

Estimates of Commercial Population at High Risk for Cardiovascular Events: Impact of Aggressive Cholesterol Reduction

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Objectives: To model the financial and health outcomes impact of intensive statin therapy compared with usual care in a high-risk working-age population (actively employed, commercially insured health plan members and their adult dependents). The target population consists of working-age people who are considered high-risk for cardiovascular disease events because of a history of coronary heart disease.

Study Design: Three-year event forecast for a sample population generated from the National Health and Nutrition Examination Survey data.

Methods: Using Framingham risk scoring system, the probability of myocardial infarction or stroke events was calculated for a representative sample population, ages 35 to 69 years, of people at high risk for cardiovascular disease, with a history of coronary heart disease. The probability of events for each individual was used to project the number of events expected to be generated for this population. Reductions in cardiovascular and stroke events reported in clinical trials with aggressive statin therapy were applied to these cohorts. We used medical claims data to model the cohorts' event costs. All results are adjusted to reflect the demographics of a typical working-age population.

Results: The high-risk cohort (those with coronary heart disease) comprises 4% of the 35- to 69-year-old commercially insured population but generates 22% of the risk for coronary heart disease and stroke. Reduced event rates associated with intensive statin therapy yielded a \$58 mean medical cost reduction per treated person per month; a typical payer cost for a 30-day supply of intensive statin therapy is approximately \$57.

Conclusions: Aggressive low-density lipoprotein cholesterol-lowering therapy for working-age people at high risk for cardiovascular events and with a history of heart disease appears to have a significant potential to reduce the rate of clinical events and is cost-neutral for payers. [*AHDB*. 2009;2(6):224-232.]

Cardiovascular disease (CVD) is the leading cause of morbidity and mortality in the United States. The estimated direct and indirect cost of CVD for 2008 is \$448.5 billion.¹ CVD ranked highest among all disease categories for hospital discharges and was the most frequent primary diagnosis coded for physician, outpatient, and emergency department visits.¹ Hypercholesterolemia, particularly elevated low-density lipoprotein cholesterol (LDL-C), is strongly

associated with an increased risk of CVD, including coronary heart disease (CHD) events (ie, myocardial infarction [MI], angina, coronary revascularization) and stroke.²⁻⁴ Landmark statin studies targeting LDL-C lowering have shown dramatic reductions in heart attacks, stroke, and cardiac death.⁵⁻¹⁴ More recent studies have shown that intensive reduction of LDL-C levels in high-risk individuals with a history of CHD is associated with an even greater reduction in CVD events than conventional LDL-C lowering.⁷⁻⁹

Although aggressive LDL-C therapy resulting in positive patient outcomes has been well documented, reports continue to find inadequate LDL-C therapy and poor compliance with statin therapy.¹⁵⁻¹⁷ Employers and commercial insurers bear significant medical cost and productivity burdens associated with undertreat-

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ment of hypercholesterolemia and poor compliance with statins, particularly for the high-risk population. Although studies have reported cost-effectiveness associated with statin therapy,¹⁸⁻²³ none has reported the cost burden in terms relevant to an employer or a health plan, such as per member per month costs.

Specifically, reports lack outcomes adjusted to a working-age population. Many studies report cost-effectiveness utilizing quality-adjusted life-years, which provides information of limited utility for employers and payers. A more meaningful approach may be to provide cost-effectiveness in terms that would allow employers and payers to project short-term impact on medical utilization and costs for budgetary purposes. Other studies report cost-effectiveness using LDL-C reduction and unit drug costs across statins, without considering the impact of CVD event reduction cost offsets.

Our analysis models the cost impact of aggressive statin therapy for a commercially insured cohort of members at high risk for secondary events from CVD as a result of a history of CHD. This group represents an important subset of working-age health plan members for a commercial insurer. Using this newly developed model, we compare the CVD event and cost burden under conventional current therapy to represent the results of intensive statin therapy, which is the current standard of care for high-risk patients.

