Dedicated academic advisors
- Monthly academic review
- Education on imposter syndrome, burnout, and wellness
- Counselling services/teletherapy
- Financial counseling
- Community engagement projects]

We've created a risk assessment tool that's really like a traffic light system. And based on where the students fall in that system, we know how much intervention they're going to need. We use risk factors that are both academic and social.

On-screen: [Data-informed Risk Stratification.

Successful Student Attributes:

- Pre-matriculation BCPM GPA > 3.5
- MCAT > 502
- Social support system
- Pre-employment experience]

For example, our data has shown that our attributes of a struggling student are those that have pre-matriculation data, including a BCPM that is less than a GPA of 3.4 and MCAT less than 501, those students with a limited support system, as well as students that have outside non-academic responsibilities.

So once those students have been identified early on in the process, they begin monthly meetings with the Office of Student Affairs and Academic Affairs to help make sure we are keeping on track with the students and giving them the support they need.

We also have an extensive peer-to-peer tutoring system that we've implemented. That includes career advising, learning communities, wellness support, as well as access to a life coach through the Office of Student Affairs.

Furthermore, we have made our first and second year advisors foundational faculty. They help the student transition from undergraduate to medical education curriculum, and each student is required to meet at least once a semester with that faculty member. And then depending on their performance on exams, those meetings may increase in frequency.

We have a dashboard that our chief information officer has created that has both pre-matriculation data and real-time data. So in-house exam scores and NBMEs, that's all housed in this software. And both the advisors and the student have access to this data so they know exactly where they stand and how they're progressing. And then the advisors use this data to help the students in the preclinical phase.

And then as they transition into the clinical or the clerkship phase of the curriculum, we have practicing clinical faculty that then meet with the student at the end of their second year to kind of get them prepared for clinical life. I mean, it is different than the first part of the curriculum. So those advisors then transition the students into what we call CADs.

So our career advising program or career advisory deans was formed in parallel with our academic advising. Academic advising is more robust in beginning of the curriculum, then we transition to more robust career advising. So the CADs or career advisory deans have access to that dashboard I mentioned.

So looking at their NBME performance and clerkships, that will be incorporated into career advising, because as we know, some specialties are a lot more competitive, so you need to have those scores and it helps the advisory dean counsel the student with their specialty choice.

Amy: All right, you've mentioned a program of assessment and data-driven feedback for both students and faculty. Robbie, let me ask you how the NBME self-assessments factor into this program?

Robbie: The NBME self-assessment voucher factors into our program of assessment as a holdover from our legacy curriculum. In our legacy curriculum, we did not administer NBME style exams. So when they got to the clerkship phase of the curriculum and they were faced with these exams for the first time, they found that to be a challenge.

So, we implemented the self-assessment vouchers to help give them a feel for how the exams would be administered and what their expectations were. When we implemented the new curriculum, we kept that feedback for midpoint evaluation to help students meet and exceed their goals for these styles of exams. And it also helps prepare them for the ever-changing match landscape.

Nitin: Especially with Step 1 going pass-fail, the onus is now more on the holistic development of the student, including their performance and assessments across the curriculum, and not just a three-digit score.

Amy: Absolutely. Let me ask, how many self-assessments does each student get, and where in the curriculum do they receive them?

Nitin: That would be for Robbie, I think best to answer.

Robbie: There's not really any self-assessment vouchers given in the preclinical clerkship, but using the customized assessment services, there's not really a voucher to give for that at this time. In the clerkship phase, we do give vouchers for every single clerkship. Our average is two per student per clerkship. And then if there's a student that comes back that they've used their two vouchers and they have a request for more, then we assess that request on a case by case basis because we don't want any student to be disadvantaged.

Nitin: We also actually provide assessment vouchers or self-assessment vouchers. The number changes every year, but at least one before the... As I mentioned before, before

the comprehensive basic science examination and one before the comprehensive clinical science examination, also managed by Robbie's office.

