ROY CHENGAPPA: Hello, everyone. My name is Roy Chengappa. I'm a professor of psychiatry at the University of Pittsburgh School of Medicine and chief of the comprehensive recovery service line, which is part of UPMC's Western Psychiatric Hospital. The topic for today's CME is titled "Less is More-- Reducing the Anticholinergic Medication Burden in Patients Receiving Antipsychotic Medicines."

My co-conspirators and presenters in this CME are people you might have seen if you have seen the previous CMEs. Jessica Gannon is an associate professor at the University of Pittsburgh School of Medicine and medical director of the CRS Ambulatory Clinics and director of the service line's Education and Training Program.

She has another hat, in which she is the medical director of the WPIC ambulatory e-record. And this, again, is affiliated with UPMC's Western Psychiatric Hospital. Ana Lupu is an adjunct instructor of pharmacy and therapeutics at the University of Pittsburgh School of Pharmacy, and she's a clinical pharmacist at the Forbes Pharmacy, here at UPMC's Western Psychiatric Hospital. So welcome.

And I'll get started. And then, I'll hand off to Ana, who, in turn, will hand off to Dr. Gannon. And then, we'll end with a few questions at the end. So to talk about the learning objectives of this CME-- we have four. To define EPS, or Extrapyramidal Symptoms and side effects, and what medicines are used to treat them, to identify the side effects that are associated with the side effect medicines-- in other words, what side effects do anticholinergic medicines bring on their own.

And how do we go about reducing this burden and improve clinical outcomes and the quality of life in people receiving these anticholinergic medicines? And then, finally, our fourth objective is to discuss what might be the predictors of all barriers to success in deprescribing anticholinergic medications. So the next slide, all three of us, along with Dr. Brar, are copyright holders of three tools where we will point these out to you.

The copyright itself has been assigned to the University of Pittsburgh and UPMC, and we have, at this point, no commercial interest to disclose other than that. So the basis of the CME is about seven years' worth of work, roughly and is reflected in three pilot projects that were done. Project one was truly the pilot. We did a project two, and then a project three.

2017 was the first publication in 2021. And also in 2021 were the second and third publications. A lot of this will be discussed by my co-presenters, but I just want to give you a sense of what has happened since we began this seven years ago. And this is the background on which we have updated this particular continuing medical education. So the next slide will talk a little bit about-- why do we prescribe anticholinergic medications in the first place?

To treat, clearly, acute experimental side effects, which we often refer to in psychiatric and pharmacy practice as EPS. A lot of anti-psychotic medicines, which tend to be potent blockers of the dopamine receptors-- otherwise known as D2 receptor antagonists-- they can induce EPS. And this is often mitigated, and sometimes completely relieved, by anticholinergic medications, such as benztropine, otherwise known as Cogentin, trihexyphenidyl, otherwise known as Artane, and diphenhydramine, otherwise known as Benadryl.

Sometimes, these medicines are used for other types of side effects, such as hyper salivation induced typically, like clozapine, or sometimes by other antipsychotic drugs. They're also used in neurology practice for tardive dystonias, as well as Parkinsonism. All right. So the next slide will talk about what this might look like in psychiatric practice. In other words, what are the three main types of extraparametal side effects?

On the left is the classic triad of Parkinsonian symptoms seen in Parkinson's disease, which typically occurs in older people. The stooped posture, a masked, wooden faces, and the rigidity of the back, reduced arm swing when they walk, slightly flexed knees and hips, and short, shuffling gait. And tremors you can typically see both in the upper extremities, as well as, sometimes, in the legs if they were sitting with cross-legged posture.

So let's go over each of these three main types of EPS. Dystonias tend to occur in hours. It's very frightening for the first-time observer or personal experiences. It typically involves the large muscle groups of the face, tongue, and hands. And the frightening aspect-- sometimes, your eyeballs roll into your head, almost, and it's frightening. And this is typically treated very acutely, with the help of any of the three anticholinergic drugs I've just mentioned, often given intramuscularly, and sometimes even intravenously.

Parkinsonian side effects, like the Parkinson's disease cartoon figure that you see on the left is not so fast, typically, as acute dystonias. And they usually feature at least three of the classic Parkinsonian features, which is tremors, bradykinesia, and rigidity. Again, treated with anticholinergic drugs. What about akathisia? This tends to occur also in hours to days to weeks and comes across as fidgetiness, restlessness, inability to sit still-- which literally the meaning of akathisia-- and is much more responsive to beta blockers and benzodiazepines.

