

OHTS: 1 Year Later

springy cornea phenomenon / neutralized 3.06 mm surface of tonometer head
 THICK = more spring ∴ false elevated
 THIN = less spring ∴ false low

Find out how the Ocular Hypertension Treatment Study has influenced this practice's approach to ocular hypertensive patients.

BY MARK PACKER, M.D., I. HOWARD FINE, M.D., AND RICHARD S. HOFFMAN, M.D.
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Just over a year ago, the National Eye Institute released the results of the Ocular Hypertension Treatment Study (OHTS).

What has the OHTS taught us?

For starters, the OHTS has given us a reason to consider the relationship between corneal stromal thickness and intraocular pressure (IOP). Of course, there's always been a connection between these two factors. After all, Goldmann tonometry requires the instrument to applanate 3.06 mm of the cornea to obtain an accurate reading. But with the OHTS, we have a solid connection because investigators found that central corneal thickness is an independent risk factor for progression of ocular hypertension to glaucoma.

Using the OHTS data, we can stratify ocular hypertensive patients by proportional risk to determine who will benefit the most from treatment. In fact, we review two OHTS charts (see below) with select patients to help them make informed choices about initiating therapy for ocular hypertension.

Alternately, we use these charts to counsel patients who've been receiving treatment for years, when continued treatment may not be justified in terms of a cost/benefit analysis.

To demonstrate our approach, let's look at several patient examples.

Three hypothetical cases

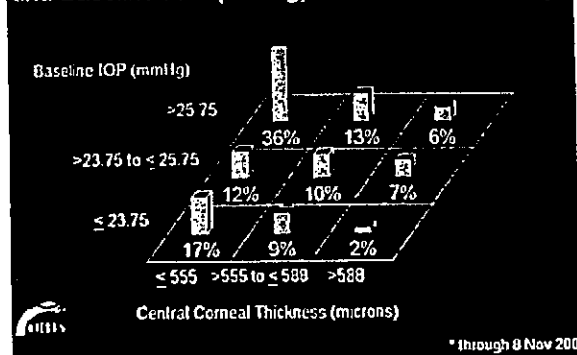
First, let's consider a 60-year-old white woman presenting for a routine exam. We find IOPs of 24 mm Hg OU, cup-to-disc (C/D) ratios of 0.1 OU and central corneal thickness of 600 μ m OU. According to the OHTS, her risk of progressing to glaucoma over the next 5 years is about 1%. Even if her IOP rises to 28 mm Hg in both eyes, her risk of progression over 5 years is still only 2%. Many eyecare professionals would consider starting this patient on medication, but our position is that unless she's extremely risk-averse, observation alone is a reasonable course of action.

Now suppose that same patient has IOPs of 24 mm Hg OU, but her C/D ratio measures 0.3 OU and her corneas are somewhat thinner, about 540 μ m OU. Her risk increases to about 7% over the next 5 years. You may want to consider treatment.

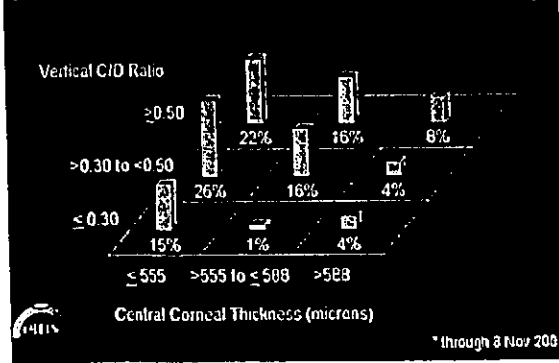
However, the combined influence of C/D ratio and central corneal thickness comes into play when we consider the same woman, this time with IOPs of 24 mm Hg OU, C/D ratio of 0.5 OU and central

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POAG Endpoints by Central Corneal Thickness and Baseline IOP (mmHg) in Observation Group*



POAG Endpoints by Central Corneal Thickness and Baseline Vertical C/D Ratio in Observation Group*



When counselling ocular hypertensive patients, you can use these OHTS charts to explain your treatment plan. (Charts © Copyright Archives of Ophthalmology 2002. Reprinted with permission.)

Explaining Corneal Pachymetry to Patients

The information we've gained from the Ocular Hypertension Treatment Study (OHTS) is helping us to further personalize our therapy for ocular-hypertensive patients. However, we still must keep in mind the perspective of compliance and reimbursement; it's important that we document in the patient's chart the medical indication for corneal pachymetry.