Amy: These are huge changes that Marshall University has made. How are the students and faculty reacting to these changes?

Nitin: First, I would like to say that these changes have brought about results. As I mentioned before, our licensure examination pass rate, particularly for Step 1, was not where we would like it to be. It has come to where we would like it to be. It is now above the national average for the last two years consistently. So we're really proud about that. We are really excited about that.

The other outcome that we have noticed, a starkly different outcome that we have noticed is our students fare far better in the clinical environment than they used to. And by clinical environment, I mean especially the academic component of the clinical environment. Our students have always performed well on patient care and clinical skills, but have struggled as we have mentioned before, because of their varying level of preparedness on the academic portion of the clerkship environment. We have seen that dissolve away. Our students are now doing much better in the clerkship environment, freeing up time to actually interact with the patients and learn from the clinical faculty rather than focusing all their attentions on the academic portion of the clerkships.

So we have seen significant improvements in the outcome data for our students. As with any big change, an assessment-driven curriculum is something new. It's something different. It takes... It balances the focus between pedagogy and assessment, and faculty development has been a part of this. Our Office of Faculty Advancement has helped us provide support to the faculty.

As I was mentioning, Assessment Evaluation Committee has faculty members on it. So we have faculty buy-in at this point in time, but we didn't get here in a day. It has taken us four years to get here.

And student support with Dr. Frazier's department and with the Office of Student Affairs has been absolutely key. Students find it challenging to adapt to this new assessment-focused program when they're coming from undergraduate. But once the outcome... Once they can see their outcome, once they see their own performance, once they see their feedback from their own clinical performance and evaluations, we have buy-in from students as well. Dr. Frazier can comment more on how students are performing in our clinical environment.

Marie: Absolutely. The students really have excelled. Of course, any change makes people nervous. The students have embraced it, they've done very well. I also oversee our Academic Standards Committee, so I deal with the students that do struggle that may not pass a clerkship NBME. And I can honestly say the numbers have significantly improved in the number of students that are struggling having to remediate or repeat that portion of a rotation.

Amy: That's fantastic.

Marie: It is. It's been very well received.

Amy: Yeah.

Nitin: And this is also, I would say, I'm hoping Dr. Frazier will agree, is also timely. With Step 1 going pass-fail, increasingly, the match data or the match outcomes will depend on the holistic development of a student, not just a three-digit score from Step 1. And I think this is a step in that direction for us.

Marie: Absolutely, absolutely. I mean, there are MSPEs, their clinical performance as well as their academic performance and the NBMEs, I mean, that's reported.

Amy: Right.

Marie: The students, that's now their new benchmark to be competitive with other students in the nation.

Amy: You've walked us through the changes that have already occurred. I'd like to now ask you, Nitin, maybe you could help out with this, the curricular or assessment changes on the horizon at Marshall?

Nitin: Yes, of course, Amy. Thank you. Our faculty or staff and our Curriculum Committee has taken a slightly different approach at looking at evaluating and changing the curriculum. We now like to say that the curriculum changes every year. We don't typically, like in the past or like traditionally it's done, we don't wait a decade for any significant change for the curriculum to happen.

So, it's a constant data-driven feedback loop where data is given back to the Curriculum Committee and all the stakeholders that are involved in training our future physicians, and iterative changes are made in the curriculum and in the scheme of assessment based on that data every year.

But the long-term goal that we have been looking at and thinking about a lot lately is true competency-based medical education. In a true competency-based medical education, time should not be a factor.

So, Dr. Frazier and I and our faculty have been involved in a conversation where we are seeking a time flexible medical education curriculum, where sometimes if a student needs longer than four years, which is at this moment, stigmatized, should be acceptable. And by the same token, if a student is ready sooner, if the student has achieved the competency sooner, then they should be allowed to move on within three years.

