Comprehensive Eye and Vision Examinations

A White Paper by KDD Health Solutions

A Path to Wellness

Employers need "vision" when it comes to deploying strategies to improve the health and wellness of their workforce.

"The comprehensive eye exam serves as an invaluable health intervention measure often revealing systemic diseases early in their progression. Focusing on eye exams as a tactic in primary care and wellness initiatives makes very good sense."

– Klaus Schafer, MD, MPH - Former US Air Force Assistant Surgeon General for Medical Readiness, Science and Technology

EXECUTIVE SUMMARY

Eye Care Professionals (ECPs) and their services offer a unique solution to employers in their drive to improve the health of employees and their dependents. The comprehensive eye and vision examination is an essential component in the evaluation of an individual's overall health status.

Eye and vision disorders are the second most prevalent health problem affecting over 120 million Americans with employers spending more on vision and eye disease annually than on breast cancer, lung cancer or HIV.[1] As such, the eye exam should be positioned as an essential component in an employer's health and wellness program. For many patients requiring systemic or other health related care services, eye and vision care serve as an important point of entry into the health care system.[2]

Optometrists are community-based, doctoral-level health care providers who diagnose, treat and manage diseases and disorders of the eye, visual system, and associated structures. These eye care professionals, through guidelines developed by the American Optometric Association, provide important disease prevention and health promotion activities during a comprehensive eye examination. Primary care is defined as "coordinated, comprehensive, and personal care, available on both a first-contact and a continuous basis."[3] Optometrists provide more than two-thirds of the primary eye care services in the United States.[4]

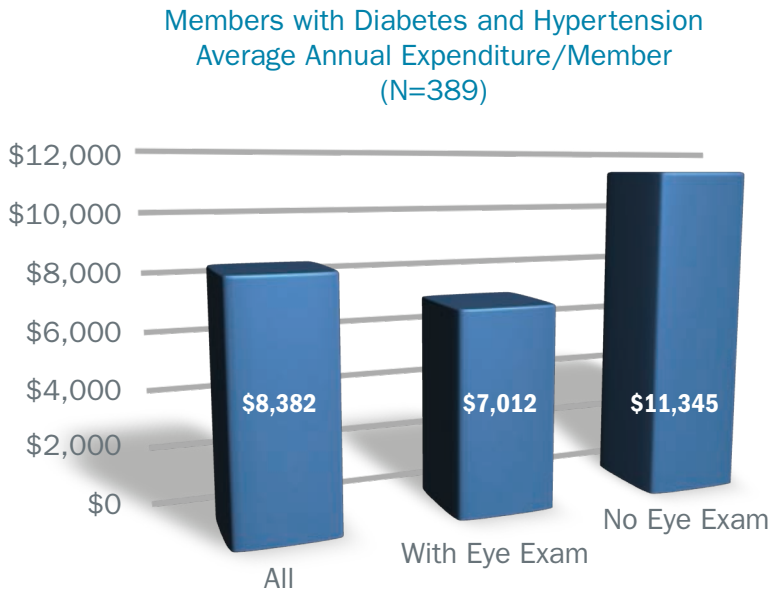
A recent analysis of health claims data shed light on the potential for eye care professionals to help improve the health status of the employer's beneficiaries. Medical claims data for a moderate-size employer of over 10,000 employees and dependents were analyzed. The analysis was performed on a subset of members participating in medical coverage for a three year span with a focus on those at high risk and corresponding high cost for the employer. Three hundred eighty-nine (389) individuals were identified with a confirmed diagnosis of both diabetes and hypertension. The analysis included an assessment of those members within this cohort that had an eye exam and those who did not. The analysis revealed dramatic differences in overall cost to the employer:

- The average annual expenditure per member for those not having an eye exam was **62% higher** than those who did have an eye exam
- For those experiencing a hospitalization of 1 or more days, the average length of stay for those having an eye exam was **5.3 days verses 8.2 days** for those not having an eye exam
- Expenditures for those hospitalized were **41% lower** for those having an eye exam verses those who did not

	All	W/ Eye Exam	No Eye Exam
Member Count	389	266	123
Average Length of Stay*	6.5	5.3	8.2
Average Inpatient Expenditure / Member / Year*	$4,375	$3,589	$6,074
Average Annual Expenditure / Member	$8,382	$7,012	$11,345

* For hospitalization for 1 or more days stay

While this is a retrospective analysis of a population at high risk, one can assume those patients having an eye examination have a greater awareness of their disease state and related conditions partly as a result of the services provided by the eye care professional. Also, it is important to note eye care benefits provided by this employer are an integrated component of their medical benefits.