Disease management efforts by employers and other payers that are focused on commercial members with CHD can represent a substantial financial investment. Such efforts seek to identify and provide early clinical intervention to improve outcomes in populations at risk for adverse events. Therefore, individuals with a history of CHD are targeted for disease management programs, because payers believe that such interventions can avoid various complications, including stroke and secondary events (eg, acute MI). However, the claims of improved outcomes of disease management vendors have received significant criticism.^{24,25} In particular, the range of improved outcomes demonstrated by applying the results of intensive statin therapy to this population can suggest plausible maximum improvements from disease management programs.

In addition, employers and insurers are experimenting with benefit designs, such as lower copayments or other financial incentives to maximize drug compliance for those with chronic diseases. Studies consistently report decreased statin compliance with higher copayments.²⁶⁻²⁹ The present article offers guidance to such experiments on the potential health and cost improvements possible through various initiatives.

KEY POINTS

- ▶ This actuarial study highlights the potential cost-savings for employers and payers with the use of intensive cholesterol-lowering therapy in people with coronary heart disease.
- ▶ This study calculates cost-effectiveness in terms that facilitate projections of short-term impact on medical utilization and costs.
- ▶ The target population is commercially insured people aged 35 to 69 years who have a high risk for cardiovascular/cerebrovascular events.
- ▶ Results suggest that in these high-risk patients, intensive lipid-lowering therapy, would result in a 33% overall reduction in events.
- ▶ This risk reduction would result in incremental average cost reductions of \$58 per target patient per month, a \$696 annual reduction per target patient.

Using the National Health and Nutrition Survey (NHANES) 2003-2004 and 2005-2006 survey data, we identified the target population of people at high risk for CVD who had a history of CHD. NHANES is a survey of healthcare information for US residents readily available from the National Center for Health Statistics and the Centers for Disease Control and Prevention. It is designed to provide reliable estimates of the health and nutritional status of the US civilian noninstitutionalized population.³⁰

Target Population

Our target population intentionally closely resembles the sample in the Treating to New Targets (TNT) study,⁸ which consisted of individuals with a history of CHD who are at high risk for CVD events. High risk for CVD as used here is based on the high-risk National Cholesterol Education Program (NCEP) III criteria,³¹ which include a history of CHD (ie, MI, unstable angina, stable angina, coronary artery procedures), diabetes, or stroke, and patients with >20% 10-year Framingham risk for CHD, combined with 2 or more of the following risk factors:

- Cigarette smoking
- Hypertension (blood pressure ≥ 140 mm Hg systolic or ≥ 90 mm Hg diastolic, or taking an antihypertensive medication)
- High-density lipoprotein cholesterol < 40 mg/dL
- Men ≥ 45 years
- Women ≥ 55 years
- Family history of premature CHD.

The Appendix (page 231) contains the NHANES survey examination fields used to identify individuals with high-risk criteria.

The population identified includes 2386 people aged 35 to 69 years in NHANES 2003-2006. Of these, 133 met TNT-like criteria for high CVD risk and a history of CHD. Because the NHANES data do not allow precise selection based on the TNT criteria, some NHANES participants who would have matched TNT criteria were likely omitted. We applied the NHANES portions of treatment target lives by quinquennial age-groups and sex to a population of 10,000 employees and 4721 spouses who had large employer-sponsored health coverage. The demographics of a working-age population are taken from Milliman's 2008 *Health Cost Guidelines*,³² which is designed to represent the demographics of a typical large, employer-sponsored health benefit program.

Extrapolating this target population to an employer with 10,000 employees yields 256 men and 187 women (aged 35-69 years) at high risk for CVD who have a history of CHD. The Table in the Appendix displays the individual distributions by age and sex. The target population, with an average age of 53.5 years, is about 7 years older than the cohort of all 35- to 69-year-old persons in a working-age population (plus dependents). The target population is more likely to have a history of diabetes (32% vs 9%) or hypertension (32% vs 18%) than the total population of that age-group. Of the target population, 55% was receiving statins according to the NHANES drug file.