Because pachymetry may not be reimbursed by Medicare, you should ask patients to sign an Advance Beneficiary Notice (ABN), stating that they're responsible for the fee if Medicare doesn't reimburse you. In this regard, it's important to explain to the patient the value of the pachymetry test to determine whether he needs treatment.



When counseling an ocular-hypertensive patient, ask her to sign an Advance Beneficiary Notice.

In our practice, this process begins when we explain to an ocular-hypertensive patient why corneal pachymetry is indicated; we point out the results of the OHTS and the new information we've learned about measuring IOP. After we leave, the technician states that Medicare likely won't pay for the test and tells the patient what our practice charges. The tech answers any additional questions about execution of the test and asks the patient to sign the ABN.

We've had only a couple of patients refuse to sign the ABN, in both instances for financial reasons. In this situation, the patient understands he's still receiving the appropriate standard of care as defined by Medicare, but he isn't receiving the additional advantage of corneal pachymetry measurement. We do explain that Medicare may begin to cover this procedure in the future, but for now — because the information from the OHTS is relatively new — it's still not covered.

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COMPANY	MODEL	PRICE	WARRANTY
Canon USA, Inc.	R-F10 Full autorefractor	\$9,930	1 year
Canon USA, Inc.	RK-F1 full-auto ref-keratometer	\$16,000	1 year
Carl Zeiss Meditec	599	\$16,950 list	1 year
Carl Zeiss Meditec	ACUITUS Model 5015	\$11,900 list	1 year
Luneau, Inc.	L62-3d Auto- Refractor-Keratometer	\$9,995	2 years
Marco Technologies	AR-600	\$8,300	1 year
Marco Technologies	ARK-700A	\$12,500	1 year
Marco Technologies	ARK-760A	\$14,000	1 year
Marco Technologies	TRS-2100	\$18,500	1 year
Marco Technologies	EPIC-2100		1 year
Marco Technologies	Palm AR handheld Autorefractor	\$10,950	1 year
Marco Technologies	Palm ARK handheld auto-refractor/keratome	\$12,500	1 year
plusoptix AG	CRO3- The Binocular Videoretinoscope	call for details	1 year
RH Burton Company	VELO 20/10 Auto Refractor	\$6,995	3 years, 30-day money back guarantee
RH Burton Company	VELO 20/10 Auto Refractor/ Keratometer	\$8,995	3 years, 30-day money back guarantee
RH Burton Company	Burton BAR70 Auto Refractor	\$5,995, 30-day	3 years, 30-day money back guarantee
RH Burton Company	Burton BARK80 Auto Refractor/ Keratometer	\$7,995	3 years, 30-day money back guarantee
Tomey Corp. USA	TR-4000	call for details	1 year parts and labor
Tomey Corp. USA	RC-4000	call for details	1 year parts and labor
Tomey Corp. USA	RT-6000	call for details	1 year parts
Topcon Medical Systems	RM-8000B Autorefractometer	\$9,990	1 year parts and labor
Topcon Medical Systems	KR-8000 Auto Kerato-Refractometer	\$15,990	1 year parts and labor
Topcon Medical Systems	KR-7000S Auto Kerato-Refractometer	\$17,490	1 year parts and labor
Topcon Medical Systems	KR-8000PA Auto Kerato-Refractometer	\$18,490	1 year parts and labor
Topcon Medical Systems	KR-9000PW Wavefront Analyzer	\$54,990	1 year parts and labor
Weich Ailyn	14010	\$4,995 net pricing	1 year parts and labor

All claims made by manufacturer

corneal thickness of 490 μm OU. Her risk of progression over the next 5 years nears 20%. Despite her minimally elevated IOPs, her risk is quite high. As you can see, corneal thickness can dramatically influence glaucoma risk.

Pachymetry to the rescue

For our final example, let's look at a patient who recently visited our practice.

This patient came to us for a second opinion about her glaucoma. At age 61, she'd been using a single topical medication for about 3 years. At her first visit, her IOPs measured 16 mm Hg OU. Her eyes appeared healthy, with a C/D ratio of 0.6 OU. To better ascertain her underlying condition, I asked her to discontinue her medication for 2 weeks and return for automated perimetry, optic disc tomography, corneal pachymetry and IOP measurement.