Data analytics provided by KDD Health Solutions, LLC

Benefits to your organization

- Eye care professionals offer an accessible, cost-effective solution to help drive improvements in health status at reasonable cost
- Important disease prevention and health improvement strategies can be quickly and effectively scaled
- For those individuals requiring systemic or other health care services, eye care professionals serve as a point of entry into the health care system
- Potential for significant improvements in the health of beneficiaries resulting in a happier, healthier and more productive workforce

BUSINESS CHALLENGE

Escalating health risks associated with an aging workforce will continue to increase total healthcare costs exponentially, making the status quo of current health and productivity strategies unsustainable. The soaring cost of healthcare is driving employers to reevaluate benefit design and deploy strategies to improve the health of beneficiaries. New and creative solutions are needed to meet the needs of the employer.

In 2008, 77 percent of employers offered formal health & wellness programs, up slightly from 2007, and more than half of those currently without programs planned to add them in the 2009. In 2008, 48 percent of employers offered formal disease management programs, approximately the same percentage as in 2007.[5]

Health care costs will continue to rise as prevalence rates of chronic diseases are increasing across all age groups. Studies indicate that nearly 60% of the U.S. population over 18 has at least one chronic health condition, with many cases undiagnosed.[6]

Cancer, hypertension, heart disease and diabetes are some of the most costly chronic conditions (see Appendix – Table 1). Much of the expense associated with chronic disease can be prevented, however, employers are challenged to increase beneficiary participation in wellness programs and demonstrate a return on investment associated with such programs. In a 2004 study completed by International Society of Certified Employee Benefits Specialists, 42 percent of employers with wellness programs reported less than 25 percent participation and 39% reported between 25% and 50% participation.[7]

It is widely recognized that prevalence rates of a condition impact spending more than severity of a condition, compounding the challenge to deploy an effective health and productivity strategy for large populations of employees.

For the employer, key challenges for improving the health of beneficiaries through benefit design include:

- Defining and deploying cost-effective wellness programs designed to improve health
- Demonstrating outcomes and an acceptable return on investment associated with such programs
- Increasing member participation rates
- Identifying and affecting not only those diagnosed with chronic disease, but those who may develop one or more in the near or distant future

UNDERSTANDING WELLNESS

Though health and wellness programs are on a growth trajectory, experts still believe the entire premise of workplace wellness is deeply flawed. Why? Because most programs focus too much on improving the health of those already chronically ill while doing little to identify and affect those at risk for developing a preventable chronic disease. In such "tertiary prevention" strategies, the majority of resources are directed toward 20% of the population with uncontrolled chronic illness responsible for 80% of the cost (case management and disease management – Pareto's 80/20 principle). Little is offered to those relatively healthy requiring a vastly smaller expenditure.

The gap, and opportunity, lies with the middle 60% of the population having few health-related claims today, but are afflicted with a chronic disease and don't know it, or are ill and choose to do nothing about it and/or lack awareness of the significance of the disease. Employees in this "Sick 60" group are marching on a path to becoming part of the expensive and uncontrolled group. For the most part, individuals with chronic disease are receiving tertiary preventive services designed to stop the progression of catastrophic complications. Sadly, many of these diseases and their complications could have been prevented had a primary prevention tactic been implemented.

Dee Edington, PhD, and Director of the Health Management Research Center at the University of Michigan, has studied health and wellness for over 30 years. Dr. Edington feels employers should focus on "individual attention to all workers" and provide high value, low cost interventions to help empower beneficiaries.[8] This strategy can be described as population-based health promotion or a full spectrum prevention strategy.

It is generally accepted that "secondary prevention" is administered or prescribed by the primary care provider based on findings from an individual's general medical exam. Secondary preventive care focuses on early identification and management of a condition to arrest the development of complications. Early interventions have the potential to improve health and wellness and contain costs. Unfortunately, only a small percentage of American adults receive a general medical exam.

