In her Jackson Memorial Lecture during the Academy’s Opening Session, Anne L. Coleman, MD explored the 2013 data of the European registry of quality outcomes for cataract and refractive surgery. Of 368,000 surgery patients, 99% had 20/200 vision, and 61% of them had 20/20 or better.

A glaucoma specialist whose research interests include the interface of ophthalmology and public health, her question was: What was wrong with the 1% who did not attain 20/200? It turned out these people had treatable issues, like endophthalmitis. There were 1,000 surgeries before an infection occurred.

In 1991, the rate of endophthalmitis among veterans at the VA after intracapsular surgery was 0.17 over two years; in the Kaiser Permanente health system, it was 0.12. But the Swedes had a rate of 0.03. “My guess was that our rate here in the US was similar,” Dr. Coleman says. So her team analyzed Medicare data from 2010-2013 and the IRIS registry, the AAO’s EMR-based eye disease registry, from 2013-2014.

“IRIS has 17.6 million unique patients and used the same CPT codes as Medicare. With the IRIS database, we knew which [eye] had been operated on and which one had been, or was, infected,” she explained.

In the Medicare population, Dr. Coleman’s team found 300 cases out of 217,000 surgeries — or 0.14% — had endophthalmitis. In IRIS, there were 511,000 surgeries, and 400 cases of endophthalmitis, or 0.08%.

Why the difference?

It was the nature of the patients, Dr. Coleman says. IRIS patients were younger. They also used lid hygiene, were medically compliant, were health literate, and could handle the cost of treatments.

But, she concedes, there was an ascertainment bias in her research. IRIS doctors did not participate in Medicare, for one thing. Additionally, the
Medicare database lacked some important details. For example, Dr. Coleman’s team did not know if the surgical eye was also the infected eye.

As for quality of vision, Dr. Coleman reported that in IRIS, presurgery, patients were 20/50. A month later, they were 20/30. However, she could not say surgery was successful because after that month, no data were recorded because patients didn’t return. “Here is a caution on data,” she told the audience. “It can only show association, not causation. If you don’t observe, you can’t measure. Without clinical insight, you can’t interpret. So, you need clinical insight, and big data can help. We can show what we are doing as compared to national benchmarks, and you can compare to your colleagues.”

**Lessons still to come**

In an interview, Dr. Coleman said the IRIS database was important because it is rich with data that could help physicians improve patient care. For example, as a glaucoma specialist, she wants to know how patients are managed and if treatment approaches vary by region. She believes ophthalmologists will be responsive to the IRIS data. “IRIS allows ophthalmologists a different way of evaluating ourselves,” she says. “Physicians want to be the best. They will work to figure out why” something has gone wrong.

Dr. Coleman says she would follow up on the endophthalmitis project, on those patients from IRIS to record their visual acuity, among other details. Another possible future project Dr. Coleman has in mind for the IRIS data is diabetic retinopathy — how long does a person have type 2 before he or she develops OR? “[These data] are powerful,” she says. “They can provide a lot of information.”

**Allergan presents EARLY**

A post-hoc analysis of BCVA data in DME patients treated with anti-VEGF therapy suggests that long-term response to the treatment can be assessed after three injections. Early anti-VEGF response and long-term efficacy (EARLY Analysis) was a three-year phase 3 trial including 691 patients (854 eyes) with DME at multiple sites.

The analysis of Protocol 1 focused on one anti-VEGF approved in the United States for the treatment of DME and it assessed outcomes in three cohorts based on observed BCVA response (defined by letters gained in the Early Treatment of Diabetic Retinopathy Study chart at week 12). The cohorts were defined as a gain of fewer than five letters, a gain of five to nine letters, and a gain of greater than or equal to 10 letters. The unadjusted differences in mean BCVA change from baseline were +0.3, +6.9 and +15.2 at 12 weeks, respectively, and +3.0, +8.2 and +13.8 at three years, respectively. After multivariate adjustment, significant correlation remained between BCVA gain at week 12 and years one and three.

