

Dark Adaptation Testing

Your Comprehensive Guide

[Dark Adaptation Testing Overview](#)

The Dark Adaptation Test at a Glance

List of Ocular Diseases Monitored and Diagnoses Identified by Dark Adaptation Testing

Example Dark Adaptation Curve

Billing and Coding for Dark Adaptation Eye Exams

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The time it takes a patient's eyes to adjust from bright light to darkness can be telling. The dark adaptation test, also known as dark adaptometry, measures how efficiently the retina recovers its sensitivity after a bright flash. You can use this test to identify conditions that affect photoreceptor function, like age-related macular degeneration, vitamin A deficiency, and inherited retinal dystrophies.

Currently, this test is not available on [Carrot](#). However, it may be worthwhile to include dark adaptation in your comprehensive eye exam routine, especially for patients at risk of age-related macular degeneration.

Dark Adaptation Testing Overview

Humans aren't known for having excellent night vision compared to other animals, but they do [adjust to darkness](#) faster than many species. When transitioning from light to dark, the human eye must shift from using cone photoreceptors (responsible for daylight and color vision) to rods, which are far more sensitive to dim light. In healthy adults, it can take up to 30 minutes for the rod function to return fully.

Dark adaptation testing quantifies this process, usually after a light bleach that intentionally saturates the retina. As rods regain sensitivity, you can track how long it takes the patient to detect increasingly dim stimuli. The key metric from this exam is often the rod intercept time.

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Academic references and clinical validation



There is a [known link](#) between age-related macular degeneration (AMD) and poor night vision, and [measuring dark adaptation](#) can help lead to earlier diagnoses.



[Rapid dark adaptometry tests](#) and [mobile apps](#) are shown to be useful, especially in detecting AMD. The sensitivity of these tests is promising, which could help overcome the time-consuming nature of the test.

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Dark adaptometry is typically performed monocularly in a darkened environment. The test begins with an initial light bleach phase that desensitizes photoreceptors in the central vision. During the recovery phase, the patient fixates on a dim red target while responding to a series of stimuli, while a technician plots the recovery curve in real time. This process takes between 10 and 30 minutes, depending on the protocol. It's a valuable test that can be revealing for patients with AMD, but this long duration can create workflow challenges.

Pros and Cons of Dark Adaptation Testing

We know the dark adaptation test is efficient, useful, and widely used, but there are pros and cons to incorporating this test into your routine.

PROS	CONS
This exam is sensitive to early functional changes before structural damage appears.	This test is unquestionably time-consuming.
It's a non-invasive, repeatable test.	Patient cooperation is a must, which can be challenging or even frightening for elderly, anxious, or cognitively impaired patients.
Dark adaptometry helps stage retinal disease and evaluate treatment response.	Dark adaptation testing requires specialized equipment that may or may not be readily available.

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Example Dark Adaptation Curve

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<p>Age-Related Macular Degeneration</p>	<p>Delayed dark adaptation is one of the earliest functional changes in AMD, even before abnormalities appear on imaging. A prolonged rod intercept time is a hallmark of early or intermediate AMD, even before visual acuity changes.</p>
<p>Vitamin A Deficiency</p>	<p>Because vitamin A is essential for the regeneration of rhodopsin (the visual pigment in rods), deficiency can result in night blindness and a severely impaired dark adaptation curve. This condition is reversible with supplements.</p>
<p>Retinitis Pigmentosa</p>	<p>In inherited rod-cone dystrophies, rods degenerate early, leading to severely delayed or absent dark adaptation. This test helps track progression and phenotyping.</p>
<p>Ocular Trauma and Surgical Recovery</p>	<p>After retinal detachment repair or laser treatments, rod function may be disrupted. Dark adaptation tests can track the return of low-light vision.</p>

