

# A New Standard for Cardiovascular Claims in Workers' Compensation

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# A NEW STANDARD FOR CARDIOVASCULAR CLAIMS IN WORKERS' COMPENSATION

Denis Paul Juge\* and John H. Phillips, M.D.\*\*

## INTRODUCTION

Heart attack<sup>1</sup> cases present very difficult causation problems in workers' compensation claims. The judiciary is often faced with medical evidence in these cases which seems to resolve the causation question but which simultaneously appears to some to produce an inequitable result in light of the principles underlying workers' compensation. Louisiana has not been immune from these difficulties. The courts of this state have faced the problem of reconciling medical evidence in cardiovascular claims with the statutory requirement that the injury be causally connected to the employment.

In three recent decisions, *Adams v. New Orleans Public Service, Inc.*,<sup>2</sup> *Guillory v. United States Fidelity and Guaranty Co.*,<sup>3</sup> and *Guidry v. Slone Industrial Painters, Inc.*,<sup>4</sup> the Louisiana Supreme Court confronted the problem. *Adams v. New Orleans Public Service, Inc.* was the first opinion to be released; however, a rehearing was granted by the supreme court and, as of this writing, a final decision has not been rendered. The Third Circuit Court of Appeal disagreed with the reasoning of the *Adams* opinion but felt compelled to follow its holding in *Guidry v. Slone Industrial Painters, Inc.*<sup>5</sup> On appeal of the third circuit's decision, the supreme court retracted the exact language of the *Adams* opinion which had compelled the third circuit to decide in favor of the plaintiff.

The discussion which follows traces some of the developments precipitating the original *Adams* opinion and describes how the concept of causation in workers' compensation heart attack claims has been changed by *Guillory v. United States Fidelity and Guaranty Co.*,<sup>6</sup> the third recent decision of the supreme court. The authors also ad-

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1. The term "heart attack" is used because of the court's tendency to describe any cardiovascular catastrophe as such and because it is a familiar term. The term is not regarded as meaningful in the medical community. See text at page 22, *infra*.

2. \_\_\_ So. 2d \_\_\_ (La. 1982), *reh'g granted*, \_\_\_ So. 2d \_\_\_.

3. \_\_\_ So. 2d \_\_\_ (La. 1982), Docket No. 81-C-2471.

4. \_\_\_ So. 2d \_\_\_ (La. 1982), Docket No. 81-C-3116.

5. 406 So. 2d 303 (La. App. 3d Cir. 1982).

6. \_\_\_ So. 2d \_\_\_ (La. 1982).

dress the magnitude of the problem presented by cardiovascular disease and present a description of the medical aspects of the disease. Finally, the authors propose an alternative method by which causation in these claims should be determined.

#### MAGNITUDE OF THE PROBLEM

Cardiovascular diseases account for more deaths in America than *all* other causes combined. One-sixth of all sums spent by Americans for health care in 1982 will be attributable to cardiovascular disease.<sup>7</sup>

Complete statistical data on the number and cost of cardiovascular compensation claims are not available. However, the National Council on Compensation Insurance did conduct a survey in 1979 on a random sampling basis in twelve states.<sup>8</sup> From this survey, the following table comparing heart cases with other common injuries was prepared:<sup>9</sup>

Type of Injury	Number of Cases	Average Wage Benefits In Dollars	Average Medical Costs In Dollars	Average Duration in Weeks	Average Age of Claimant
Heart Cases	450	\$21,395	\$3,400	241	49
Arm	13,610	2,635	947	28	34
Back	29,307	2,761	1,142	39	34
All others	66,480	3,411	1,400	43	34
TOTAL	109,847	\$ 3,215	\$1,283	41	34

Although the survey indicated relatively few reported heart cases, the benefits associated with such cases are great. The average wage benefit recovered in cardiovascular cases is considerably higher than the average benefits recovered for other injuries. The relatively lower medical costs in heart cases may be attributed to the fact that many of the heart cases result in death. Further, the high average age of workers with heart claims supports the proposition that cardiovascular catastrophes are more likely the result of the degenerative process associated with aging.

