



THE DOWNSTREAM COSTS OF HIGH CHOLESTEROL

DISABILITY AND LOST PRODUCTIVITY COSTS OF ATHEROSCLEROTIC CARDIOVASCULAR DISEASE

SUMMARY

- High cholesterol contributes to the hardening and narrowing of arteries (known as atherosclerotic cardiovascular disease, or ASCVD) - which in turn is a major cause of heart attacks and strokes.
- The disability costs of cardiovascular conditions related to high cholesterol are less recognized than the healthcare costs and fatality risks.
- An analysis of IBI's disability benchmarking data shows that average short-term disability (STD) costs for AVSCD are more than \$9,100 - which includes nearly \$4,900 in wage replacements and an additional \$4,200 in reduced output and increased labor costs. Average long-term disability (LTD) wage replacement costs for ASCVD are about \$53,000.
- Assuming that about 10% of STD claims for ASCVD will enter the LTD system, total disability costs are about \$14,200. This is almost 40% higher than disability costs for non-circulatory diagnoses and about 6% higher than costs for other circulatory diagnoses.
- Employers should consider implementing workplace efforts to raise cholesterol awareness, encourage cholesterol testing, promote healthy lifestyles and design pharmacy benefit plans that support cholesterol control.

Background

About 1 in 4 working-age adults in the U.S. have hypercholesterolemia, also known as dyslipidemia or simply high cholesterol (defined as greater than 240 mg of total cholesterol per dL of blood).¹ Risk factors for high cholesterol include smoking, an unhealthy diet, physical inactivity and obesity. Genetic factors can also predispose individuals to high cholesterol.

Because high cholesterol is asymptomatic, it poses few limitations on the ability to engage in normal activities such as work. However, cholesterol contributes to the buildup of plaque on artery walls, a condition known as atherosclerotic cardiovascular disease (ASCVD). The hardening and narrowing of arteries due to ASCVD is a major cause of heart attacks and strokes – which account for 1 in 5 deaths in America each year.² Care for patients with cardiovascular conditions costs more than twice as much as care for the average patient (about \$13,500, compared to an average of \$5,800).³ Costs for patients with conditions linked to ASCVD can be much higher – from about \$26,000 for atherosclerosis patients generally to about \$70,000 for patients with congestive heart failure.⁴

Disability impact of ASCVD

The disability costs of ASCVD are less recognized than the burden of mortality and medical costs. The total disability impact on both employers and employees can be modeled using IBI's 2014 health and productivity disability benchmarking dataset.⁵

SHORT-TERM DISABILITY (STD)

As Table 1 shows, short-term disability (STD) claims for conditions related to ASCVD⁶ tend to be longer and costlier than claims for other conditions. The average STD claim for ASCVD keeps an employee off the job for approximately 44 workdays and costs almost \$4,900 in wage replacements. These results are nearly 15% higher than results for non-circulatory diagnoses, and 4%-5% higher than results for other circulatory diagnoses.

¹ Centers for Disease Control and Prevention, *Health, United States, 2014*. Hyattsville, MD: National Center for Health Statistics.

² Centers for Disease Control and Prevention, *National Vital Statistics Report (NVSr)*, 2013. Hyattsville, MD: National Center for Health Statistics.

³ Truven Health Analytics, MarketScan Disease Profiler <<https://marketscan.truvenhealth.com/dxp/>> 2013, data accessed August 18, 2015.

⁴ For detailed of costs in the acute phase of a cardiovascular event, see O'Sullivan, A. K., Rubin, J., Nyambose, J., et al. (2011). "Cost estimation of cardiovascular disease events in the US." *Pharmacoeconomics*, 29(8), 693-704.

⁵ The IBI benchmarking system collects employers' STD, LTD Worker's Compensation and Family and Medical Leave Act claims each year from the books of business of 14 major carriers and third-party administrators. The current database contains more than two 3.8 million claims representing more than 50,000 employer policies.