And all of this has to be looked upon with the lens of artificial intelligence. AI has been with us for nine months, and it already has changed the landscape. The way medical education is changing, the way AI is evolving, the way medical knowledge is expanding, there is absolutely no way for the students, let alone the faculty to keep up with these changes.

So, we believe focusing on lifelong learning skills and true competency development is how we see the future of medical education. I think Dr. Frazier can speak more on how that benefits some of our students.

Marie: Absolutely. I mean, when a student requires more than the traditional four-year medical school curriculum affords, there's a stigma associated with that, which disadvantages smaller schools and communities like Marshall, where incoming students may not have the degree of preparedness that some of the more heavily resourced programs have, meaning that the duration of training will not be constricting to the professional development of the student. Students in our school, I mean, they're from rural towns. These are coal mining areas that not only are first-generation students going to college or even a professional school, but they're limited socioeconomically as well as just resources in general. We provide support to all students across the board to ensure the success and the goal of the student for a lot of these are to go back to their hometown and be the physician in their own community. I mean, this aligns with our mission at Marshall.

Amy: Let me ask you, Robbie, how does Marshall provide the best support for first generation students?

Robbie: Well, we don't really single out first generation students. First generation students and students of different socioeconomic statuses are part of the norm for us. It's what we've built our system to assist. So they all come in on an equal footing.

Nitin: A student from a lower socioeconomic background or a student who's a first generation college goer, let alone a first generation medical school attender is not an outlier for us. It's actually the norm. That's the majority of our students. So, the community at Marshall School of Medicine, the community at Joan C. Edwards School of Medicine is acutely aware of this. In fact, this is how our system has been designed.

Office of Student Affairs, Office of Academic Affairs, a newly created Office of Academic Advising, learning specialists. Our foundational sciences and clinical faculty all are in this together. It takes a village to make a physician for us. And we're not training physicians for exporting to other states or exporting to other communities.

Our mission, our focus is to train future physicians that more than likely will treat us, will take care of us. So that's the approach we take. First generation college attending student, first generation medical school attending student requires a lot of support. We are aware of that. And Dr. Frazier can speak more about how this is uniquely addressed when these students are discussed at promotion or academic standards meetings.

Marie: Yes, I mean, what we have found is, like we've mentioned, I mean, we treat all the students on a level playing field. And yes, there will be some students that struggle whether life happens, they have road bumps in the curriculum and they may not succeed on their first time through.

And our response to that is we look at each student, look at any stressors, any unique life events that may have happened that maybe inhibited their medical education that year, and we've actually ramped up our Academic Standards Committee to where we now meet monthly. And that committee will meet with the student that maybe failed a course, struggled with one year, has a medical leave, I mean, whatever they may need to ensure we find out what do we need to assist them with so that we can get them back into the holistic approach and be ready to restart the year the next academic year.

Nitin: We've also shifted our focus a little bit away from being reactive to being proactive. And the assessment has really helped us with that. All this assessment data, as Dr. Frazier mentioned earlier, feeds back into an academic dashboard that has been developed in-house, and that allows academic standards and the faculty and the academic advisors to be proactive.

We have an ongoing predictive analytic modeling that we use where every single assessment data feeds into a model that alerts us, as Dr. Frazier was saying, the traffic light system, alerts us to the upcoming potential concerns or issues with the student's academic or professional progress. So we anticipate these problems, we expect these challenges and we're ready.

I mean, there really aren't surprises.

Amy: Yeah.

Marie: We know and the students know they have that data as well.

Amy: Can you elaborate on the traffic light system?

Marie: Sure. What it is, is we looked at the demographics of our struggling students and have also applied first generation, looked at multiple factors in pre-matriculation data. And by knowing what those attributes are, we can stratify the students based on whether they're green, yellow, or red, and where they fall, and this is an ongoing assessment. After each exam, the students are reclassified.