Methods

Using the Framingham risk scoring system,³³⁻³⁵ we calculated the probability of MI and stroke for each patient in the target population. The 3-year period used in this study reflects a compromise between a long-term study and the short-term horizon of many employee benefit managers.

To model the impact of intensive statin therapy for the target population, we applied the reduction in CHD and stroke events reported in the TNT study⁸ and in the Heart Protection Study (HPS).⁷ The TNT study compares the results of 80-mg and 10-mg atorvastatin treatment arms. It was assumed that those in the target population who were receiving statin therapy were currently being treated with conventional statin therapy and were achieving outcomes similar to the 10-mg atorvastatin arm. For those currently receiving statins, an additional event reduction shown for the 80-mg arm compared with the 10-mg arm was applied:

22% (7%-34%, 95% confidence interval [CI]) for CHD and 25% (4%-41%, 95% CI) for stroke.

To model the impact of intensive statin therapy for those not receiving a statin, the event reduction of the 80-mg arm over the 10-mg arm in the TNT study was applied. In addition, the results of the HPS, which compared 40-mg simvastatin to placebo,⁷ was applied. The HPS reductions of 38% (30%-46%, 95% CI) for CHD and 25% (15%-34%, 95% CI) for stroke, combined with the TNT study reductions, produced reductions of 52% for CHD and 44% for stroke, and were applied for individuals not currently receiving statin therapy.

The HPS population closely resembled that of the TNT study, and we assumed that the event reductions in the TNT study for the 10-mg atorvastatin arm would be similar to the event reductions in the HPS 40-mg simvastatin arm, based on LDL-C reductions reported in each study, as well as other results.³⁶

To quantify the cost impact of intensive statin therapy for a working-age population, we applied data queries to Medstat MarketScan 2003-2007 claims data.³⁷ Medstat contains paid claims generated by more than 14 million commercially insured lives across the United States. Because our model uses the reduction in CVD events among target high-risk individuals as the driver of reduced costs, we identified costs of people with CVD events who also had diabetes, because other characteristics of the target population are not readily identifiable in claims. The following *International Classification of Diseases, Ninth Revision (ICD-9)* and *Current Procedural Terminology (CPT-4)* codes were used to identify individuals with a history of CVD events: stroke (ICD-9 code: 430.x, 431.x, 432.x, 433.x1, 434.x1); MI (ICD-9 code: 410.x0, 410.x2); coronary artery bypass graft (CPT code: 33510-33514, 33516-33519, 33521-33523); coronary angioplasty (CPT code: 33533-33536, 35600, 33572, and ICD-9 procedure code 36.1, 36.2x); and percutaneous transluminal coronary angioplasty (CPT code: 33140, 92980-92982, 92984, 92995, 92996, and ICD-9 procedure code: 36.01, 36.02, 36.05, 36.09).

Costs were applied to each individual based on average annual historic per-person medical claim costs, developed separately by sex by 5-year age bands for each CVD event. The event costs (costs during the year of an event) and costs incurred in the 2 years after an event populated a longitudinal cost model for people having an event. Baseline costs for individuals in the year before a CVD event served as a "background" cost. All costs were projected to 2008 levels, using industry trends from the 2008 *Milliman Medical Index*.³⁸

Distinct costs were not applied to events that result-

Table 1 LDL-C Goals and Number of Patients Not at Goal, by Risk Category

Risk level	Commercial population ^a	LDL-C goal	Persons not at LDL-C goal
High risk, history of CHD	4.2%	<100 mg/dL (therapeutic option 70 mg/dL)	73% (95%)
High risk, no history of CHD	9.4%	<100 mg/dL (therapeutic option 70 mg/dL)	70% (95%)
Moderately high risk	5%	<130 mg/dL	60%
Moderate risk	12%	<130 mg/dL	29%
Low risk	69%	<160 mg/dL	12%

^aNCEP guidelines applied to NHANES.