⁶ We identify ASCVD-related claims by ICD-9 codes 410.x – 414.x, 433.x – 435.x, 438.x and 440.x. All other conditions with codes 390.x – 459.x are considered "other circulatory."

Table 1: STD claim outcomes for ASCVD and other diagnoses

	STD bench- marking claims ^a	Avg. lost work- days	Avg. wage replacements	Add'l Lost productivity costs	Total STD costs	% of claims reaching maximum duration
Conditions related to ASCVD	18,578	43.7	\$4,894	\$4,221	\$9,116	10%
Other circulatory conditions	32,029	41.9	\$4,653	\$4,013	\$8,666	10%
Non-circulatory conditions	934,176	37.9	\$4,249	\$3,665	\$7,914	7%

^a closed claims with valid ICD9 code and wage replacement cost data

When workers are absent, employers also incur opportunity costs in the form of reduced output and increased labor costs to make up for any shortfalls— which we refer to as “additional lost productivity” because these resources are not available to the employer for other productive uses. One study estimates these opportunity costs at 38% of an absent worker’s daily wages.⁷ Opportunity costs for STD claims for ASCVD are estimated at almost \$4,200 – bringing total STD costs to nearly \$9,200, compared to about \$8,700 and \$7,900 for circulatory and non-circulatory diagnoses, respectively.

Disability claims also have costs for employees. Since the typical STD policy has a 63% wage replacement rate⁸ – that is, claimants forego an average of 37% of their wages each day they are absent – a 44-day STD leave for ASCVD results in a claimant losing about 6% of annual earnings.

LONG-TERM DISABILITY (LTD)

While the average STD claim for ASCVD lasts nearly 8 weeks, some claimants are absent for the maximum benefit duration (which is usually six months⁹). Table 1 shows that 10% of ASCVD claims reached the maximum benefit duration, compared to 7% of claimants for non-circulatory diagnoses.

STD claimants who reach their maximum benefit duration can cross into the long-term disability (LTD) system if they are covered for LTD benefits. LTD claims typically have a maximum benefit duration that extends until the claimant’s normal social security retirement age. Figure 1 shows that over three-quarters of LTD claims for non-circulatory conditions close within three years. LTD claims for ASCVD and other circulatory conditions remain open longer than average, with less than two-thirds closing within three years.

⁷ Nicholson, S., Pauly, M.V., Polsky, D. et al. "Measuring the Effects of Work Loss on Productivity with Team Production." *Health Economics*. 2006;15(2):111-123.

⁸ Bureau of Labor Statistics, Employee Benefits Survey 2014
<http://www.bls.gov/ncs/ebs/benefits/2014/benefits_tab.htm#tabs-3>, accessed August 18, 2015.

⁹ About 78% of claims had a six month maximum duration; about 7% had maximum durations of one year, with less than one percent allowing durations of more than one year. The remainder of claims had 13 week maximum durations. No STD claims in the data are older than two years at the time of observation.

Figure 1: % of LTD claims closing within ...