Though, sometimes, anticholinergic drugs are used for this condition, as well. So this, obviously, is the reason for prescribing anticholinergic drugs in the first place. The next slide refers to medical school 101, pharmacy school 101-- the imbalance between dopamine and acetylcholine. So when we have dopaminergic inhibition caused by dopamine antagonists, then we have cholinergic excitation, which we need to rebalance by anticholinergic drugs. And so, this is the mechanistic reason for our practice.

And the next slide talks about-- what are the arguments for continuing these drugs forever, for life? If antipsychotic drugs have to be prescribed for life, would it stand to reason that drugs used for their side effects, like EPS, should also be used for life? The argument against, not unexpectedly, is people adapt to EPS over weeks and months and typically, often, don't need it beyond three to six months.

And even more arguably why you should taper and stop them is the side effects that they, themselves bring-- dry mouth, blurred vision, constipation, urinary retention, tachycardia, and memory problems. And so, these are the reasons for arguing against their long-term use. Which brings us to the next slide, which is where I hand off to Dr. Lupu, who I had just introduced. And she will begin.

ANA LUPU: Thank you so much, Dr. Chengappa. First, I think it's important to understand how anticholinergic medications, like benztropine and trihexyphenidyl, that we use for EPS can contribute to our overall anticholinergic burden. So let's talk a little bit about how we quantify anticholinergic burden in clinical practice. Just to define what we typically refer to as anticholinergic burden, it's, really, the cumulative effect of taking one or more drugs that can induce anticholinergic adverse effects.

And then, it can be quantified either through serum radial receptor, anticholinergic activity assay, or using anticholinergic burden scales, which are expert-based lists. Now, the SAA is, perhaps, not the most practical for clinical practice. It measures serum anticholinergicity by a blood draw. And it can be difficult, especially if we're hoping to do this across our patient populations and not really as part of a study, to do this regularly and routinely in clinical practice.

And, really, this is why I think the anticholinergic burden scales were developed. As I mentioned, they are expert-based lists. They take into consideration information about the serum anticholinergic activity, but also examples from the literature and assign a number to each medication according to its anticholinergic properties. There are over 20 scales out there. I believe last I heard, there were 22 that have been described in clinical practice.

All of them have been recommended for use, but there have been differences in the quality measures, which I will talk about next. These scales usually use a four-point system. And so, the one that we have been using and the scale that we, really, have found to be practical in our practice is called the anticholinergic cognitive burden scale, developed by Boustani and colleagues in 2008. And it's been our go-to, really, for the past eight years for our QI projects.

And this particular scale looks at the overall burden in-- has been mostly studied in the elderly populations, but it is validated and it's widely used in the literature across the years. In 2021, Lisibach and colleagues published a review of 19 of the ACB scales out there, and they did find the anticholinergic cognitive burden scale to be the highest quality, in terms of rigor of development, clarity of presentation, and, really, applicability to clinical practice.

And we really found that these are extremely important for our population and for our patients. And we were especially drawn to this scale because of the focus on the cognition aspect and the impact of anticholinergics on cognition. Again, this is something of great concern in the elderly, but it's also a big concern for our patients with psychosis who, typically, already have an underlying cognitive impairment.

So the ACB scales, like many of the others, assigns a number from zero to three. And zero are medications that have no anticholinergic activity, whereas a three are the medications with established anticholinergic effects that impact cognition and increase the risk of delirium. So a total score of three on this scale is considered to be clinically significant in the elderly, and we would argue the same for our patients with schizophrenia and bipolar disorder.

So just something to keep in mind as we move on to the next slide and look at some examples of the medications that are listed on the anticholinergic cognitive burden scale. Now, the medications on this ACB scale-- the list was updated after 2008, again in 2012. But I still want to note that some of our newer antipsychotics approved after 2012, including brexpiprazole, coriprozene, those have not yet been evaluated and added to this scale.

I also want to point out that the list on the slide is not all-inclusive. Actually, the ACB scale in its entirety can be found at the link on the slide. These are just some examples of the medications that I really want to talk about today. So our anticholinergics that we use for EPS-- benztropine and trihexyphenidyl, you can see, are each assigned a score of three. This is the highest score on the ACB scale.