CHD indicates coronary heart disease; LDL-C, low-density lipoprotein cholesterol; NCEP, National Cholesterol Education Program; NHANES, National Health and Nutrition Examination Survey.

ed in death. The costs include contributions from a small number of people with multiple events. However, the model assumes that a person could have, at most, one type of CVD event (ie, stroke, MI without revascularization, MI with revascularization, or revascularization without MI) over the 3-year model period.

Two distinct scenarios were modeled: a “current status” and a “therapy” scenario. The current status assumes that the current risk, treatment status, and costs continue throughout the 3-year time period modeled, while the therapy scenario assumes individuals with a history of CHD and a high risk for CVD events and receive the additional therapies specified in the TNT and HPS studies.

Results

Analysis of the NHANES 2003-2006 data identifies 4.2% of patients in the 35- to 69-year-old age-group at high risk for CVD and with a history of CHD. Based on statin studies subsequent to the 2002 NCEP III guidelines, updated guidelines have set a therapeutic option of LDL-C <70 mg/dL for high-risk individuals, and some experts recommend the use of intensive statin therapy for all high-risk patients, even when LDL is <100 mg/dL.³¹

Only 55% of patients in the high-risk cohort with a history of CHD were taking a statin, although 95% were above LDL-C goal (considering the <70 mg/dL therapeutic option). **Table 1** provides the distribution of 35 to 69 years old by risk category, NCEP III–updated

Table 2 CHD/Stroke Risk Is Concentrated in High-Risk Patients with CHD

Risk level	Patients, N	Population	CHD/stroke events, N	CHD/stroke events
High risk, with CHD	443	4.2%	49	22%
High risk, no CHD	985	9.4%	40	17%
Other than high risk	8998	86.3%	138	61%
Total	10,426 ^a	100%	227	

^aThose aged 35-69 years, a subset of the total population of 10,000 employees and 4721 adult dependents.

CHD indicates coronary heart disease.

LDL-C goals, and portion of each cohort above NCEP III–updated goals.

Using the Framingham risk score and NHANES data, the probability of a CHD event or a stroke during 3 years was calculated for each patient. **Table 2** presents the number of CHD events and strokes that occurred in the study cohort drawn from a typical working-age population of 10,000 employees and their 4721 dependents. The risk for CHD and stroke is concentrated disproportionately in the target population, which comprises just 4.2% of the 35- to 69-year-old commercial population but is responsible for 22% of the CHD and stroke risk.

Based on the Framingham risk scoring system, the 3-year risk for stroke and CHD in the target population is 2.3% and 9.9%, respectively. If all high-risk patients with CHD were to receive intensive lipid-lowering therapy, stroke and CHD events in an employer population of 10,000 employees and 4721 dependents would be reduced from 49 events to 33 events, a 33% overall reduction. **Table 3** illustrates the reduction under both current status and therapy scenarios and presents a range of event reduction based on the CIs reported in the TNT and HPS studies.

To estimate the cost impact of the reduced number of events, we applied event costs calculated from our Medstat analysis. The applied CHD costs used the database’s cost and distribution of MI with revascularization, MI without revascularization, and revascularization without MI identified in Medstat. **Table 4** presents the costs in the year before the event, the event year, and the costs in the 2 years after the event. These costs reflect payer paid claims dollars and exclude member cost-sharing. Costs before the event vary by event type, which we postulate reflects differential patient risk characteristics.

Table 3 Event Reduction with Aggressive Statin Therapy in Target Population

Events	Current status: no change from current statin therapy	Therapy scenario: intensive statin therapy
Probability of an event during 3 years for target population		
Stroke ^a	2.3% ^a	1.6% (95% CI, 1.3%-2.2%), a 30% reduction (95% CI, 8%-47%)
CHD events: heart attack and revascularization	9.9%	6.6% (5.4%-8.2%), a 33% reduction ^b (95% CI, 17%-45%)
Number of stroke + CHD events for target population	49	33 (95% CI, 27-41) ^b

^aStroke reduction rate applies only to people aged 55-69 years, because Framingham stroke risk applies to people age ≥55 years.