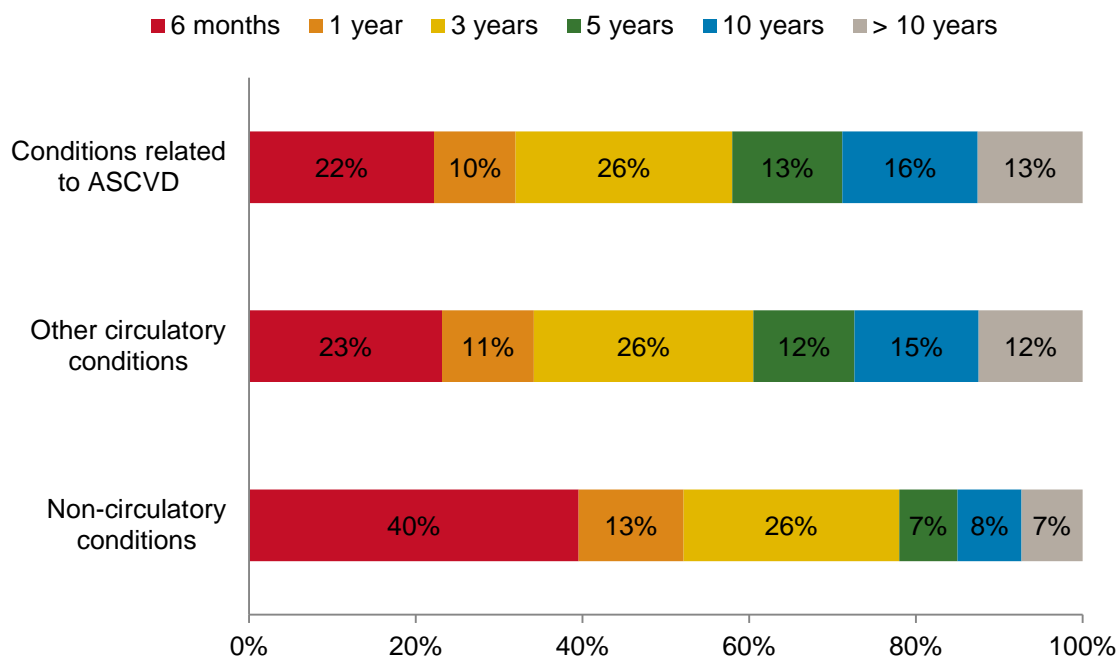


Table 2 shows that the average LTD wage replacement cost to employers for ASCVD claims is almost \$53,000. This is about 60% higher than the costs of claims for non-circulatory diagnoses and almost 14% higher than the costs of claims for other circulatory diagnoses. Employees themselves stand to lose about 42% of their earnings¹⁰ for each year they spend on disability – a substantial income loss. Opportunity costs for LTD claimants are not calculated, on the assumption that employers replace these absent workers permanently.

Table 2: LTD costs for ASCVD and other diagnoses

	LTD benchmarking claims ^a	Avg. wage replacements
Conditions related to ASCVD	4,198	\$52,720
Other circulatory conditions	7,316	\$46,441
Non-circulatory conditions	119,282	\$32,914

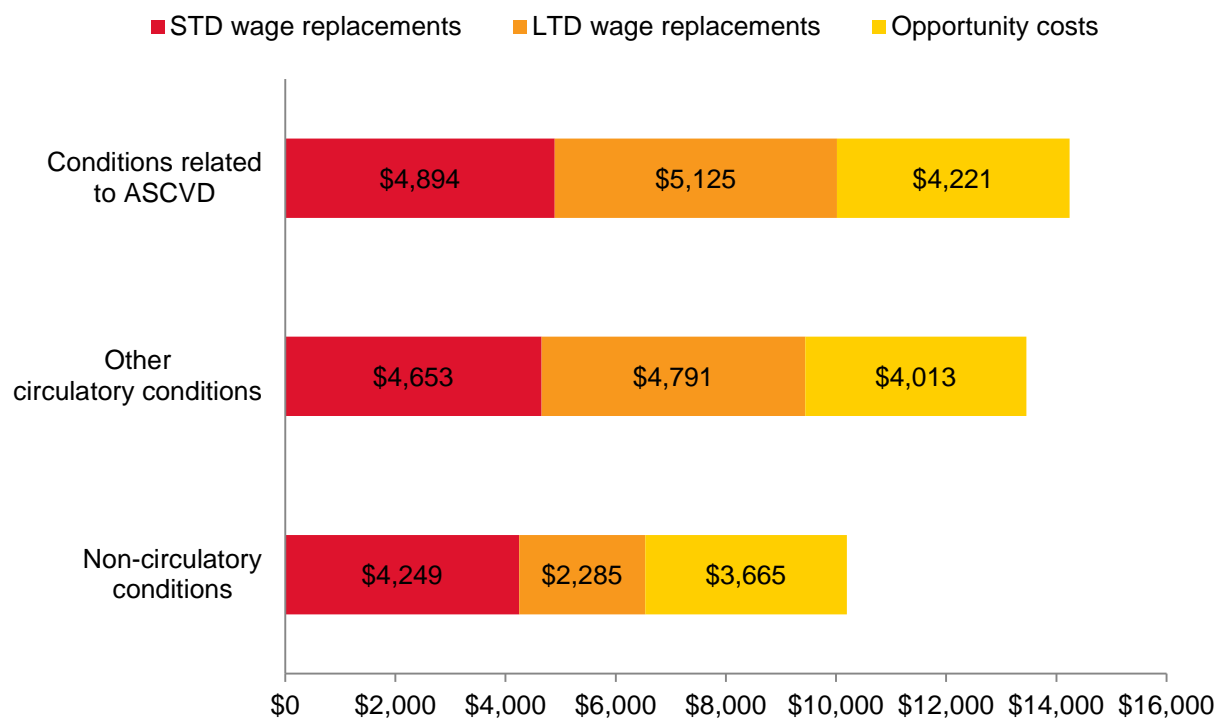
^a closed claims with valid ICD9 code and wage replacement cost data