The U. S. Department of Health and Human Services 2006 Data indicates that 12% (27.5 million) of the U.S. adult population had a general medical exam in that year. This fact has serious implications for the legions of employers embracing the concept of the Patient-Centric Medical Home (PCMH) model – a team-based model of care led by a personal physician who provides continuous and coordinated care throughout a patient's lifetime to maximize health outcomes.[9] If one believes the Patient-Centered Medical Home model can transform health care delivery and help reduce the burden of chronic disease, one must also ask, "what is going to compel an individual to obtain a general medical exam—or said another way—what will compel an individual to go to the doctor for preventive care when they feel fine? Perhaps the question should not be "what will compel", but "who will compel."

The Patient Centered Medical Home Model could benefit from a collaboration with eye care professionals who support the full spectrum of preventive care.

HEALTH ECONOMICS

The Milken Institute reports that 40.2 million cases of chronic conditions can be avoided, and $1.1 trillion saved by 2023 by making reasonable improvements in prevention, early intervention, and management of chronic disease. Looking at overall spending for health care, it is estimated that 85% of healthcare spending goes toward care for people with chronic conditions.[10]

The health economics equation of "supply and demand" can be balanced by implementing health and wellness programs that address the full spectrum of prevention. Cost containment in the health industry has been focused almost exclusively on the "supply side" of the health economics equation with insurance carriers undertaking initiatives to:

- Monitor utilization by increasing or decreasing co-pays
- Negotiate discounts with providers
- Aggressively review utilization that restricts provider care
- Restrict access to care to lower expense.

Health and wellness programs fall under the "demand" side of the health economics equation and, if properly designed, can effectively contain health care costs related to chronic illness. Demand is driven by many factors such as gender, age, family history, economics and life-style.

Employers can impact the health economics equation by implementing well-designed initiatives that deploy the full spectrum of preventive care and foster high engagement and participation rates within their workforce. As example:

Tactic	Objective	Services
Primary Prevention	Prevent disease from occuring	• Smoking cessation • Weight loss program • Comprehensive eye exams
Secondary Prevention	Identification and early intervention prior to symptoms appearing	• Pap smear • Condition-focused eye exam • Mammography
Tertiary Prevention	Targets those diagnosed and with symptoms - designed to reduce progression	• Early management of renal, eye and foot problems • Skin testing to help eliminate allergens

High Value - Or Just High Cost?

The average annual cost for wellness services vary widely. The following are estimated costs for some wellness initiatives employers currently deploy in hope of improving health outcomes and reducing health care spending:[11]

- Telephone outreach wellness programs - one time fees range from $40 to $250 per participant
- Biometric screenings range from $40 to $250 per participant depending on tests conducted; set-up fees for these services can range from $2,000 to $3,000
- Health Risk Assessments (HRAs) - paper-based can range from $10.00 to $15.00 per person with web-based initiatives ranging from $.75 to $1.50 per person.
- Incentives to encourage participation - $100 to $600 per employee

Based on these estimates, a company having 10,000 employees and dependents with a 25% engagement rate could spend in excess of **$1.5 million annually on such initiatives**.

Conclusion

Successful models reach the right group of beneficiaries at the right time and with the right proposition. Conditions with high prevalence rates including diabetes, hypertension, eye disease and vision disorders are good starting points. Such initiatives have the potential to immediately reduce health risk for beneficiaries and corresponding cost to the employer. From a behavioral perspective, the ideal offering would be painless, shameless and easy for employees and dependents to undertake. An effective solution? Community-based eye care professionals and their services including the comprehensive eye examination.

SOLUTION DEVELOPMENT

Eye care professionals and their services, the centerpiece being the comprehensive eye exam, offer a unique solution to employers in their drive to improve the health of employees and their dependents. Comprehensive eye and vision examinations are an essential component in the evaluation of an individual's overall health status.

The American Optometric Association Optometric Clinical Practice Guidelines lists the following as goals of the comprehensive adult eye and vision examination:

- Evaluate the functional status of the eyes and visual system taking into account special vision demands and needs
- Assess ocular health and related systemic health conditions
- Establish a diagnosis (or diagnoses)
- Formulate a treatment and management plan
- Counsel and educate the patient regarding his or her visual, ocular and related systemic health care status, including recommendations for treatment, management and future care.

Table 3 of the Appendix outlines current recommendations for the elements of the comprehensive eye examination and examination sequence as provided by The American Optometric Association Optometric Clinical Practice Guidelines. Figure 1 of the Appendix provides a flowchart of the comprehensive eye examination process.