So somebody being on one of these medications automatically puts them at that clinically significant anticholinergic burden level. But if we take a closer look at our column with medications that have a three, we see that our antipsychotics, like clozapine, olanzapine, and quetiapine, are there. We also see diphenhydramine and hydroxyzene, which are commonly used for sleep or anxiety. And even just a side note, diphenhydramine is over-the-counter, so a lot of people might use it without us even being aware.

And then, also with the score three, we have some of our TCAs, like amitriptyline, imipramine, as well as our anticholinergic bladder agents, which we certainly see a lot of our patients taking. Looking at the column with a ACB score of two, in the middle, I want to point out that some of our muscle relaxants are there, like cyclobenzaprine and meperidine. And then, I also want to point out the column with a score of one because we have some of our antipsychotics, like haloperidol, aripiprazole, and risperidone, with an anticholinergic burden score of one.

But we also see medications like warfarin and prednisone and blood pressure medications like atenolol, chlorthalidone, and metoprolol, as well as over-the-counter allergy medicines, like cetirizine, loratadine, and ranitidine, and the antidiarrheal loperamide. So you can see how easily and quickly an anticholinergic burden score can accumulate and how we can get up to scores of 5, 6, 10, 12, 13 depending on the patient.

We certainly see patients with very complex medication regimens. And so, it's not atypical to see scores greater than five. And, obviously, then, we will also see all of the side effects, both peripheral and central-- so the side effects on cognition. So on the next slide, since we've reviewed how, overall, anticholinergic is quantified using the ACB scale, let's bring the focus back to what we can do to reduce this burden and the associated side effects by tapering and discontinuing anticholinergic medications for EPS when we don't need them anymore.

I'm going to review two out of the three quality improvement projects that we were able to do over the past, really, almost 10 years here. And we really believe that stopping these medications and reducing the ACB score even by three points could impact our patients from a side effect perspective, from a quality of life perspective. And also, we were hopeful that there would be improvements in memory.

So in 2014, our team initiated our first QI pilot project. We used a pharmacy report to identify patients on benztropine or trihexyphenidyl, and all of them had a diagnosis of schizophrenia or bipolar disorder. And the clinical pharmacist collaborated with the psychiatry team to initiate taper and eventual discontinuation of these medications. After our first pilot project, we expanded.

Within our academic clinic, we got some more reports of our patients on these medications, and we're able to work with about twice as many to help to taper and discontinue these medications when they were no longer needed. And finally, the initiative was expanded into a community psychiatric clinic, where clinical pharmacy support was not readily available. And Dr. Gannon will talk a little bit more about our project three later on.

So on the next slide, I really want to point out some of the approach to deprescribing that we took as part of our QI projects. Because our clinic is very fortunate to have clinical pharmacy support, we were able to work together-- the psychiatry team and the clinical pharmacists and the patients-- to provide the screening, the counseling, the education, the monitoring and follow-up that were very, very important when, really, having a conversation about stopping a medication with a patient.

So once a patient was identified and the psychiatrist determined that it would be safe to try and taper and discontinue the medication-- so typically, this is if our patient isn't experiencing bothersome EPS currently and if they're psychiatrically stable-- we don't, certainly want to make any medication changes in our patients who are not doing well. And then, once the psychiatrist determined that this was an option, a referral was made to the clinical pharmacist.

And the first thing that pharmacists do is we compile a complete and accurate list of medications. So we did a medication review. And as part of that review, we use the anticholinergic cognitive burden scale to identify all of the anticholinergic medications that a patient was taking and assign a total score. And then, we also used our Pittsburgh anticholinergic symptom scale, which was developed by our team. And Dr. Chengappa will go ahead and talk about that a little bit later, and the development and the details of that scale.

But really, it was a patient-friendly scale that we use to help identify side effects that could be related to their anticholinergic medications. So that included dry mouth, blurred vision, fast heartbeat, constipation, problems with memory. So we asked, are you experiencing these side effects? How often, over the past week or so, have you been experiencing these side effects? And really, how much are they impacting your day-to-day functioning and quality of life?

And finally, we measured impairment in short-term memory using the memory impairment screen for project two. Just want to add that, for some of these screens, it feels, perhaps, cumbersome or a lot of different scales. But really, these are all just tools that I used, as the clinical pharmacist was able to use, for education. None of these screens or questionnaires took longer than, maybe, a minute or two.

