There are many formulations of carb/levo out there. Let's talk about the immediate release first, then we'll talk about controlled release, extended release, and then other formulations as well. The immediate release formulation comes in 10-100 or 25-100. The majority of us would prefer 25-100 because we like the 4 to 1 ratio of levodopa to carbidopa. It's considered the optimal ratio for being able to block adequate amount of carbidopa to allow levodopa to get into the brain.

Now, there is a separate carbidopa available as well, which is carbidopa 25 milligrams, which is utilized uncommonly, but in patients who have a lot of nausea with their carbidopa/levodopa. It's difficult for them to take it, because many times they're taking it prior to the next dose. So they have to take something 30 minutes prior the form of carbidopa, then remember to take their dosage of carbidopa/levodopa. And that has to be spaced apart an hour from food, so it's a lot of tracking for folks to do. So it's user intense in that sense.

We generally prefer 25-100. If we look at the carbidopa/levodopa controlled release class, we have a 25-100, as well as a 50-200. One of the challenges of carbidopa/levodopa controlled release class is the fact that it's done in a wax matrix. Absorption isn't always as quick as the immediate release. It's not always as high of a peak in terms of dosing. And it only gives you a slightly longer amount of time in plasma. One of the challenges has been with individuals with gut issues, sometimes this leads to dose delays and dose failures many times.

So carbidopa/levodopa controlled release isn't something that we typically use in the movement disorder space. I still see general neurologists using it. I still see internal medicine doctors using it. But we prefer immediate release because of its more reliable pharmacokinetics than carbidopa/levodopa controlled release in that sense. Controlled release is two formulations.

Then we have an even longer acting formulation, carbidopa/levodopa extended release. The formulations here are no longer 25-100, but the ratio of levodopa to carbidopa is 4 to 1 in that sense. Here, the important thing is because it's a 1/3-2/3 formulation that I mentioned earlier, that really we have to convert the individuals so that they get an adequate on with their immediate release component of the carbidopa/levodopa extended release, and then be able to sustain that. So we really are asking for a reasonable amount of GI function. If there's GI dysfunction, it can really result in difficulty in dosing or finding the optimal dose for individuals.

We also have carbidopa/levodopa available in a GI formulation, which is basically an enteral solution formulation, which is basically given through a pump. And that's in a liquid formulation, also a 4 to 1 formulation of levodopa to carbidopa, but requires a surgical implantation of a PEG-J tube through which the medication can be given and programmed through a pump.

In addition to that-- these are the mainstay formulations-- we also have an on-demand formulation of levodopa. And the inhaled levodopa does not contain any carbidopa-- it's an important distinction-- but does contain levodopa. And the dose approved for that is 84 milligrams, which is two capsules of 42 milligrams that are inhaled to work in an on-demand fashion, either providing you a bridge from one dose to another.

We also have a formulation that's newly available called the fractional formulation of carbidopa/levodopa 25-100. And for the purposes of differentiating this from immediate release, because the dosing is identical, is to be called as Dhivy-- that's the trade name for it. I know this is a CME, but it's important to distinguish one product from another. And I'll be referring to that as the fractional carbidopa/levodopa 25-100 formulation.