So, if we find a student maybe was doing great in a green zone and we've seen them start to decline, we will intervene. We'll reach out, pull the student in, find out what's going on. Is it an academic problem? Is it something social and help them overcome rather than just watching the progression of their education.

Amy: That's great.

Nitin: And our Department of... Or Office of Student Affairs is very active in this. "We are family" is not a slogan for us. It's a way of life. And we don't leave anybody behind. We expect that our students will face challenges that students from some other schools may not. As we said earlier on, there's a wide, very wide variability in the level of preparedness of the incoming student. We're aware of that, we're prepared for that and we plan for that.

Amy: Thank you so much for coming and sharing the work that your team has done. We hope this has been helpful to viewers, many of whom may be experiencing some of the same challenges. This concludes the prerecorded portion of this webinar. A live Q&A session will follow with our Marshall University representatives taking questions submitted by those who have registered for the webinar.

On-screen: [Video ends]

Amy: Hi everyone, welcome back. We hope you found that video interesting. We have Nitin, Marie, and Robbie on the phone who are going to be answering your questions. So let's go ahead and get started.

Nitin, it looks like the first two questions would be helpful if you could answer them. Here's the first one. Has the change to pass-fail improved your student performance?

Nitin: Good afternoon and thank you, Amy. Yes, the change to pass-fail and the change in our assessment program has improved our licensure pass rate. Our Step 1 pass rate is above the national average. It's actually five points above the national average, where in the past, it wasn't where we wanted to be.

Our Step 2 pass rate is close to a 100%. So we are seeing significant improvements in licensure performance of our students. But more importantly, the biggest area of change that we have observed by changing our assessment protocol is improvement in the academic piece of the shelf examination and the clerkship phase. Our students rarely struggle on academics in the clerkships anymore. They do really well.

Amy: All right, don't leave me yet, Nitin. I think this next one is for you as well. Let's see. How can we best prepare students for NBME-style questions beyond just trying to model NBME test questions, especially during their preclinical years when their medical knowledge may be limited and still developing?

Nitin: Thank you, Amy. That's a very good question actually. And we ourselves struggle with that on how to prepare students for board-style questions when they really don't have all the pieces as the question mentions, in the early part of the curriculum.

But I think we have come up with a creative solution which uses mix of assessments to achieve that. Our flipped classrooms, our team-based learnings, all of these activities that we do as formative assessments are actually in line with how the licensure examination is structured. on how to think critically, how to do problem solving, how to answer multiple step questions.

In addition to these things, we also have clinical reasoning sessions and self-record learnings built into the curriculum, which foster problem solving and critical thinking from day one. And then there is ongoing student feedback from academic advisors based on their NBME performance, which helps student use their own data, improve their outcomes.

So, we struggle with these same things, but I think we have found a solution. And one of the biggest pieces is how our formative assessment is structured. It's structured on the exact same level as... Excuse me, as the licensure examination would be. So, we train them from day one on how to address and answer these questions.

Amy: All right. Thank you, Nitin. Marie, I think the next one would be great for you. It says here we had a number of... Well, we've had actually a number of questions about this very topic about the use of NBME assessments for intervention. Marie?

Marie: Yes, certainly. We give a customized summative NBME assessment at the end of every course during the M1 and M2 levels. So the students have that data to determine their strengths and weaknesses when they go to prepare and create their study plan for the CBSE. We use the CBSE as a promotion requirement between their pre-clerkship and clerkship curriculums.

In addition, we'll allow our students two attempts to successfully pass the CBSE during the prep course. And that begins after the completion of the M2 coursework. And if the student is unsuccessful in achieving a passing score on the CVSE, they can evaluate their performance from that previous attempt, look at those areas that they need to improve, and then create a further customized study plan for that second attempt on CVSE. And then they can use that as well to guide them on their preparation for Step 1. So they focus not only on the high yield information, but also the areas that need improvement based on that information received from the exam performance.