At her return visit, the patient's IOPs had risen to 25 mm Hg OD and 24 mm Hg OS. Her automated perimetry was normal, and the optic disc tomography revealed normal cupping in both eyes without significant asymmetry. Her central corneal thickness measured 630 μm OD and 622 μm OS. We explained to the patient that her corneas were thicker than average and her risk of losing vision from glaucoma was less than 5% over 5 years.

We recommended she discontinue her medication and schedule twice-a-year checkups to measure her IOPs, with repeat visual field testing and tomography performed annually.

We told her we were confident that in the unlikely event her disease progressed, we'd catch any changes early enough to resume treatment. She was quite happy to avoid the unnecessary expense of medication.

One more tool

Before the OHTS, we'd determine which glaucoma suspects would benefit from treatment by taking into account a patient's age, C/D ratio and IOPs. Today, we add central corneal thickness to that equation.

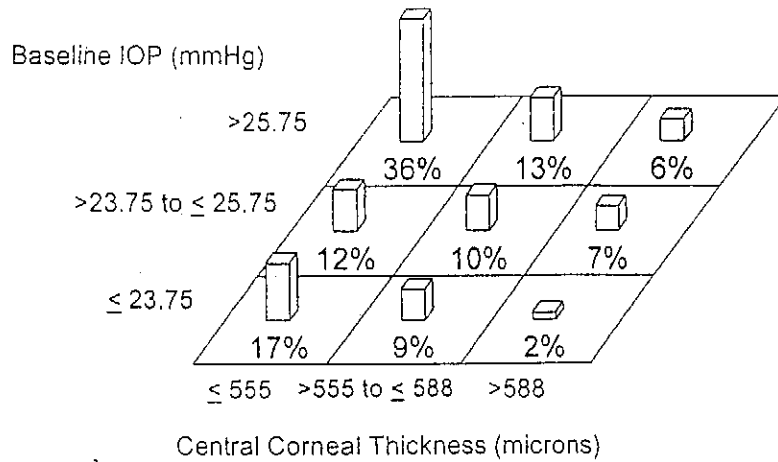
Adding corneal pachymetry as a screening tool in ocular hypertension is very valuable. Central corneal thickness can mean the difference between treatment and observation — certainly a critical difference from the patient's perspective. ■

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COMPANY	MODEL	PRICE	WARRANTY	STIMULUS
Carl Zeiss Meditec	Field Analyzer II Model 720		1 year	Goldmann std. proj. size III only; Heijl-Krakau fixation monitor and video eye monitor
Carl Zeiss Meditec	Field Analyzer II Model 740		1 year	Goldmann std. proj. size I, II, III, IV, V Heijl-Krakau fixation monitor and video eye monitor, gaze tracking
Carl Zeiss Meditec	Field Analyzer Model 745		1 year	Goldmann std. proj. size I, II, III, IV, V Heijl-Krakau fixation monitor and video eye monitor, gaze tracking
Carl Zeiss Meditec	Field Analyzer II Model 750		1 year	Goldmann std. proj. size I, II, III, IV, V Heijl-Krakau fixation monitor and video eye monitor, head tracking, vertex monitor, gaze tracking
Carl Zeiss Meditec	FDT Visual Field Instrmnt w/Welch Allyn freq. doubling	\$6,950	1 year	frequency doubled sinusoidal gratings (0.25 cpd; 25 Hz)
Carl Zeiss Meditec	Humphrey Matrix	N/A	1 year	frequency doubled sinusoidal gratings
Dicon, Inc.	TKS 5000 autoperimeter	\$5,995+ (U.S. domestic)	1 year	static w/kinetic fixation, Heijl-Krakau fixation monitor
Dicon, Inc.	LD 400 autoperimeter	\$8,500 to \$14,845	1 year	static w/kinetic fixation, Heijl-Krakau fixation monitor
Dicon, Inc.	FieldLink Automated Perimetry System	\$17,995	1 year	static w/kinetic fixation, Heijl-Krakau fixation monitor
Kowa Optimed Inc.	AP-340	\$11,990	1 year parts/labor	continuous infrared, fixation and scope
Octopus Perimeters, division of Haag-Streit	Octopus 301	N/A	1 year parts/labor	Goldmann III & V; low vision 100% fixation control yields no fixation losses on your printouts; operates in diffused room lighting
Octopus Perimeters, division of Haag-Streit	Octopus 101	N/A	1 year parts/labor	Goldmann I thru V; blue/yellow detection in less than 3 minutes per eye; 100% fixation control yields no fixation losses on your printouts
Oculus, Inc.	Easyfield	please call	1 year	Goldmann size III, Heijl-Krakau & central fixation; video eye monitor; static white on white

