



Nip Myopia in the Bud?

With AMMC[®], a first-of-its-kind standardized age-matched myopia control system, we can do just that!

by Sam McCommon

Pardon the pun, but it's easy to be short-sighted in preventing and treating myopia. It's an enormous and growing problem expected to affect half the world's population by 2050 — that is, if we continue our current trajectory. If prevention and diagnostic protocols are rapidly improved, however, maybe we can turn that trend in the other direction. To do that, doctors will need both the right tools and the right information.



We're discussing that here, and we've got some good news. Lenstar Myopia (Haag-Streit, Köniz, Switzerland) combines a top-notch tool in the Lenstar 900 biometer with intuitive,

powerful software in EyeSuite Myopia.

And here's where we tie it back to myopia prevention: A key, exclusive feature in EyeSuite Myopia is Age-

Matched Myopia Control (AMMC[®]). This framework helps doctors identify potential myopia in children to treat it early.

This framework was developed by Prof. Dr. Hakan Kaymak, who was kind enough to speak with us and describe how the system works, how doctors can use it, and how it can help nip myopia in the bud. Prof. Kaymak is an ophthalmologist, eye surgeon, and head surgeon of Breyer, Kaymak & Klabe Augenchirurgie in Düsseldorf, Germany.

So, what makes AMMC[®] so special?

For starters, there was no standardized myopia control system prior to this one. It's the first of its kind. It provides data on the eye's axial growth based on age and gender. The data is presented in an easy-to-understand visual format that can help doctors explain their child's situation to parents.

Communication with patients is a crucial point. As Prof. Kaymak told us, "With the new system, it is possible to tell the parents clearly what we want to achieve with our therapy. It is also helpful to improve compliance and adherence, especially when we use atropine eye drops. It is nice for the parents and also for the children to see that they reach the therapy goal and are thus further motivated."

Catching myopia as early as possible is vital in treating it. The AMMC[®] system can be used in children as young as six years old, when the biometry and refractive measurements can be performed accurately enough.

Biometry and informed decisions

Prof. Kaymak noted that measuring axial length is the key to identifying myopia that results from excessive eye growth, which is, by far, the most common type of myopia. So what measurements are valuable? "For myopia management, myopia and the need for therapy should be judged by axial length measurement," explained Prof. Kaymak. "If the axial length of



an eye is greater than the average axial length of an age-matched group of emmetropic children, that is those children that remain without any error of vision, an ophthalmologist should consider recommending myopia therapy,” he continued.

Monitoring eye growth and treatment effects are crucial as well. After the initial assessment and commencement of therapy, doctors can use the AMMC® framework to keep track of the course of the therapy. The child’s second visit should take place 10 to 14 months after the first, and biometry will be collected again. The actual eye growth is compared to normative values, which will give an idea of just how effective the therapy has been.

The same process is repeated at subsequent follow-up visits. If the therapy has worked and the goal has been reached? Great! If new therapy is needed, the doctor can discuss with the parents what needs to change.

Note that it’s insufficient to measure axial length growth alone: It must be compared to the normative values of emmetropic children of the same age, gender and ethnicity, since eye growth is quite dependent on a child’s age. This is where the “age-matched” part of AMMC comes in, which is why the system is so valuable.

Catching myopia before it begins

Myopia should be treated as early as possible to prevent it from worsening. We know that. But can it be identified before it even begins?

Yes, says Prof. Kaymak. As he explained, “Well before the children develop myopia as it is expressed in the negative refractive power of the glasses, one can already determine on the basis of the axial length whether an excessive axial length growth will soon give rise to myopia or not.”

The axial length growth difference between myopes and emmetropes is noticeably different two to three years prior to the onset of myopia, Prof.

Kaymak noted — meaning myopic eyes develop quite differently before any refractive change towards myopia takes place.

Preventative treatments

Should biometry indicate that myopia is likely to develop, there are a couple of valuable preventative treatments. Firstly, Prof. Kaymak noted, children need to be outdoors more. We’ve heard ophthalmologists discussing this for some time now, as a landmark 2008 study¹ indicated a significant difference between children of Chinese descent in Singapore and Sydney, Australia. Spoiler: the kids who were outside more had much lower rates of myopia.

Secondly, Prof. Kaymak pointed to studies indicating that prophylactic atropine at 0.05% can reduce the risk of myopia onset by half, as shown in the latest publication in the LAMP2 study.² We should consider starting myopia treatment prophylactically before myopia becomes visible as a refractive error. There is a whole new group of patients to be addressed: Parents with children who have, apparently, healthy eyes.

Knowing is the real battle

In order to treat myopia, doctors and parents must be aware of it. That’s why the biometry assessed by the AMMC® framework is so crucial: It gives a clear indication of just what needs to be done.

Prof. Kaymak urged doctors to get going. As he put it, “I can only recommend starting with this new myopia management soon. Firstly, it is straightforward to use and enables us to communicate clearly with patients and their parents. Secondly, and more importantly, we have the opportunity to help shape the future of all children by preventing them from developing pathological myopia, which is definitely not just a cosmetic problem, but one of the main causes of severe vision loss and blindness in all developed societies.”

Ensuring children maintain quality

eyesight is one of the most laudable goals possible. And now that the tools are improving, it’s more possible than ever.

Prof. Kaymak said it well: “We can actively influence and stop excessive eye length growth with pharmacological and optical correction therapy options. With the AMMC® system, we have the possibility to perform efficient and safe monitoring, which means that we have everything in place to ultimately meet our treatment goal.”

The AMMC® method is exclusive to Haag-Streit and is only available, as standard, in the Lenstar Myopia. 🍷

References

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2. Yam JC, Li FF, Zhang X, Tang SM, Yip BHK, Kam KW, et al. Two-Year Clinical Trial of the Low-Concentration Atropine for Myopia Progression (LAMP) Study: Phase 2 Report. *Ophthalmology.* 2020;127(7):910-919.



Contributing Doctor

Prof. Dr. Hakan Kaymak is an ophthalmologist, eye surgeon, and chief surgeon at Breyer, Kaymak & Klabe Eye Surgery in Düsseldorf, Germany, for the area of retinal, macular, and vitreous body surgery. His range of therapies includes laser treatments, innovative combination therapies, and minimally invasive operations, as well as the prevention and treatment of myopia in children. He has experience from more than 45,000 surgeries. Prof. Dr. Kaymak is the medical director of the Macula Retina Center in Düsseldorf-Oberkassel and a Professor of Experimental Ophthalmology at the University Eye Clinic Homburg/Saar. He also teaches at the Ernst Abbe University in Jena and cooperates with Prof. Schaeffel, University of Tuebingen, in the field of prevention and therapy for myopia in schoolchildren.



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