Amy: All right. Thank you Marie. Nitin, let me come back to you and ask you this. How have you aligned communications with admissions to ensure students who attend Marshall have accurate expectations for preparation, performance and support?

Nitin: Thank you, Amy. This is also one of the areas of improvement for us, opportunity for us, which we have worked on for the last five, six years. And we have made significant progress here. We include our dean of admissions and folks from our admission committee in academic review process. That means that the academic data is not blinded from our admissions administrative staff.

Our dean of admissions is also an academic advisor and she meets with struggling students one-on-one. So she has real time feedback on how students that are being admitted to Marshall are actually doing in the curriculum, especially in a vertically integrated curriculum. Our dean of admission is also a member of a non-boarding member of our Curriculum Committee. She also comes in, attends Academic Standards

Committee, but most importantly, the academic dashboard that we have built that collates all the data on student assessment in one place is accessible to the administration of the Office of Admissions.

So, there's constant back and forth, constant communication between admissions and medical education to provide reliable data on student performance in the curriculum that then informs the admission process as a whole. We're really happy about the progress we've made on this aspect.

Amy: All right, thank you for that, Nitin. Robbie, let me bring you in here. How does Marshall use the NBME assessments to create or drive student study plans?

Robbie: We use NBME assessments to create and drive study plans by giving the students the feedback that is provided to us by the NBME of recent. Before it was just a performance summary. Now that NBME provides us question level style feedback and so we provide that directly to the students. We upload that into our learning management system, MedHub, where the academic advisors have access to that.

There is a question level feedback report for the whole cohort that takes that exam. That data is not housed just with us. We share that with the course director, the clerkship director for that particular course.

Amy: All right. Thank you for that. Marie, let me come to you. I've got two questions back-to-back for you, Marie. The first one is this. What are your remediation strategies for at risk or underperforming students?

Marie: Thank you, Amy. That's a great question. This is something that we've really worked over the years to come up with a new plan and it's worked well. For our pre-clerkship curriculum, we have a longer M1 level versus M2, so students are allowed to remediate up to three block failures at the end of the M1 level and up to two block failures at the end of the M2 level. These failures are monitored and remediation plans are approved by our Academic Standards Committee. They now meet monthly, which is something else we've ramped up over the last few years. A student is not approved though generally to repeat an academic level due to failures more than one time. That is something academic standards has implemented in the recent years and has worked pretty well for the students.

In addition, the pre-clerkship curriculum have implemented a policy where a student must pass 50% of in-house and NBME exams per academic level, not course. So for example, for our first level, they have a total of 18 exams. They can fail up to nine of

them and on the ninth exam, they're pulled to either repeat the year or if they're already repeating at that point, they would likely be dismissed. Academic standards handles the implementation of that policy.

For our clerkship phase, the student may not have more than two outstanding failures to continue to progress with third year clerkships. This includes either an NBME failure or a clinical performance failure. But honestly, our clinical performance failures are rare. We mostly commonly encounter the NBME failures, and honestly those have decreased dramatically over the past two to three years with the change in our assessment.

For example, if our remediation of clerkship, the way we do that is entails a self-study plan that's structured at the discretion of the clerkship director, and it's combined with either weekly meetings, question review, and in some cases they have to attend additional lectures. They're also given NBME practice exam vouchers and they use this to gauge their NMBE performance before they take their remediation exam because if they fail that remediation exam, it triggers a repeat of the rotation in its entirety, both clinical and NBME.

Our remediation period is half the length of our rotations. So at Marshall, our rotations are mostly eight weeks with the exception of psych neuro, which are four weeks each. So our remediation period for an NMBE failure would be four weeks for most of the rotations.

Amy: Okay, this second question is an add-on, Marie, to that about tools. What tools are being used to provide timely student feedback and how does Marshall measure if the feedback was in fact impactful in regards to behavior change?