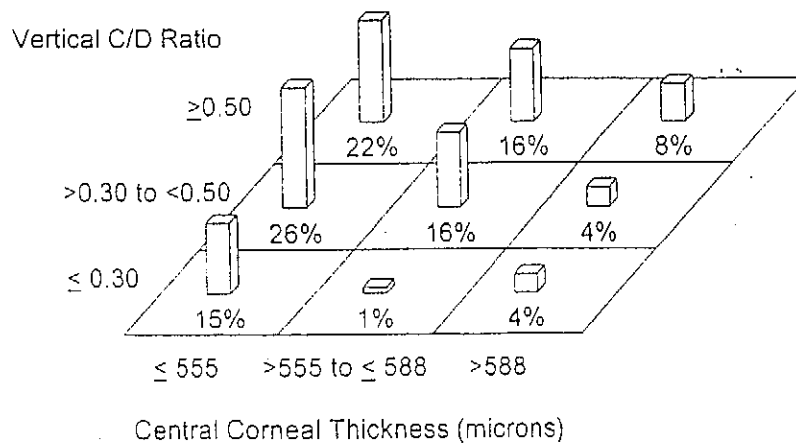
All claims made by manufacturer

POAG Endpoints by Central Corneal Thickness and Baseline IOP (mmHg) in Observation Group*



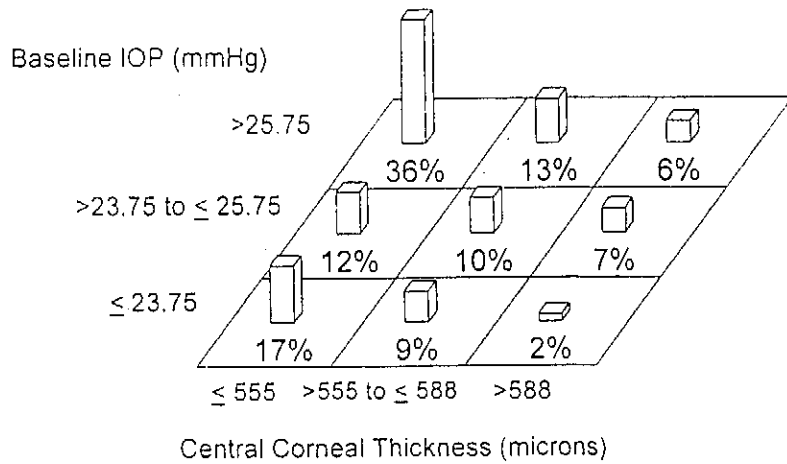
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POAG Endpoints by Central Corneal Thickness and Baseline Vertical C/D Ratio in Observation Group*



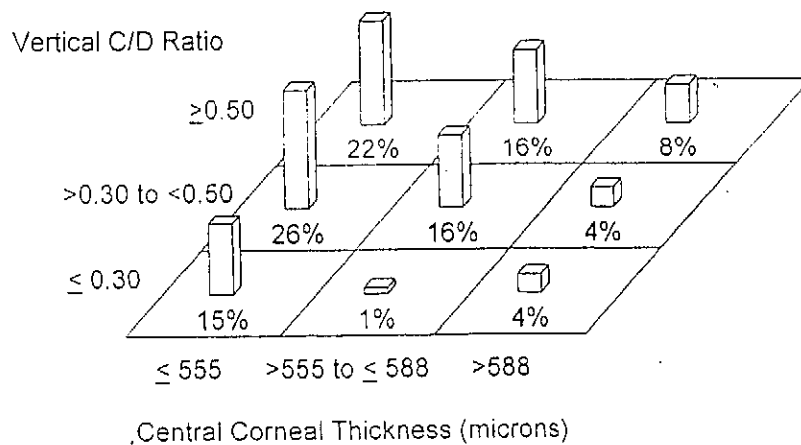
* through 8 Nov 2001

POAG Endpoints by Central Corneal Thickness and Baseline IOP (mmHg) in Observation Group*