^bIntensive statin therapy impact modeled using Treating to New Targets study and Heart Protection Study. Targeted population: high-risk patients with CHD aged 35-69 years, a subset of the total population of 10,000 employees and 4721 adult dependents.

CHD indicates coronary heart disease; CI, confidence interval.

Table 5 Medical Cost Reduction with Intensive Therapy

CHD	Incremental cost per event	\$58,077
	Event reduction per 3 years, N	14 (8-20) ^a
	Total cost reduction	\$841,594 (95% CI, \$442,000-\$1,154,000) ^a
	Cost reduction per target person per month	\$53 (95% CI, \$28-\$72) ^a
Stroke	Incremental cost per event	\$53,065
	Events reduction per 3 years, N	1.6 (95% CI, 0.4-2.4)
	Total cost reduction	\$83,188 (95% CI, \$22,000-\$128,200)
	Cost reduction per target person per month	\$5 (95% CI, \$1-\$8)
CHD + stroke	Cost reduction per target person per month	\$58 (95% CI, \$29-\$80)

^a95% confidence interval from Table 2 applied to events and costs. CHD indicates coronary heart disease; CI, confidence interval.

Table 4 National Average Annual Cost of Events Per Patient, Projected to 2008

Event type	Before event, \$	Event year, \$	1 year after event, \$	2 years after event, \$
Myocardial infarction with revascularization	10,028	74,333	25,067	22,468
Myocardial infarction, no revascularization	24,634	74,966	37,886	37,918
Revascularization, no myocardial infarction	26,150	72,446	34,642	30,113
Stroke	13,780	56,028	26,105	21,579

Costs in particular geographic regions vary from the national averages. Milliman's 2008 *Group Health Insurance Survey* of preferred provider organization plans with highest and lowest cost regions vary by up to ± 11% to 12% from the national average.³⁹ For a particular payer, costs can fall above or below this range, depending on negotiated reimbursement or local patterns, and costs for particular patients can be even more variable.

Incremental costs net the costs from the year before the event, from the year of the event, and the 2 subsequent years. **Table 5** presents estimated incremental event costs for the 3 years after the events, based on

Table 4, using equal probability of an event in all 3 years. Incremental costs were applied to the number of events reduced over 3 years and calculated as an average \$58 (95% CI, \$29-\$80) per target member per month reduction, or an annual cost reduction of \$696 per target member, assuming intensive statin therapy. This cost reduction does not consider the cost of statin therapy, nor does it consider the potential impact on nonmedical costs, such as disability costs or lost work time.

To estimate how this cost reduction per target member compares against the cost of intensive statin therapy, Medstat 2006 and the first 3 quarters of Medstat 2007 were analyzed to identify claims for atorvastatin 80 mg/day, the dosage used in the TNT study. The average allowed cost for 2006 and for 2007 was \$97 for a 30-day supply. Assuming a \$25 copayment (2nd tier) and a 15% rebate to the payer/employer, the cost to a payer for a 30-day supply of intensive statin therapy with atorvastatin would be \$57. Thus, compared with average medical cost reduction of \$58 per target member per month, intensive statin therapy may be cost-neutral to the payer in this model (Table 5).

Discussion

The literature on the cost-benefit relationship of statin therapy includes mention of some cost-effective nonstatin treatments to prevent CVD events, such as aspirin therapy.^{20,40} In addition, some critics of intensive

statin treatment point out that the TNT study did not find a reduction in overall mortality in the higher-dose group, and did find persistent elevations in liver aminotransferase levels, raising questions about whether the side-effect risks exceed reported benefits of aggressive treatment for patients with stable CHD.^{41,42} Of note, potential risk reduction for individuals at low baseline risk may be necessarily small; however, the focus in this analysis is on patients at high CVD risk who have a history of CHD, which intends to provide additional perspective on this controversy. In addition, the target population is defined by its CVD risk, not solely by its LDL-C level, suggesting a new perspective for consideration.

