The ESCRS Digital Health Committee has been set up to promote digital transformation in cataract and refractive surgery. We will do this through an open research call for projects (the DRA awards) designed to promote the availability of high quality, open access data for clinical research and through educational events.

Statement of need

Clinical research questions are answered by analysis of data collected either in clinical trials (prospectively) or in routine clinical practice (retrospectively). As digital transformation and protocol driven clinical care continue to develop, the quality distinction between prospective and retrospective data is becoming less relevant.

ESCRS currently spends €1m a year on research, mostly clinical trials. This research is valuable but has clear limitations. Clinical trials are slow and very expensive. Many are never completed, and data collected is often never re-used. Datasets from clinical trials are also generally too small for analyses using machine learning techniques.

Machine learning has revolutionised pattern recognition and prediction in modern life. Existing applications in ophthalmology include more accurate biometry formulae and automated screening for diabetic retinopathy. Machine learning does not require specialist knowledge for successful application: the machines now choose the algorithm best suited to the question being asked. This "code free" machine learning is freely available.[1] The missing piece is the data, particularly for anterior segment applications.[2]

ESCRS already sponsors registry studies including Eurequo, and it may be possible to extract useable public access datasets from this existing data. But relatively few data fields are collected, and protocols for data collection are not well controlled.

The space for new ESCRS sponsored open access datasets sits between clinical trials and registry studies. We aim to leverage the trend towards protocol driven routine clinical care in order to create richly labelled datasets comprised of imaging and clinical outcomes data for groups of 1000 to 100,000 patients.

Is this achievable? It is already being done for retinal disease. We simply need to replicate these efforts in the front of the eye.

References

1) Korot E et al. Code-free deep learning for multi-modality medical image classification. Nature Machine Intelligence 2021 https://doi.org/10.1038/s42256-021-00305-2
2) Khan S et al. A global review of publicly available datasets for ophthalmological imaging: barriers to access, useability, and generalisability. Lancet Digital Health 2021 https://doi.org/10.1016/s2589-7500(20)30240-5.