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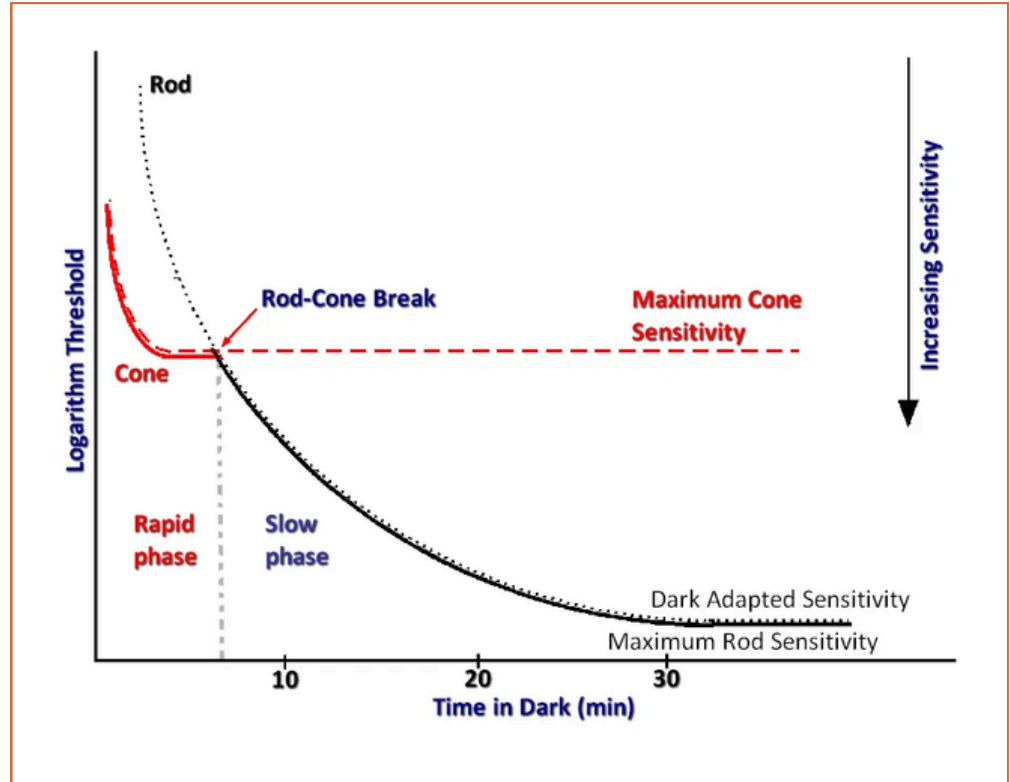
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Billing and Coding for Dark Adaptation Eye Exams

Complete Your Comprehensive Vision Exams with Carrot

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Source: [Fluorescence Media](#)

Dark Adaptation
Testing Overview

The Dark Adaptation
Test at a Glance

List of Ocular Diseases
Monitored and
Diagnoses Identified
by Dark Adaptation
Testing

Example Dark
Adaptation Curve

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for Dark Adaptation
Eye Exams](#)

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Billing and Coding for Dark Adaptation Eye Exams

CPT code 92284 is used explicitly for dark adaptation exams and diagnostics. According to the [CMS fee schedule](#), this code is billable between \$26 and \$40, but this will vary depending on your practice's location, type, and setting.

When is the dark adaptation test required?

Most often, this test is used to diagnose or measure the progress of age-related macular degeneration. At-risk and early-stage AMD patients should have their dark adaptation measured to help establish a management plan. Patients who complain of poor night vision, squinting, or trouble finding things in low light may also benefit from this test.

Is dark adaptometry required for driver's licenses?

No states require dark adaptation measurements for driver's licenses, but it may be helpful for certain occupations, such as air traffic controllers or military defense personnel. Consider offering it to patients who are concerned about their ability to drive at night.

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The Dark Adaptation Test at a Glance

List of Ocular Diseases Monitored and Diagnoses Identified by Dark Adaptation Testing

Example Dark Adaptation Curve

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[Complete Your Comprehensive Vision Exams with Carrot](#)

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Dark adaptation testing provides insight into how well the retina functions in low light — something conventional imaging can't show. It's not routinely used in every setting, but it can provide insight into early-stage retinal conditions or post-surgical recovery. For many patients, it can be a key component of [improved outcomes](#) at successful, thriving eye care practices.

Carrot offers over 13 visual field, pupilometry, color vision, and extraocular motility exams in a single, lightweight, portable headset, empowering you and your staff with comprehensive testing capabilities for all patients, including those who need dark adaptation testing.

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Questions? Contact sales@carrot.io talk to a Carrot expert today.