In health economic terms, a solution should be cost effective, cost saving and high value

The cost for a comprehensive eye exam can range between $92 - $164 per year per employee, and is a cost effective solution providing:

- A 1:1 eye and health assessment by a doctoral level clinician,
- a refraction of the eyes to enhance vision and acuity, and
- a means to detect signs of eye and systemic diseases including diabetic retinopathy, diabetes, hypertension and high cholesterol.

For individuals with asymptomatic, emergent conditions, the eye care professional is quite often the point of entry into the medical health care system. Ninety-nine percent (99%) of optometrists surveyed indicate they routinely refer patients to other health providers for additional care as needed.[12] Employers positioning the comprehensive eye examination as a risk reduction tactic can enjoy **A COST EFFECTIVE SOLUTION** (defined as when the net cost per unit of health generated is favorable relative to other health services).

Positioning the comprehensive eye exam as a health and wellness tactic leverages the existing network of eye care professionals including some 32,000 community-based doctoral level clinicians - optometrists. In the U.S., approximately 99 million adults get an annual eye exam while only 28 million adults receive a general medical exam. Engaging 3.6 times more people creates opportunity for incremental improvements in health and cost savings. Optometrists can intervene earlier in the arc of disease process performing "micro-vessel examinations" in which markers of chronic disease, such as diabetes and hypertension, may be detected. Optometrists have an ethical obligation to refer these patients to physicians for primary care services...and patients listen...thus, **A COST SAVINGS SOLUTION** (defined as a reduction in costs when intervention or program exceeds the money required to develop, implement and maintain it).

The Center for Health Transformation recently completed a study of 2,000 uninsured patients in Columbus, Ga. This project, known as the Georgia Project, revealed that 100 percent of patients diagnosed by eye doctors as having diabetic retinopathy or retinopathic changes followed the advice of the eye care professional to obtain the requisite additional care for prevention and wellness. As a contrast, only 64 percent of patients followed through on additional care after receiving a diagnosis of a chronic disease that did not threaten their ability to see. **Eye exams drive employee primary care participation rates – thus A HIGH VALUE SOLUTION** (an intervention that prevents a substantial amount of morbidity and/or mortality and is cost effective.).

As the trend for lowering clinical thresholds for chronic disease gains momentum, the eye care professional is uniquely positioned to aid in the arrest of catastrophic complications earlier in the arc of the disease process. This trend, in and of itself, heralds a radical shift in health care delivery. Given that 38% of the workforce is age 40 or older and the high prevalence rates of health conditions that develop after the age of 40, employers are presented with a strategic opportunity.

Wellness programs designed to use the eye care professional as an active participant can leverage behavioral and attitudinal challenges associated with managing individuals with chronic illness. A comprehensive eye care program is 'shameless and painless' serving as a powerful surveillance tactic that increases patient enrollment and participation in primary care preventive services. The potential to engage some 99 million people in preventive care, each year, is a compelling concept worthy of consideration.

THE EYE EXAM IS NOT ACCIDENTAL "HEALTHCARE"

Within the population of the United States, it estimated that:

- Approximately 180 million people have a condition that can be identified during a comprehensive eye exam
- 57 million have "pre-diabetes" - individuals with blood glucose levels higher than normal, but not yet high enough to be diagnosed as having diabetes
- 23.6 million children and adults have diabetes - 7.5 million are undiagnosed
- Cataracts affect nearly 22 million individuals age 40 and older – direct medical costs for cataract treatment are estimated at $6.8 billion annually
- Glaucoma affects more than 2.3 million people age 40 and over – another 2 million do not know they have the disease
- More than 2 million individuals age 50 and older have advanced age-related macular degeneration
- 10 million children fail each year in school due to vision disorders
- 65 million adults have hypertension
- 107 million have high cholesterol
- 25 million have other uncorrected refraction errors in the population age 18 and older

SUMMARY

Eye Care Professionals and their services offer a unique solution to employers in their drive to improve the health of employees and their dependents. Comprehensive eye and vision examinations are an essential component in the evaluation of an individual's overall health status.

Defining the comprehensive eye exam as a health and wellness tactic serves to leverage existing pathways and some 32,000 community-based doctoral level clinicians serving the community as optometrists. Eye care professionals can drive improvements in health status at reasonable cost.

Eye care professionals and their services can effect and demonstrate favorable outcomes at a respectable return on investment. Member participation is enhanced through a convenient network of readily-accessible professionals. Services can touch those not only symptomatic and demonstrating the effects of chronic disease, but those asymptomatic as well. Initiatives centering the eye care professional and the comprehensive eye exam as a focal point in employer wellness are efficient, cost-effective and readily scalable.