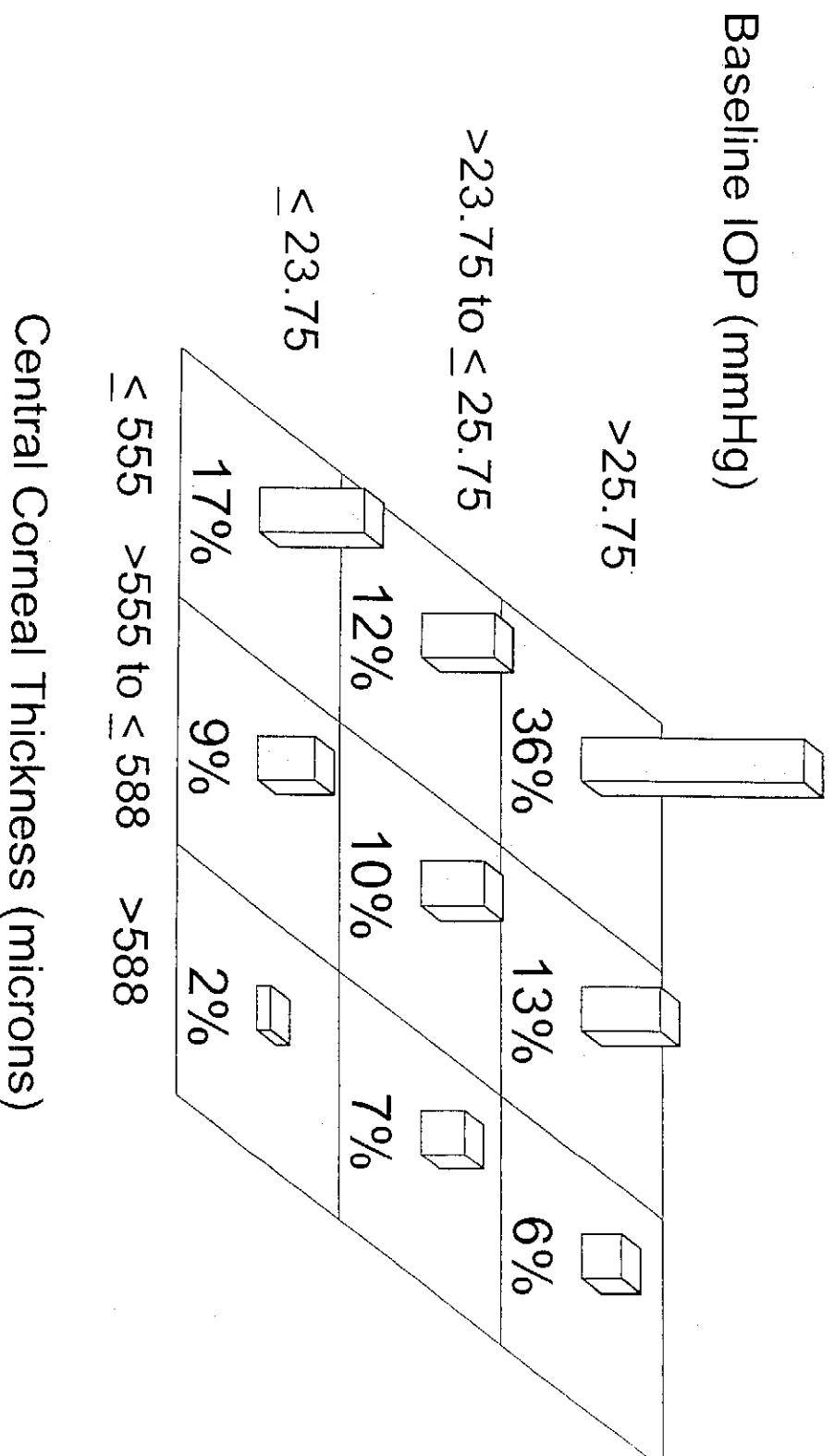
* through 8 Nov 2001

POAG Endpoints by Central Corneal Thickness and Baseline Vertical C/D Ratio in Observation Group*



* through 8 Nov 2001

POAG Endpoints by Central Corneal Thickness* and Baseline IOP (mmHg) in Observation Group*



June, 2002

* through 8 Nov 2001

POAG Endpoints by Central Corneal Thickness and Baseline Vertical C/D Ratio in Observation Group*