The 4,500 cardiovascular disability claims reported to the Social Security Administration Office in Louisiana in 1981 represent 14% of all claims filed in this state for disability benefits.<sup>10</sup> These figures clearly indicate the financial impact of cardiovascular claims.

7. AMERICAN HEART ASSOCIATION, HEART FACTS, 1982; *America's \$39 Billion Heart Business*, U.S. NEWS & WORLD REP., March 15, 1982, at 53.

8. The states surveyed were Connecticut, Florida, Georgia, Illinois, Kentucky, Massachusetts, Michigan, Minnesota, New York, Pennsylvania, Virginia, and Wisconsin.

9. THE NATIONAL COUNCIL ON COMPENSATION INSURANCE, DATA CLAIM CALL (April 1, 1979).

10. *Social Security Administration Pre-Effectuation Review*, SOC. SECURITY ST. AGENCY OPERATING REP. (1981).

## A PRIMER ON CARDIOVASCULAR DISEASES

A reading of the judicial opinions in cardiovascular compensation cases reveals a judiciary at times confused by medical evidence. A proper evaluation of the legal issues involved requires a better understanding of the present state of medical knowledge concerning the operation of the cardiovascular system, the manifestations of cardiovascular diseases, and their causes.

Considerable confusion exists regarding the definition of certain terms and the understanding of various pathologic processes frequently encountered in cardiovascular (heart and blood vessels) medicine. Some of the most common are as follows:

*Atherosclerosis and arteriosclerosis.* In general, these two terms are used interchangeably today. The lay terminology is "hardening of the arteries." This is a chronic complex pathologic process that develops over a period of years. It generally starts in early childhood and progresses with aging. At the present time, for practical purposes, it is considered an irreversible process, particularly when it involves the blood vessels of the heart. The rate of development of atherosclerosis is influenced by certain "risk factors." The disease involves arteries (vessels delivering blood to tissues, as opposed to veins, which are vessels carrying blood away from tissue). In the process, certain elements are deposited in the walls of arteries which progressively reduce the size of the arterial lumen (the tube or open portion of the vessel which carries blood). These elements include platelets (small particles in the blood involved in the clotting process), red blood cells (the cells carrying oxygen to the tissues), lipids (fats which include cholesterol and triglyceride), fibrin (small linear fibrous structures), thrombi (blood clots), calcium, and others. The result is "atherosclerotic plaque."

*Risk factors.* These are factors related to the rate of development of atherosclerosis. Those associated with a more rapid development include an adverse family history or heredity (genetics), gender (males at greater risk than females), hypertension (high blood pressure), smoking (tobacco cigarettes and probably other forms of smoking), hypercholesterolemia (high blood cholesterol), hypertriglyceridemia (high blood triglycerides or neutral fats), aging, obesity, hyperuricemia (high blood uric acid levels), oral contraceptives, diabetes mellitus ("sugar diabetes"), lack of regular exercise, low levels of high density lipoproteins (HDL's, "heavy" proteins that "carry" fats in the blood), anxiety, depression, stress, and excessive caffeine intake. The absence of these factors is associated with a slowed rate of development of atherosclerosis. For example, regular physical activity on a job and/or in leisure time is a favorable influence for an individual. Alcohol in-

take in moderation and regular sexual activity appear to be associated with reduced atherosclerosis. Alcohol in excess, of course, is a significant health hazard.