The potential to significantly improve the health status of employers' beneficiaries exists – improvements that can result in a happier, healthier and more productive workforce.

Call to Action

- Ensure benefit design includes coverage for comprehensive eye examinations
- Consider mandating the comprehensive eye examination as a prerequisite of employment
- Check provider panel – must include optometrists and ophthalmologists
- Include operating standards that position the comprehensive eye exam as central to a health and wellness strategy
- Leverage the existing network of eye care professionals
- Communicate the important attributes of the comprehensive eye exam to the membership
- Understand your data - if you can measure it, you can change it
- Gain top down support - executive leadership must be educated and promote program values

APPENDIX

Table 1

Cancer and Hypertension are the Most Costly Chronic Conditions

Rank	Condition	Treatment $	Lost Economic $	Total Expenditures $
1	Cancers	48	271	319
2	Hypertension	33	280	313
3	Mental Disorders	46	171	217
4	Heart Disease	65	105	170
5	Pulmonary Conditions	45	94	139
6	Diabetes	27	105	132
7	Stroke	9	22	31

$ US Billions
Source: DeVol R, Bedroussian. Et al An Unhealthy America: The Economic Burden of Chronic Disease. The Milken Institute, October 2007.

Table 2

Eye Disease and Direct Medical Costs to An Employer*

	Cataracts	Glaucoma	Macular Degeneration	Diabetic Retinopathy
Member Count	278	197	59	56
Average Age	59	53	55	54
Average Annual Expenditure Per Member	$1,844	$3,815	$6,527	$11,003

Source: KDD Health Solutions, LLC – Analysis of medical claims data for employees and dependents of a moderate-size employer over a three year period

Table 3
Potential Components of the Comprehensive Adult Eye and Vision Examination

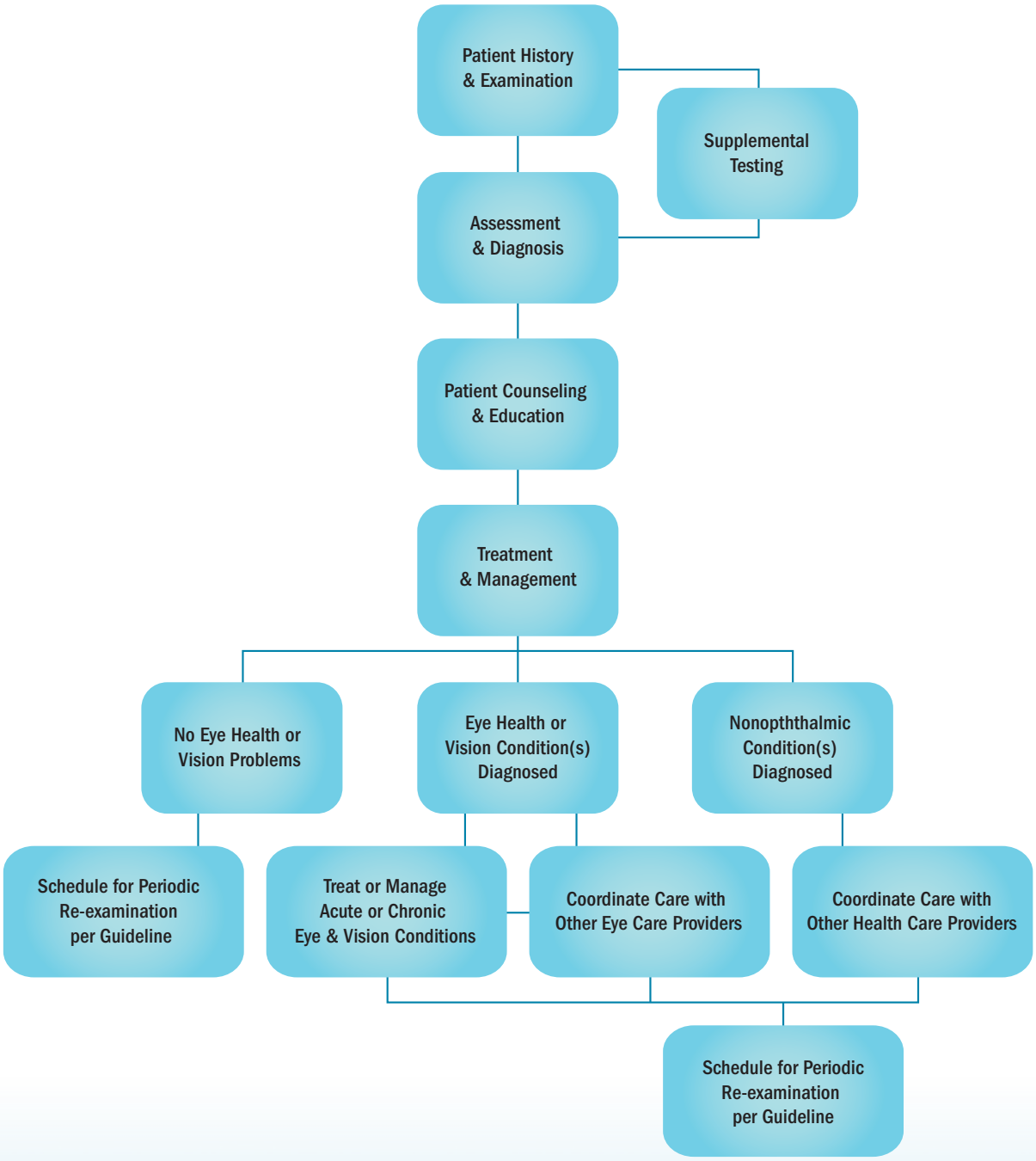
A. Patient History	1. Nature of presenting problem, including chief complaint 2. Visual and ocular history 3. General health history, which may include social history and review of systems 4. Medication usage (including prescription and nonprescription drugs); mineral, herbal, and vitamin supplement usage; and, medication allergies 5. Family eye and medical histories 6. Vocational and avocational vision requirements 7. Identity of patient's other health care providers
B. Visual Acuity (VA)	1. Distance visual acuity testing 2. Near visual acuity testing 3. Testing of acuity at identified vocational or avocational working distances
C. Preliminary Testing	1. General observation of patient 2. Observation of external ocular and facial areas 3. Pupil size and pupillary responses 4. Versions and ductions 5. Near point of convergence 6. Cover test 7. Stereopsis 8. Color vision
D. Refraction	1. Measurement of patient's most recent optical correction 2. Measurement of anterior corneal curvature 3. Objective measurement of refractive status 4. Subjective measurement of monocular and binocular refractive status at distance and near, or at other specific working distances