Marie: Sure, our chief information officer has created an internal student dashboard that houses pre-matriculation data and real-time in-house exam data, as well as NBME scores. And like Nitin said, the advisors, the students, they have access to this data so they know how things are going. These are one of the tools that they use to support themselves, and also we use to know who needs intervention.

In addition, we've implemented an academic advising program that we had touched on earlier where students meet with their advisors required at least once a semester. But honestly, as the students that are at risk or tend to have some struggles, they will meet with their advisors a lot more frequently, often within one week of an exam failure.

And as far as the behavior change, honestly this is the first year we've implemented this program. So to date, the feedback's been positive. We've seen exam performance

trends improve over time. We've had less failures, but honestly, we'd have to do a formal survey at the end of the year to get formative feedback. But in just speaking with the students, it's been very well received.

Amy: That's great. Okay. Nitin, how do you balance formative and summative assessment to better engage students?

Nitin: Thank you, Amy. That's an age old question that everybody I'm sure struggles with. We are no different. We struggle with balancing formative and summative assessment. There is no one size that'll fit all. We focus more on the program of assessment and the mixed assessment model.

First, as I mentioned before, all our assessments are in the same format as we expect the licensure examinations to be. That means multiple steps are required to answer any assessment item. This could be very low stakes assessments like quizzes or TBLs or high stake assessments like in-house exams or the NBME. We strongly encourage our students to use commercially available products, commercially available question banks because we believe, as we said, we want to train our students, all our students to the same level so they are able to pass the licensure examination in their first attempt.

We also... Actually, the Assessment Evaluation Committee does a wonderful job here. It categorizes each assessment item on a Bloom scale from Bloom's one to Bloom's four, where Bloom's one is a simple recall question and Bloom's four is advanced data analysis. And then this feedback, this data is given back to the students so they can see how they're performing on each Bloom's category.

For example, some students might be doing really well if the assessment item is simply testing recall of information. So those students receive feedback that they should probably do more practice questions, but try and integrate the content better. On the other hand, there might be some students who are doing better on higher level Bloom's question, but are forgetting specific details, then they receive feedback on trying to gain more content.

So, it's a constant struggle to balance formative and a summative assessment. But by encouraging self-assessment, by using Bloom's categorization and by using a program of assessment with a mix of low stakes, medium stakes, and high-stake assessments, I think we're close to achieving that balance. But as I said, it's a work in progress.

Amy: Nitin, you had spoken about CBSE in the prerecorded video. So, I want to ask you, is CBSE used within the programmatic assessment? And if so, how do you use it?

Nitin: Yes, of course. Thank you. Amy. CBSE is actually a key part of our program of assessment. So, a quick recap of our program of assessment. Our pre-clerkship curriculum is divided into two academic levels, M1 and M2. At each level, the student must pass 50% of the delivered exams. The pass point for in-house exams is set at 70% and the pass point for the customized NBME is set at 65% because we expect the NBME exams to be slightly more challenging.

So, a student has to pass half this exam to get from M1 to M2, and then again pass half the M2 exams to get to the CBSC. Then the students must pass the CBSC with at least a score of 62% to be allowed to go into third year.

So CBSC is a key part of our assessment strategy. It's the comprehensive exam for the pre-clerkship curriculum that frees us from the USMLE Step 1 requirement as a promotion examination. Our Curriculum Committee does not believe that a licensure examination should be used as a promotion examination, some of the similar arguments that the USMLE itself made in making the exam pass-fail.

So, we no longer rely on Step 1 as a promotion exam, but we rely on CBSC as a promotion exam. And the student has up to five chances to pass the CBSC to go to the third academic level. And if they're unable to, then they're referred to academic standards for possible dismissal.

Amy: All right. This next question, Nitin, I'll pass it to you. It's a layered question, so bear with me here. How are you discussing, Nitin, the results of NBME assessments with Curriculum Committees and what sorts of information is most helpful for this type of audience? I'll stop with a question there. The third one is about how you present it, but let's start there if you could answer that, Nitin.