Retinal specialist Pravin Dugel, MD, clinical professor, USC Eye Institute, Keck School of Medicine, University of Southern California, says the EARLY Analysis study carries weight for retinal physicians eager to gauge how patients will respond to anti-VEGF long-term. “This data suggests that if treatment goals are not achieved after three injections, further expected improvement may be minimal and physicians may want to consider other treatment strategies,” he says.

The Diabetic Retinopathy Clinical Research Network (DRCR.net) along with Allergan conducted the post-hoc analysis to support patient care in the management of DME.

Allergan also announced that it submitted a Prior Approval Supplement for its dry eye drug Restasis (cyclosporine ophthalmic emulsion) 0.05%. The company is seeking approval of a multi-dose, preservative-free application.

**Visunex Medical Systems**

Experts in the field discussed the importance of screening all babies, not just those born prematurely who could be at risk for retinopathy of prematurity and retinoblastoma. But it’s those in neonatal intensive care units who are at most risk of having difficult vision issues.

In the neonatal intensive care unit, 20% of these babies have some vision abnormality, said Audina M. Berrocal, MD, of the University of Miami. The time has come, she said, to manage amblyopia and other vision disorders. About 400,000 babies in this country are born prematurely, said moderator Darius M. Moshfeghi, MD, of Stanford University. These babies are so small ophthalmologists sometimes aren’t allowed near them, but with a handheld wireless device that is noninvasive, it’s possible to see, for example, if blood vessels are
Yes, you did wait in line for coffee longer this year than last — and probably for everything else.

Attendance at AAO increased this year over 2014. Physicians, both foreign and domestic, and others attended the annual conference in Las Vegas in significantly greater numbers.

<table>
<thead>
<tr>
<th>Annual Meeting Attendance</th>
<th>2015 Sunday</th>
<th>2014 Sunday</th>
<th>% Change</th>
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<tbody>
<tr>
<td>US Physicians</td>
<td>8,754</td>
<td>7,814</td>
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<tr>
<td>International Physicians</td>
<td>6,206</td>
<td>5,140</td>
<td>21%</td>
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<tr>
<td>Exhibitors</td>
<td>8,088</td>
<td>7,258</td>
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<tr>
<td>Total Attendance</td>
<td>27,033</td>
<td>23,168</td>
<td>17%</td>
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<table>
<thead>
<tr>
<th>Subspecialty Day Attendance</th>
<th>2015 Sunday</th>
<th>2014 Sunday</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cornea</td>
<td>1,266</td>
<td>732</td>
<td>73%</td>
</tr>
<tr>
<td>Glaucoma</td>
<td>1,312</td>
<td>1,079</td>
<td>22%</td>
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<tr>
<td>Ocular Oncology &amp; Pathology</td>
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<td>N/A</td>
</tr>
<tr>
<td>Oculofacial Plastics</td>
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<td>N/A</td>
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<tr>
<td>Refractive Surgery</td>
<td>1,264</td>
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<td>21%</td>
</tr>
<tr>
<td>Retina</td>
<td>3,677</td>
<td>3,537</td>
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</tr>
<tr>
<td>Uveitis</td>
<td>N/A</td>
<td>273</td>
<td>N/A</td>
</tr>
<tr>
<td>Total Attendance</td>
<td>8,461</td>
<td>7,656</td>
<td>11%</td>
</tr>
</tbody>
</table>

At birth, regardless of whether the child is full- or preterm, “We can easily identify ... and prevent amblyopia and other refractive errors,” he said.

Taking sting out of cyclosporine A

German company Novaliq GmbH presented its proprietary, drug delivery technology designed to transform poorly soluble drugs into more effective ophthalmic therapeutics. EyeSol is an eye drop created in an aqueous-free environment via the use of semi-fluorinated alkanes (SFA) and an excipient. The fat-loving, water-loving nature of the SFAs means they dissolve numerous therapeutically relevant, poorly water-soluble compounds, such as cyclosporine A, without the need for surfactants. This technology allowed Novaliq to also create CyclASol, a non-aqueous solution of cyclosporine A to treat dry eye syndrome.