Table 3 *(continued)*
Potential Components of the Comprehensive Adult Eye and Vision Examination

E. Ocular Motility, Binocular Vision, and Accommodation	1. Evaluation of ocular motility 2. Evaluation of vergence amplitude and facility 3. Assessment of suppression 4. Evaluation of ocular alignment, including fixation disparity and associated phoria 5. Assessment of accommodative amplitude, response, and facility 6. Assessment of relative accommodation
F. Ocular Health Assessment and Systemic Health Screening	1. Evaluation of the ocular anterior segment and adnexa 2. Measurement of intraocular pressure 3. Evaluation of the ocular media 4. Evaluation of the ocular posterior segment 5. Visual field screen 6. Systemic health screening tests
G. Supplemental Testing	The interpretation of subjective and objective data may indicate the need for additional testing, either performed or ordered by the optometrist.
H. Assessment and Diagnosis	The assessment and evaluation of data to establish a diagnosis and formulate a treatment plan.
I. Treatment and Management	Review and discussion of examination findings, visual and ocular health status, available treatment options including risks and benefits, anticipated outcomes based upon the recommended course of action, and recommendations for follow up care and re-examination.

Source: American Optometric Association
Optometric Clinical Practice Guideline for Comprehensive Adult Eye and Vision Examination
Reference Guide for Clinicians – Second Edition 2005
(Reprinted with Permission)

Figure 1
Comprehensive Adult Eye and Vision Examination: A Brief Flowchart



Source: American Optometric Association
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Mr. Barnwell serves as President and Founder of KDD Health Solutions, LLC. His work has been distinguished as a Best Practice for Chronic Disease Management Systems by the American Accreditation Health Care Commission, URAC; Selected by Models of Care: Case Studies in Healthcare Innovation, Best Practice in the Administrative and Clinical Realm; and Nominated for the American Hospital Association, Nova Award for Innovation in Healthcare. In addition, his work is featured in Harvard Business School's Master of Business Administration, Case Study Program, Boston, MA. His past experience includes serving as a Senior Vice President of Cardinal Health, a Fortune 18 diversified health services company.

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