¹⁰ About 78% of STD claims had a six month maximum duration; about 7% had maximum durations of one year, with less than one percent allowing durations of more than one year. The remainder of claims had 13 week maximum durations. No STD claims in the data are older than two years at the time of observation.

Total estimated costs of a disability incident

Considering the likelihood that an STD claim will reach its maximum duration and then cross into the LTD system, Figure 3 shows that total disability wage replacement and opportunity costs for ASCVD claimants are estimated at about \$14,200. This is almost 40% higher than costs for non-circulatory diagnoses and almost 6% higher than costs for other circulatory diagnoses.

Table 3: Estimated total costs for STD claimants with ASCVD and other diagnoses



What Can Employers Do?

Because high cholesterol is asymptomatic, many people do not know they are at risk for ASCVD. For most working-age adults – particularly older workers or those with other known risk factors for cardiovascular conditions – the benefits of serum lipid tests for high cholesterol outweigh the potential harms.¹¹ Employers should consider workplace efforts to raise cholesterol awareness and encourage employees to get their cholesterol test according to treatment guidelines.

For many patients, lifestyle habits such as avoiding tobacco, eating a healthy diet and engaging in regular physical activity can help prevent or manage hypercholesterolemia. Employers may benefit from offering programs to help employees adopt and maintain healthy lifestyles.

Designing pharmacy benefit plans that support cholesterol control also is recommended. Medications that inhibit the production or absorption of cholesterol (such as statins) or cause the body to consume more cholesterol in the production of bile acids are common treatments. However, patients with genetic conditions

¹¹ Agency for Healthcare Research and Quality, U.S. Preventive Services Task Force, “The Guide to Clinical Preventive Services 2014.”

that predispose them to high cholesterol or who already have a history of cardiovascular disease (including heart attacks and strokes) may benefit from the use of newer classes of medications that stimulate the removal of cholesterol through the liver (i.e., PCSK9 Inhibitors).¹²

Additional Information

More information about the causes, treatment and prevention of high cholesterol can be found at the following sources:

The Centers for Disease Control and Prevention's [Heart Disease and Stroke Prevention Fact Sheets](#).

The Mayo Clinic's [Diseases and Conditions](#) page for high cholesterol.

Harvard Medical School's special report, [Managing Your Cholesterol](#).

About IBI

Founded in 1995, the Integrated Benefits Institute (IBI) is a national, non-profit research and educational organization committed to helping business people and policy-makers understand the business value of workforce health and to recognize the competitive advantages of helping employees get and stay healthy. IBI is supported by over 1,100 member companies representing over 20 million workers.

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¹² Robinson, Jennifer G., Michel Farnier, Michel Krempf et al., 2015, "Efficacy and Safety of Alirocumab in Reducing Lipids and Cardiovascular Events," *New England Journal of Medicine*, 372:1489-1499; Sabatine, Marc S. Robert P. Giugliano, Setephen D. Wiviott, et al., 2015, "Efficacy and Safety of Evolocumab in Reducing Lipids and Cardiovascular Events," 372:1500-1509.