Patients with a history of CHD at high risk for CV events can be identified in claims data and frequently are identified through routine disease management algorithms. Specific strategies, including data such as dosage, patient prescription fills, and medication possession ratios, can be monitored through claims data and gaps targeted for intervention.

The reported medical cost reduction in our analysis is driven largely by fewer hospital admissions for stroke and CHD events. Disability, lost work time, and replacement costs for workers suffering from these events were not considered. According to the UnumProvident report, CVD was reported as the fifth leading cause of long-term disability, accounting for 8% of disability claims incidence.⁴³ A 2007 report from the American Heart Association Statistics Committee and Stroke Statistics Subcommittee indicates that 15% to 30% of stroke patients become permanently disabled, and that stroke is a leading cause of long-term disability in the United States.⁴⁴ By not considering disability costs, our modeling underestimates the potential cost-savings of intensive statin therapy for stroke prevention.

Landmark statin studies have shown that treatment of hypercholesterolemia with statin therapy significantly reduces the probability of a stroke or a CHD event. This report, although not the first to attempt to quantify the value of intensive therapy,¹⁸ presents this information in the context of employer-sponsored benefit plans.

This present analysis did not consider that some individuals in the model cohort generated from NHANES may already be receiving intensive statin therapy, and potential risk reduction would therefore be reduced. But, this concern is at least partially offset by the assumption that patients in the modeled comparator group who were receiving lower-dose statin therapy were indeed compliant and received the full benefit of the HPS study, which is not likely to be the case.

Limitations

A challenge to the applicability of this model is whether clinical trial results can be replicated in the real-world setting of a health plan. Compliance in the real world may be lower and patients in a clinical trial may receive more attention and be managed more carefully than those enrolled in a health plan.

Another potential limitation is that the target population identified in NHANES may not precisely match the TNT population for characteristics such as age (our population was ages 35-69 years, while TNT was ages 35-75 years) or rates of comorbidities other than CHD. Consequently, this model may reflect the “upper limit” of various CVD event reductions associated with intensive statin therapy and may be used to estimate this maximum potential benefit, with the additional advantage of being practical to implement in the real world of health plan operations.

In addition, the present analysis did not consider that during the 3-year period modeled, aging would increase the size of the target population. Although the TNT and HPS outcomes were based on 4.9- and 5.0-year treatment periods, respectively, our analysis uses a 3-year period. And whereas the TNT and HPS studies are well-regarded, our assumption that the results can be used in sequence and additively is not based on clinical trial results.

Finally, the cost figures presented in this article are point estimates of national average costs, although we offer ranges that indicate regional variation. However, a particular payer's costs may fall outside this range, depending on contractual arrangements. This variation in business practices is distinct from random variation.

Conclusion

The present analysis quantifies risk, events, and cost avoidance, with a focus on one of the widely and easily available tools—intensive statin therapy—that superior patient management efforts could bring to the population at high CVD risk. The range of improved outcomes demonstrated by applying intensive statin therapy to this population can suggest plausible maximum improvements in CVD risk reduction.

Information regarding specific program efforts (identification and therapies), outcomes (reduction in CVD events), and net costs (medical and prescription drugs) that can be measured demonstrates that intensive statin therapy for patients with established CHD may ultimately be cost-neutral to the payer. These results offer potential targets to determine the value of disease management programs aimed at populations at high CVD risk.

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Ms Fitch, Ms Goldberg, and Mr Pyenson are consultants to Pfizer. Ms Fitch is also a consultant to Boehringer Ingelheim. Dr Kuznik and Mr Solomon are employed by Pfizer. ■

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APPENDIX: Supplemental Materials

1. Demographics of Target Population and Standard Commercial Population

Sex	Age, y	Target population, N	Total population (target + nontarget), N
Men	35-39	13	1048
	40-44	8	1122
	45-49	46	1034
	50-54	18	889
	55-59	62	506
	60-64	66	313
Women	35-39	11	1072
	40-44	47	1173
	45-49	24	1124
	50-54	55	982
	55-59	27	562
	60-64	17	372
Total		443	10,426 ^a

^aThose aged 35-69 years, a subset of the total population of 10,000 employees and 4721 adult dependents.