They were almost always explain to patients both in words. And then, they were able to see everything in writing. And especially, our PASS scale opened up really important conversations about side effects that provided that opportunity to educate patients about how the benztropine might be causing or exacerbating some of these side effects. Once they made that connection between this medication and the side effects that they are experiencing, even patients who, maybe at first, were initially a little bit hesitant were more likely to be interested in tapering and discontinuing these medications.

So patients were counseled to taper slowly. They met with a pharmacist every one or two weeks to monitor for, perhaps, re-emergence of EPS or just make sure that they're doing well and sticking with the deprescribing the tapering plan. And for most patients, the process took at least two or three months. A couple were able to stop their meds-- the ones that were on the lower doses-- in about a month. And some patients took six to eight months. We really took a very, very slow approach with them to make sure that they were not experiencing EPS and they were comfortable with the process.

And the next slide just outlines some of our results and what we were able to do and see using our different measures. So in project one-- that was our small pilot-- we had 29 patients that were initially screened. 19 of those were considered appropriate for a medication change. And of the 19, 13 had their medications discontinued and 6 had dose reduction. So 45% overall of all the patients that were screened were able to stop this medication.

We saw 50% improvement in side effects, as well as 40% improvement in quality of life and 20% improvement in memory recall. And these results were pretty similar in our second expansion project. We had 51 patients recommended for a change, and 31, or 60%, had a medication discontinued. So that was fantastic. And then, eight of them had a dose reduction. And, again, we saw, really, improvements in both quality of life and memory in these patients. We were very encouraged by these results.

We noticed that, even between our first two projects, having had some positive impact and some success stories from those patients, we took time to educate the psychiatrists and APPs about the opportunities to deprescribe these medications and to really take a second look when patients come in for their appointments. And we found that many of them-- just planting the seed was enough to get the conversation going and stop some of these medications without even, necessarily, needing to go through that slower process with the clinical pharmacist.

And a lot of patients were just giving us positive feedback. They were taking less medications for constipation. They were noticing improved memory. And overall, they were very satisfied and encouraged by the fact that they could be on less medications. So with that, I will go ahead and introduce Dr. Jessica Gannon. She's going to talk about our third project.

JESSICA GANNON: Thanks, Dr. Lupu. So project three, as Dr. Lupu already briefly introduced, was different than the previous two projects in that it was in a community setting. So one of our affiliated community mental health centers. So it was outside of academia. And they do not have a clinical pharmacist on staff. We wanted to try to deprescribe in a real world setting.

And so, we went in, knowing that we were going to use some of the same educational tools that we did in our second project and expand upon those. So we taught the site's psychiatrists and their nurse practitioners more in depth about EPS and use of anticholinergic medications and strategies for deprescribing. And after presenting that, we met with them periodically to discuss cases where, if they were meeting with some barriers where they were meeting with success. And then, we also offered PRN as-needed consultations.

This was a community setting, I should say, with a high number of patients with schizophrenia, with bipolar disorder who were on antipsychotics. So we weren't surprised when we ran reports from the medical record that we all use at UPMC, the ambulatory medical records, to see that there were a fair number of patients getting either benztropine, trihexyphenidyl, or both.

And we use those reports to help provide administrative support to the prescribing clinicians. So we teamed up with the front desk at the community mental health center, as well as their clinic manager. And we provided reports to each physician, each nurse practitioner of all the patients they had on benztropine or Artane. And then, we'd have the front desk give them reminders, ultimately, through the EMR, which we found was the most efficient way to do it. And that was most appreciated by the prescribing clinicians.

They would remind them when one of their patients was coming in who may be an appropriate candidate for deprescription. And then, we took these reports, and we tracked them over time. We would run them and look for changes to see if benzetrophine or trihexyphenidyl had been deprescribed. At the very beginning, our first report, we captured that 106 patients were on either benztropine or trihexyphenidyl. A couple of patients were actually on both.

And they were on those medications for six months or more. 20 patients were prescribed one or both medications or less than six months. So next, this brings us to results. So by the end of our project period, 29% of patients had had their anticholinergic medications deprescribed. Two of those patients did have to restart those medications because they did have a re-emergence of EPS.

We did analyze our results to determine if there was any relationship with a type of antipsychotic therapies. We didn't find any association with whether or not the patient was on one or more antipsychotic or what type of antipsychotic they were on, either the first generation or second generation, or if they were receiving the antipsychotic orally or through a long-acting injectable.