It is clear that long-term, repetitive, even strenuous, physical effort regularly performed by an individual cannot be regarded as a causal element in the development of atherosclerosis. To the contrary, such activity is actually beneficial in that it appears to retard the rate of development of the atherosclerotic process. Such physical activity is associated with a favorable change in risk factors including lower cholesterol, lower triglycerides, higher HDL's, lower resting blood pressure levels, slower resting heart rates, increased cardiovascular efficiency (less energy needs for a given physical effort), less anxiety and depression and less obesity. The concept that regular physical activity causes "wear and tear" on the cardiovascular system is totally invalid. The "normal" process of aging, of course, proceeds but even this may be favorably influenced by regular physical activity. When a disease process is present, the natural progression of this disease, even in an employed individual, clearly does not constitute causation or aggravation relative to employment.

*Vascular.* This means relating to blood vessels (arteries and veins).

*Coronary arteries.* These are the blood vessels that carry blood (with oxygen and other essential elements) to the heart muscle (myocardium) and other heart structures.

*Thrombus.* This is a blood clot. It is composed of red blood cells, platelets, fibrin, and many other blood elements. If the clot involves a coronary artery it is termed coronary thrombosis. When this occurs it usually develops on a pre-existing atherosclerotic plaque.

*Embolus.* This involves the development of structures in the vascular system (e.g., clots) which physically move (embolize) to another portion of the vascular system. For example, a thrombus that moves becomes an embolus.

*Spasm.* This is excessive contraction of muscle. If it involves the muscles in the walls of blood vessels it is termed vascular spasm. If it involves the vessels supplying (arteries) blood to the heart it is termed coronary spasm or coronary arterial spasm. It is almost without exception a temporary (lasts only minutes) phenomenon. It should be noted that one of several mechanisms that cause spasm is platelet activity in fresh thrombi. Here chemicals (e.g., thromboxane A<sub>2</sub>) are released that are strongly vasospastic in action.

*Hemorrhage.* This, of course, is bleeding. It may involve extravasation of blood internally into tissues, internally into various body

cavities, internally into body conduits (*e.g.*, the gastrointestinal tract), or externally with loss of blood from the surface of the body.

*Occlusion.* This is an obstruction. If it involves arterial vessels supplying blood to the heart it is termed coronary occlusion. Coronary occlusion may be caused by atherosclerosis, thrombosis, spasm, embolus, hemorrhage under an atherosclerotic plaque, or a combination of two or more of these and other factors.

*Ischemia.* This means an insufficient amount of arterial blood to meet the metabolic needs of body tissues. If it involves heart muscle it is termed myocardial ischemia. Ischemia may result from a decrease in arterial supply and/or an increase in tissue metabolic demands. Coronary occlusion (from whatever cause) may result in a decreased blood supply to the heart. Increasing the work of heart muscle (*e.g.*, from physical exertion) increases the metabolic needs and, particularly in the presence of coronary occlusion, may result in an insufficient supply of blood to the heart for those increased needs. It should be noted, however, that coronary occlusion alone frequently results in an insufficient supply of blood to the heart in the total absence of an increased metabolic demand by the heart.

*Injury.* This is structural damage to body tissues but the tissues continue to live (stay viable). If it involves heart muscle it is termed myocardial injury.

*Necrosis.* This is irreversible damage to tissue so that it dies (becomes non-viable). If it involves the heart muscle it is termed myocardial necrosis.

*Ischemic heart disease.* This is an insufficient supply of blood to the heart. This may result in angina pectoris, coronary insufficiency, myocardial infarction, congestive heart failure, rhythm disturbances of the heart, death, or a combination of these.

*Aggravation of a disease process.* There are two basic types of aggravation, one *temporary* and the other *permanent*. With temporary aggravation, the pre-existing disorder is worsened or made more severe for a time but with no significant residual adverse alteration of the underlying disorder and without leaving any continuing additional impairment beyond that time. With permanent aggravation there is a significant continuing and irreversible change in the underlying disorder, thus adversely altering the future course of the disorder.