2. Risk Factors in NHANES Were Identified Using:

History of CHD

- MCQ160C Ever told you had CHD
- MCQ160D Ever told you had angina/angina pectoris
- MCQ160E Ever told you had a heart attack
- D0503 Drug file 0503 antianginals
- D0508 Drug file 0508 coronary vasodilators

History of diabetes

- DIQ010 Doctor told you that you have diabetes
- DIQ050 Now taking insulin
- DIQ070 Now taking diabetic pills to lower blood sugar
- LBXGLU Blood glucose

History of stroke

- MCQ160F Ever told you had a stroke

History of cardiovascular disease

- Stroke (See above for NHANES item number)
- CHD (See above for NHANES item number)
- CHF MCQ160B

Family history of premature CHD

- MCQ260GA Blood relative/myocardial infarction/mother before age 50 years
- MCQ260GB Blood relative/myocardial infarction/father before age 50 years

Smoking

- SMQ040 Do you now smoke cigarettes?

Hypertension

- BPXSAR Systolic blood pressure
- BPXDAR Diastolic blood pressure

High-density lipoprotein

- LBDHDL High-density lipoprotein

Low-density lipoprotein

- LBDLDL Low-density lipoprotein

Total cholesterol

- LBXTC Total cholesterol

CHD indicates coronary heart disease; CHF, congestive heart failure.

Drug File Data

- 0912 Hyperlipidemia
- 05100 Atorvastatin calcium
- 26500 Fluvastatin sodium
- 37200 Lovastatin
- 48400 Pravastatin sodium
- 53200 Simvastatin
- 70600 Cholesterol-lowering drug, unspecified
- 14100 Cholestyramine
- 24400 Fenofibrate
- 27000 Gemfibrozil

STAKEHOLDER PERSPECTIVE

The 10,000-Life Measure Shows Real-World Costs of Disease Burden and Interventions on a Population

PAYERS/EMPLOYERS: Although this study provides a significant contribution to the literature of diabetes and cholesterol management, it is the

authors' use of the 10,000-life framework that should get the attention of various healthcare stakeholders for future research.

Continued next page

STAKEHOLDER PERSPECTIVE *Continued from previous page*

The traditional use of quality-adjusted life-years (QALYs) as a measure of cost-effectiveness analysis has proved to be of little actionable use for health insurers, health plan decision makers, employers, and other payers. Although the QALY is a measure of social value, the concept is neither truly economics- (cost-) nor population-based—2 strong components of today's healthcare delivery system infrastructure. Because some people may suggest that QALY is an economic construct, this point is worth clarifying.

QALY analysis does provide a means to evaluate the cost of a QALY. For example, incremental QALY values are often assigned to a specific technology, which is then accepted or rejected based on some hurdle. Missing from a QALY analysis, however, are concepts of affordability—population-based measures, such as how costs are spread across a population, productivity, and family/coworker impact.

By using a 10,000-life analytical framework, key stakeholders are provided with meaningful and practical information that can have a direct impact on people's lives and the cost of healthcare. Although healthcare quality is a societal concern, healthcare

management is a local activity. When stakeholders know how to identify individuals with specific diseases—as well as the real-world costs of those conditions and the costs of interventions—they can assess how these metrics affect the population they are responsible for, and set an agenda for change.

The appeal of the 10,000-life framework is that it can be scaled to any population size (the more local, the better), facilitate understanding of insurance-related costs, and directly measure the impact of disease burden and interventions on the population.

The collaborative effort between clinical, actuarial, and disease experts, as evidenced in this article, is a model for healthcare stakeholders to encourage. These experts' training and experience, when combined, make cost-effectiveness analysis accessible to stakeholders closest to the patient. With further encouragement for these types of studies, much needed improvements in healthcare quality and cost reductions can be realized.

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