Deprescription was also not associated with patient-reported sex or race, nor age or diagnosis. OK, next slide. Through all three of the projects, we learned quite a bit about predictors of success and potential barriers to a successful deprescription. At the patient level, we found that patients who were more engaged with treatment in general, who tend to come to appointments and be adherent with medications, who are stable, as Dr. Lupu pointed out-- clinical stability is really important-- and those who trust their treatment teams were more likely to successfully engage in anticholinergic deprescription.

At the clinician level, we found that physicians and advanced practice providers who were very committed to evidence-based practice, who were concerned about things like patient quality of life-- so were holistic in their stances-- and who were collaborative-- and so, who looked at us as extensions of the treatment team, that we were being helpful and not interfering-- they tended to be more successful in deprescribing anticholinergics in working with their patients.

We also found, very importantly, that prescribing clinicians who feel supported by their clinical administrators, like they feel they have enough time to spend on things like deprescription, they also tended to be the clinicians who were more likely to be engaged throughout the course of our project. And then, on the next slide, these are some of the barriers to successful deprescription that we found over the course of our projects.

Patients who were not adherent, who miss appointments, who don't take medications as prescribed, who were disengaged from treatment, who are distrusting either because of their temperament or, maybe, disease factors, these folks aren't easy to engage in deprescription and, often, don't meet with successful deprescription. We've already mentioned, clinically unstable folks don't tend to do well in these type of projects. On patients who have extrapyramidal symptoms already, we didn't recommend their inclusion. And it's possible that their EPS would get worse with deprescriptions. So that would be a barrier to their successfully participating.

Importantly, I wanted to point out, too, that some of our patients were quite tied to their medication. Many of us, I'm sure, have patients who come out of a psychiatric hospital on a pretty complex regimen of medications. And when they're on that regimen for several years and they take it faithfully, they begin to feel that the entire regimen is essential for their mental health and staying out of the hospital.

So sometimes, with those patients, understandably, when we start talking about deprescribing a medication and saying you don't really need this, we can face some resistance with that. And so, patients who had that tie to their anticholinergic, sometimes, they would opt out of participation. On the clinician side, physicians and nurse practitioners that we met who were fearful of change were less likely to fully participate in the initiative.

Those who had had failures in deprescriptions-- sometimes, those get generalized to all medications. Patient anxiety can definitely play a role in not being as apt to deprescribed medications. Patient anxiety can take an entire 15-, 20-minute session to mitigate. And so, sometimes, it just may not seem that it's worth the time to deprescribe when patients are anxious about it.

And that also speaks to lack of resources, too. Prescribing clinicians who didn't feel that they had enough time or didn't have enough support in deprescription, also, were less likely to meet with success. All right. Next slide. So overall, our clinical takeaways are that long-term anticholinergic medications can be tapered and stopped in many patients. We do recommend a slower taper. As Dr. Lupu said, in our projects we generally recommend tapers of one to six months or longer.

That helped with patient adherence to our plans, and it allowed us to more closely monitor for EPS emergence. With only education and local support, 30% of patients can taper and stop ACM. That's what we found in project three. And then, with embedded clinical pharmacy support, Dr. Lupu presented the rates in projects one and two where a patient's anticholinergics were stopped. If you combine that with folks who were able to be tapered, we got up to 70% rates of deprescriptions. So 70% of patients were able to taper or stop their ACM.

If you do meaningfully engage with your patients who are on anticholinergic medications and antipsychotics, especially if they're having some anticholinergic side effects and they don't have EPS and they're clinically stable, if you try to deprescribe them, they will thank you. And we think that you will find, like we did in our study, that this effort will improve your patient's quality of life. So thank you. And I think I will turn it back over to Dr. Chengappa.

ROY CHENGAPPA: Thank you, Dr. Gannon. And that was a very good explanation of three projects by Drs. Lupu and Gannon, along with a whole bunch of clinical pearls. And sometimes, given the tools, as Dr. Lupu was pointing out, it might look overwhelming. But actually, a lot of these support tools are just to engage patients and create the more positive, successful trajectory that Dr. Gannon was talking about. So here are three of the tools we had developed, and another one that's in development.

The first one is the Pittsburgh Anticholinergic Symptom Scale. Well, we had an earlier version that we call version 1.0. And the one we've used more recently is 2.0. The second one is a patient handout-- or infographic, as we call it-- and this was done from project three, the one that was done in the community, because the prescribers-- the doctors and nurse practitioners-- asked us if they could have a print version or an electronic version to bring discussion to the point of deprescription of anticholinergic medications.