*Angina pectoris.* This is a reversible disorder (lasting usually one to twenty minutes) resulting from myocardial ischemia. It generally is caused by a temporary increase in myocardial demands (*e.g.*, produced by physical exertion and/or emotional stress) in an individual who

has underlying fixed atherosclerotic coronary occlusive disease. Less frequently, coronary spasm may result in ischemia sufficient to produce angina even in the absence of chronic fixed obstructive disease, or the two processes may operate together to produce the ischemia. During the period of ischemia the myocardial cells produce acidic metabolites which irritate sensory nerve endings in the heart. These in turn transmit messages to the brain which the individual interprets as chest (thoracic) pain ("tightness or heaviness" in the middle of the chest). Angina pectoris is *not* associated with any significant residual structural damage to cardiac tissues. If angina develops because of stress or work-related activities, this is considered only a temporary aggravation. It should be noted that with initiation and continuance of proper medical therapy (treatment) most patients with angina pectoris may continue to work with stresses even in excess of those they were not able to tolerate before therapy.

*Myocardial infarction.* This is commonly called a "heart attack." The latter terminology should not be used when relating to other forms of cardiac disorders such as congestive heart failure, cardiac rhythm disturbances, or even sudden death. A myocardial infarction results from cardiac ischemia severe enough and prolonged enough (usually twenty minutes or longer) to produce death of heart muscle (myocardial necrosis). This produces irreversible structural damage to the heart. The patient experiencing a myocardial infarction generally suffers extremely severe chest pain (similar to severe prolonged angina).

In the large majority of instances, no preceding precipitating event can be determined or identified which initiated the myocardial infarction. The infarction then is generally viewed scientifically as a "natural" expression of the progression of the underlying disease, *viz.*, coronary atherosclerosis. Most infarctions occur while an individual is away from work and at rest, and thus are judged "spontaneous." Why a myocardial infarction began at a given moment, and not before or after that moment, usually is not established.

Pathologic factors initiating a myocardial infarction include:

1) Progression of the chronic occlusive coronary atherosclerotic process to a point where the blood supply to the myocardium has become so insufficient that the cells can no longer survive.

2) Acute thrombosis in a coronary artery. This is present in about 70% of acute infarctions, and, in the majority of instances, occurs in the vessel at a point where there was significant chronic occlusive atherosclerotic disease.

3) Coronary arterial spasm. This is probably a factor in 30% to

40% of infarctions, and in the large majority of cases this also occurs at a site of pre-existing chronic atherosclerotic occlusive coronary disease.

4) An acute change in the chronic coronary atherosclerotic process, *e.g.*, hemorrhage, under a pre-existing atherosclerotic plaque so as to further occlude the coronary vessel to the point that infarction occurs.

5) A chemical change in the ability of oxygen-carrying hemoglobin so that the blood is unable to transfer optimal amounts of oxygen to myocardial tissue.

6) An embolus to a coronary artery.

7) A combination of two or more of the above.

8) An acute significant increase in oxygen needs of the myocardium. This factor usually is not identified and, when it is, an infarction usually does not ensue without the presence of one or more of the above factors (the latter of which are of much more pathophysiologic importance than the increased myocardial oxygen needs in the great majority of instances).

It is important to recognize that, after the start of the process of acute myocardial infarction, an individual must live with this process for 6 to 8 hours before an infarction as a cause of death can be established by usual pathologic means at autopsy. Individuals dying before this time period frequently have died of the process which would lead to infarction (coronary occlusion and severe ischemia) but the infarction *per se* is difficult, if not impossible, to prove at autopsy. One needs to live long enough during the infarction process for the typical changes to develop in the heart that allow an autopsy diagnosis of infarction to be made.

Since myocardial infarction or the process of infarction is the most common cause of "natural death" in the United States today, from a scientific standpoint, one has to be particularly careful when attempting to assign job-related activities a causal position. In the large majority of cases the relationship is not causal but rather only temporal, *i.e.*, the chance association of the job activities with the onset of the process of infarction. In most instances, the statistical probability is that the relationship is coincidental and if the job-related activity is a factor, it is clearly not the only factor, and certainly the least important, of a number of much more important factors.