Nitin: Yes, of course. I'll also rope in Robbie here in a second. But all the annual reports on USMLE Step 1, Step 2 and when CS was still being used are actually presented to all the subcommittees and to the Curriculum Committee itself. And the Curriculum Committee discusses and debates the performance of the students at the school level at length. Robbie can speak more to this because we hold special retreats just to discuss the NBME performance.

Robbie: I'm the institution's Executive Chief Proctor and I'm also the recording secretary for our Curriculum Committee, our pre-clerkship and clerkship subcommittees, and Nitin is the executive secretary of those committees.

So anytime we have an exam or get annual results back from the NBME portal, I'm downloading those within 24 hours of receiving those and they're being sent out to our administrative team, our clerkship directors, our course directors. And then twice a year, we have a spring and a fall annual retreat where these reports are shared in detail and discussed at great length.

Amy: Okay, thank you for that. The add-on to that is how are you presenting or sharing the results with cohorts of students?

Nitin: We share our licensure pass rate for Step 1, Step 2 and match rate with our students. We do not share, not yet, the detailed breakdown of the Step 1 and Step 2 annual report that we get from the NBME, not with the students just yet.

There are some concerns about we are a smaller school. It's easier to identify individual students if the data is presented to everybody. So we have to be a little bit careful here not to violate any FERPA guidelines.

So, our students know what our pass rate is, but they don't receive our detailed annual report on Step 1 or Step 2, except for the students who actually sit on the Curriculum Committee, the Pre-clerkship Committee and the Clerkship Committee. So those students do see these reports.

Amy: Okay. All right. You have provided us with so much information. Let me ask the three of you, either Nitin and Marie or Robbie, is there a key takeaway that you can provide for everyone who's watching today?

Nitin: For me, the key message that we are trying to share with the audience, and thank you so much for people who took the time to listen to our story, is that our curriculum is assessment first. We focus on assessment. We focus on what we expect the students to be able to do at the end of these courses. We focus on the skills that we want them to have.

We're shifting away from emphasis on pedagogy and shifting towards assessment for learning. That is the key takeaway. Assessment drives learning and we are a living example of that.

Amy: Okay. Any other key takeaways before we begin to wrap up?

Marie: I think one thing that's important is we've had a lot of questions talking about first generation students. How do we train, how do... I mean, we treat all the students on a level playing field. I mean, we treat them all the same. We look at everyone because

things pop up, they have behaviors, they may have some at risk characteristics that were not anticipated, life events.

So, I think when you're going through with assessments, whether it be remediation plans, successful students, you just got to look at the whole playing field and make sure you have tools and be open to implement change. If it's not working, we will re-look at the data, reanalyze and see what can we do because our whole goal is to get the students successfully through the curriculum.

Amy: Okay. And, Robbie, do you have something you'd like to add?

Robbie: I would say for me, one of the key takeaways is you have to have communication. You can't create silos and say that admissions only does X, Y, Z, and the Office of Student Affairs or medical education does X, Y, Z. We all have to work together as a team.

And being in a small school, we have a smaller than average administration. And so we have to work across departments and we have to have somewhat of cross training with each other because if one of us is out, somebody's still got to carry the baton.

Amy: All right. Well, I'd really like to thank all of you, Nitin and Marie and Robbie, for allowing NBME to share your story of improving teaching and learning at Marshall University. NBME is absolutely committed to supporting the medical education community and is proud to help create space for educators to share challenges, solutions, and best practices.

If anybody watching, if your institution has a story that you'd like NBME to feature in a similar format, or if you have questions or requests, please reach out to us by emailing NMBEOutreach@nbme.org. And just a reminder, there will be a very short pop-up survey. If you answer that, it really helps us determine what webinars, what content are important to all of you. So thank you in advance for that. Thank you very much for joining and bye for now.

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