And the third was oriented towards clinicians. And if everything was otherwise OK for the prescription, then what would be the guide to get someone to get going? So I'll talk a few minutes about this before we have a couple of live questions. So the next slide. So this is PASS scale-- the Pittsburgh Anticholinergic Symptom Scale-- that we developed here, over time. It used to be 10 items. We brought it down to 6. Then we added one quality-of-life scale at the end for the overall burden of the side effects.

Remember, this is a self-report. And the way we ask is we just ask in the last week so that memory is not for a whole lifetime or for a year or for a month, even, but more towards the last week. And this helps you get a sense. If this scoring in the neutral phases-- 3, 4, 5, 6-- it's pretty bad for single items, let alone a bunch of items. And as Dr. Lupu was pointing out, you add up a whole bunch of drugs with anticholinergic burden, these numbers could increase rapidly just by having benztropine or Cogentin or trihexyphenidyl and Artane.

You could be at three on the anticholinergic burden scales, but here, you might be at different numbers. But it's, after all, on the patients that could easily tell you how bad their dry mouth or blurred vision or constipation or difficulty urinating is, or the memory issues. With blurred vision, sometimes, we find gets mixed up a little bit, but not having seen an optometrist or ophthalmologist in years, if not for several years.

So there's a little more poking around that needs to be done in the short interview. But these could help guide you to see if they see improvements when you taper and stop medicines like benztropine or trihexyphenidyl. The last question is really important because, as Dr. Gannon was pointing out, if you are able to achieve success, you will see people coming down from a four or a five where it's interfering severely that they're drinking water non-stop, using laxatives.

And stopping these laxatives, as Dr. Lupu was pointing out, they'd be very grateful, and you will see the measures coming downwards towards one and zeros, even. So the next scale is a informatic tool or a patient infographic that Dr. Lupu primarily developed and we jumped in to add finesse to it. And really, it's a patient-facing tool. Whether it's electronically available or printed out, it doesn't really matter. It gives them a sense of why we might consider, maybe, using a lower dose or even stopping and how best we might achieve it in conversation with the prescriber.

And so, this patient education tool, the PASS, they're all copyrighted by the University of Pittsburgh and UPMC. But in general, for clinical use, we would give you permission to use it. And all you need is to send us an email. So this copyright is available to anyone who wants to use this clinically. For commercial interests, they'll be contacting the university for use of this in large trials, if it was ever used.

The last slide addresses a support tool that's more a clinical decision support or a clinical guide. It addresses, really, what Drs. Lupu and Gannon pointed out. The first thing you want to know-- is the patient clinically stable? Because if someone's just come out of the hospital, they're not quite stable. And the benztropine was given for acute dystonia. I don't think you want to be tapering in discontinuing on the spot.

So you wait for a few months-- typically, six months-- and then, you can ask are any of these symptoms bothering you, the anticholinergic side effect symptoms? And you can do a basic examination for stiffness, for tremors, for rigidity. And if none of these are present, then maybe you could begin this discussion as to whether you want to continue this medicine, or is it time to taper and discontinue?

And how do you do it? You do it very slowly, over one to six months. If you were at a super low dose-- half a milligram, one milligram of either of these anticholinergics-- maybe you could go a little faster. But if you were the typical doses of 2, 3, 4 milligrams of these drugs or higher with, say, Artane or trihexyphenidyl, you'd want to take longer to discontinue. And that's just common sense clinical practice.

If it re-emerges, you can prepare them to go back to the previous dose. Or all the way back to the original dose that kept them comfortable. So you always have that in your back when you begin this process. And that's, really, decision making with the help of sharing this information, which we've now begun to call shared decision making of treatment choices in psychiatry practice. So these are the three tools available for general clinical use. Just send us an email.

And we would prefer for people to use it as widely as possible. If there are commercial interests interested, then we will direct them to the right people at the University of Pittsburgh and UPMC. And at this point, maybe, we are down to just references, which are in the slide set. And the next slide is resources. Maybe some of the resources were earlier, on slides that Dr. Lupu presented, maybe places where you could go to online and put in, say, a bunch of medicine.