In 2014, CyclASol successfully completed a phase 1 study on 18 patients with moderate to severe dry eye and found that the product increased the absorption area, allowing better penetration. One-quarter drop was the equivalent of one drop of cyclosporine A. CyclASol is now in a phase 2 study of 200 patients. Novaliq says the preservative-free eye drop will be available in multi-dose units.

IRIS registry update

Academy President David W. Parke II, MD, told the audience in Las Vegas that the IRIS registry now holds more than 16 million unique patients, and that he anticipates 100 million unique patient visits by next year.

The registry, Dr. Parke said, reveals the following statistics on eye care in the United States:

- The number of cataract surgeries: 857,738
- Cases of POAG: 334,558
- Diagnosed cases of AMD: 1,321,746

Dr. Parke also reported a rebranding for the Academy. The society’s new tag is: “Protecting sight. Empowering lives.” In a press conference, Dr. Parke said that the AAO represents 94% of ophthalmologists here and many internationally. “We are the voice of ophthalmology.”

What’s new at the booth?

OM’s Ed Board peruses the hall for tech’s best.
the exhibit hall on the lookout for the new and in-your-tracks-stoppable.

What follows are their product and technology picks they believe will help patients and practitioners:

**Abbott’s iDesign** generates a high-definition scan that measures and maps irregularities of the eye that may impact vision. From these measurements, the iDesign System creates an accurate and personalized LASIK treatment plan based on the unique “blueprint” of each person’s eyes. "It’s a second-generation wavefront technology that captures four times more data than the previous wavefront technology and should take custom wavefront laser to a whole new level of accuracy," says Eric D. Donnenfeld, MD.

**Abbott and Alcon** have introduced new low-add multifocal IOLs — the Tecnis (Abbott) +2.75 and +3.25 and the ReStor +2.50 (Alcon).

**AcuFocus’s KAMRA** inlay for presbyopia is winning attention. Brian Will, MD, began implanting the newly FDA-approved corneal inlay last summer. "The company has a very rigid proctor and oversight on patient selection to ensure the best results," he explains. "Patients have been uniformly happy with their uncorrected and near vision with the inlay. I have patients seeing 20/20 at near and 20/15 at distance."

Dr. Will also likes **AcuFocus’s AcuTarget HD.** "The system helps us quantify the clarity of the lens of the eye — excellent for determining the need for cataract surgery in an objective manner. It also is excellent at testing the quality of the tear film."

**Alcon’s Autosert IOL Injector Handpiece** continues to impress Robert P. Lehmann, MD. "I have greatly enjoyed using it for reliable delivery of the single-piece acrylic IOLs into the capsular bag," he says. "I rediscovered several advantages to a preloaded delivery. The lenses are not touched with forceps or exposed to the environment of the OR, and there is the timesavings of the tech not needing to load them into a device. Additional benefits include not needing to purchase costly handpieces to maintain and sterilize them."

**Alcon’s Contoura Vision** is a topography-guided LASIK treatment that provides surgeons with the ability to perform more individualized laser refractive procedures on patients with myopia or myopia with astigmatism.

Another **Alcon** offering: the ORA System with VerifEye+ Technology. "It’s been redesigned; Alcon started shipping it out just last summer," says Albert Castillo, CEO at San Antonio Eye Center.

**Bausch + Lomb** presented its recently acquired Doctor’s Allergy Formula. "This minimally invasive ocular and systemic allergy testing system allows ophthalmic practices to test, diagnose and more objectively guide treatments for patients with nonspecific ocular surface symptoms such as red and itchy eyes," says Robert J. Weinstock, MD.

**Carl Zeiss Meditec’s Angioplex OCT Angiography** provides three-dimensional representations of the retina and the choroid, eliminating the risk of adverse reactions caused by injections into the eye. "For diseases of the macula, Angioplex will replace fluorescein and indocyanine green angiography because it’s faster, cheaper, safer, non-invasive, doesn’t require dilation and provides all the advantages of traditional OCT imaging while giving us superior images of the retinal and choroidal microvasculature. We can also segment different macular layers for better depth localization of diseases compared with angiography," says Philip J. Rosenfeld, MD.

