

JULIE PHILLY, MD: The decision to use amikacin is difficult at times. Intravenous amikacin has a lot of side effects, namely ototoxicity and renal toxicity. So in an elderly patient that already has a baseline hearing loss, sometimes that's not a great option because we do anticipate, with the use of intravenous amikacin, that there will be some high frequency hearing loss. And we do check a baseline audio-gram. And then I, in my own clinical practice, follow those every one, to two, to three months, depending on the severity of the hearing loss of the patient.

In terms of the renal disease, although we carefully monitor the peak levels and the BMP or the basic metabolic panel in these patients, many times they will suffer some renal toxicity that precludes the use of intravenous amikacin. Fortunately, many patients do tolerate it quite well, especially when the dosages are followed frequently. Other patients do much better with an inhaled version of amikacin.

What we understand from actually from the lyposomal amikacin data and, specifically, the convert trial that looked at actually Arikayce or lyposomal amikacin in refractory MAC lung disease, what we understand is there is a much lower systemic exposure to amikacin when used in the lyposomal inhaled form. How amikacin works is, basically, it interferes with protein synthesis and binds to the ribosome. So what happens is the amikacin is actually in kind of a water core that's surrounded by a lyposome.

And this lyposome offers better delivery into the macrophage, which is where MAC lives. In some of the animal studies, in fact, this type of molecule has five to eight times more concentration than just free amikacin. So we believe that, perhaps, there is better delivery into the macrophage, thus a better chance of essentially killing the MAC. Although, we don't exactly know what all of this means.