Someone's on clozapine. You're unlikely to taper and discontinue that, but they might be on menstrual pain for, maybe, excess salivation. There are alternatives for hyper salivation than using benztropine or trihexyphenidyl. And you could reduce the score from six to three by tapering and discontinuing the anticholinergic. Now, someone might be on, say, a dose of olanzapine, but then, a second antipsychotic-- like haloperidol is added to make up what olanzapine doesn't take care of.

And suddenly, you have EPS, and you have a benztropine added to it. It's unlikely you will discontinue the olanzapine. But if you needed two drugs to get things going and better, then you would have benztropine to go after, to lower and get rid of. So we're down to the last five minutes. I'd like to thank all of you for participating. But what I'd like to end these last five minutes is maybe a couple of questions.

Since this is not a live audience, if I may ask those questions of Drs. Gannon and Lupu? So Dr. Gannon, say you had someone come to you maintained on clozapine, but has seasonal allergies. They're taking, maybe, diphenhydramine for it. They don't like cetirizine or one of these so-called daytime antihistamines. And they also have, maybe, trihexyphenidyl that was used by somebody for hyper salivation.

How would you go about thinking about deprescribing this patient?

JESSICA GANNON: Well, first, I'd invite the patient to have a conversation about their medication regimen in total and see if I could share information with them about anticholinergic side effects and how their particular combination of medications could lead to that. And then, I would ask them questions. Or if I was, fortunate as I am, to have a tool like the PASS, I would review that with them and have them tell me more about the side effects that they may be having.

So I would collect information about that. And if I had the PASS, I could do that in a more formal way, a qualitating way that I could show them. And having that visual that the PASS gives can be very helpful. And then, I would ask them if they'd like to make a change to try to reduce some of these symptoms. And if they said yes, I would then share information about options.

And the lowest-hanging fruit here, to me, if they didn't want to change their diphenhydramine prescription-- because as you said, Dr. Chegappa, there are other medications for allergies that have lower ACB scales. I've used loratadine in such cases. But I would talk to them about hyper salivation with clozapine and standard of care treatments that we have now, which include under-the-tongue, ipratropium nasal spray, and atropine eye drops.

And we use those now because they're not systemically absorbed, and they help with hyper salivation. And we do use them quite commonly with some success.

ROY CHENGAPPA: Yeah. Thank you. I think that's a really good approach. And Dr. Lupu, as you were saying, there's a whole bunch of drugs that people coming on, young people. Not just psychotropics, but several others. For instance, someone may have incontinence and may be treated with, say, oxybutynin. And that may have resolved it, may not have, and it may be on top of the olanzapine or the clozapine.

And there may be yet other drugs. how would you go about counseling and reconciling this medication burden with such patients, and how often would you see them if they went the route of deprescription?

ANA LUPU: Yeah, absolutely. So we see this often. And even in the previous example, we have medications prescribed by multiple providers addressing multiple, different issues and each carrying an anticholinergic burden that is contributing to side effects. So certainly, especially with overactive bladder, we have had to collaborate and work with either primary care providers or, potentially, urologists to-- we can ask some basic questions about whether patients feel like their overactive bladder symptoms are well-controlled.

We find, typically, quite partial response to some of these medications. We are fortunate to have Myrbetriq, or mirabegron now, and this medication does not have anticholinergic properties. And so, this is an alternative, and it's effective. It can either be added to the regimen or used instead of our bladder anticholinergics to treat overactive bladder.

But honestly, I've had patients who have chosen to stop all of them because they're not getting enough benefit, and stopping some of these medications changes their quality of life in other ways. So that's always an option. Conversation, like Dr. Gannon, really, just said, is so important. What matters most to a patient. For some, having a tremor in public is very, very embarrassing, whereas, for others, a little bit of a tremor can be very normal.

It's not bothersome, and they're very open to deprescribing benztropine because of some of the other benefits and reducing side effects.

ROY CHENGAPPA: Yeah. Thank you. I think one of the key things in this business is how we coordinate with other specialties when it comes to medicines prescribed by them. And if patients and if our methods of communication, whether through electronic records or email or phone calls, can certainly set the stage for this deprescription and a burden of fewer medicines, all told.

But I'd like to thank you both for your wisdom and sharing all the clinical pearls you have with the audience. And to this audience, I thank you for your attention. And please complete any CME requirements by taking any post-test questions and reaching out within the CME to any contacts you need, in terms of getting the CME. So thank you, again, both Dr. Gannon and Dr. Lupu, and to Joan for recording this presentation. Bye bye, everyone.

JESSICA GANNON: Thank you. Goodbye.