Another **CZM** offering is the IOLMaster 700. "It’s the first device to capture IOL measurements using swept-source OCT, which images the back surface of the cornea, lens thickness and the retina to help locate the fovea and assure fixation," Dr. Donnenfeld explains. "I believe this device will increase the accuracy of IOL measurements."

**Leica Microsystems** launched the Proveo 8, the core of a new ophthalmic microscope platform for cataract and vitreoretinal surgeries. The Proveo 8 is designed to provide consistent red reflex and a crisp, texture-rich image during procedures, due to proprietary innovations such as FusionOptics and CoAx4 Illumination.

Clear Eyes Pure Relief from **Medtech Products** is a new preservative-free artificial tear solution in a multi-dose bottle with a built-in purifying filter in the tip to keep bacteria out.
MST will release the Malyugin Ring 2.0 in early 2016. "The new version of the Malyugin Ring will be made of a thinner 5-0 ga filament instead of the current 4-0 ga material; consequently, it will be able to be compressed further to fit through a 2.0-mm corneal incision," says Cynthia Matossian, MD.

Mynosys' ZEPTO is a novel capsulotomy device with a disposable handpiece and tip designed to produce a quick, round, predictable capsulotomy in milliseconds. "The capsular edge tear strength is three to four times greater than those created with a manual CCC or femtosecond laser," says Dr. Matossian.

Nidek's new VersaCam Digital Medical Scope offers a wide range of interchangeable lenses, and improves informed consent by allowing captured images to be displayed directly on the 3.5-inch color LCD monitor with a 2X magnification on the submonitor. Users can file images more quickly as captured images can be imported to image-filing software.

Omeros' Omidria (phenylephrine and ketorolac injection) 1%/0.3%, an additive for irrigating solution, that is used during cataract surgery and lens replacement procedures. Its indication is for maintaining pupil size. Omidria, which recently approved FDA approval, prevents intraoperative miosis and reduces postoperative ocular pain. "This dilating agent makes surgery easier and safer for patients," says Kendall Donaldson, MD.

Jenvis Dry Eye report for the Oculus Keratograph assists in diagnosing dry eye. It collects and summarizes data from a questionnaire, a slit lamp measurement of lid parallel conjunctival folds and four measurements performed with the Oculus Keratograph 5M. "The Jenvis report allows for instant pattern recognition of the patient’s ocular surface problem. The black spider plot shows, at a glance, precisely which of the patient's parameters are abnormal, and to what degree," says Marguerite B. McDonald, MD.

RPS' Inflammadry is an in-office test for ocular surface inflammation. It gauges MMP-9, an inflammatory marker elevated in the tears of patients with dry eye.

TrueVision Surgical presented the TrueVision 3D digital operating and guidance system. "This game-changing technology allows the ophthalmic surgeon and observers to view the surgical field in vibrant 4K 3D. It has digital overlay software to guide surgical maneuvers, astigmatism correction, IOL centration and other anterior and posterior segment applications," says Dr. Weinstock. "With V10 software and a higher
resolution camera, surgeons can finally be untethered from the restraints of the microscope oculars."

Visunex Medical Systems introduced the PanoCam LT Wide-field Digital Imaging System and PanoCam Review Software. It can image all newborn infants, including preterm infants at risk for retinopathy of prematurity and retinoblastoma. Darius M. Moshfeghi, MD, who has an equity position in Visunex Medical Systems Ltd, says "The PanoCam introduces cordless wide-angle imaging for pediatric retinal disease evaluation in a light-weight, portable, ergonomic device configuration that can connect wirelessly to the Internet for synchronization with a cloud-based review system."

Ziemer bills its Femto LDV Z8 as the first real mobile femtosecond laser for both cataract and refractive surgery. "It's small, portable and has nearly every approval a femto laser could have — all at once," says Larry Patterson, MD. OM