For the above reasons, before a causal relationship between job-related activities and a myocardial infarction or death due to cardiac cause should be entertained, an "unusual" event or set of events should



have in time preceded fairly closely the onset of the pathologic process. The farther temporally that an event and a subsequent pathologic process are separated, the less likely a causal relationship exists. This reasoning applies not only to myocardial infarction but to any other disease process. From a scientific standpoint, the usual activities of daily living (*e.g.*, the usual activities of a job to which a person has become accustomed over a period of weeks to years, or activities as might appear in one's job description) should not be viewed as causally related to the process of myocardial infarction or to death due to cardiac causes. In establishing causation one needs to assiduously avoid the very tempting, but most major fallacy of logic, *viz.*, "after that therefore because of that."

It should be emphasized that, although irreversible, a myocardial infarction in itself is not disabling once recovery from the acute event has taken place. An infarction (or series of infarctions) is not disabling unless it has damaged, quantitatively, enough myocardium so that significant congestive failure is produced or medically unresponsive angina pectoris has been produced or the propensity to cardiac rhythm disturbances has been produced (*i.e.*, rhythm disturbances severe enough to cause syncope or presyncope, aggravate congestive failure, aggravate angina pectoris, produce significant fatigue or an enhanced propensity to sudden death).

*Coronary insufficiency.* This is a group of disorders that lie somewhere between angina pectoris on one hand and myocardial infarction on the other. Terms used in this regard include unstable angina pectoris, pre-infarction angina pectoris, and intermediate coronary syndrome.

*Disorders of heart rhythm.* These are referred to as arrhythmias or dysrhythmias. These are heart rates and rhythms that depart from normal (termed "normal sinus rhythm") and become too fast, too slow, or too irregular. The common symptom resulting from these is "palpitation" (an awareness of the heart beat). Arrhythmias may be benign and asymptomatic or may be serious and result in angina pectoris, myocardial infarction, congestive heart failure, presyncope (sudden near unconsciousness), syncope (sudden unconsciousness), hypotension (low blood pressure), shock, and death. Arrhythmias may be precipitated by physical and emotional stresses but this would be viewed only as temporary aggravation.

*Sudden cardiac death.* There are a number of definitions for this, but an acceptable one is death from cardiac causes that results without prior symptoms or that occurs within one hour after the onset of symptoms. Parenthetically, it should be emphasized that death claims

(whether sudden death or not) should be supported by full and complete autopsy findings even if this involves ultimate exhumation.

*Congestive heart failure (CHF).* This results when the heart fails as a pump. Blood, in essence, "backs up" in the lungs producing pulmonary congestion (pulmonary edema) with dyspnea (shortness of breath). In addition, blood flow (perfusion) to body organs is reduced resulting in lack of optimal function of these organs. Fluid is retained in the body and frequently results in swelling (edema) of the legs and feet (peripheral edema). The most common causes of congestive heart failure are atherosclerotic heart disease (ASHD) and/or hypertensive cardiovascular disease (HCVD).

Sudden severe physical efforts, for example on a job, may precipitate acute CHF in patients with significant pre-existing heart disease. With discontinuance of the effort and with treatment, the CHF abates. This would be judged as temporary aggravation. With proper treatment such an individual may return to work similar to that which he was doing prior to the acute CHF.

Long-term repeated strenuous effort in some persons with significant underlying heart disease may result in the onset of CHF sooner than might have occurred without such effort expenditure. However, at the present state of medical knowledge, it is not possible to determine precisely when the CHF would have occurred during the natural history of the underlying disease or from the normal "wear and tear of life" (aging process) in the absence of the indicated physical stress. Even with the long-term physically induced CHF, the situation would be viewed as temporary aggravation of the underlying disease process (the latter of which, of course, would not be causally related to the strenuous efforts).

*Symptoms.* These are *subjective* manifestations of a disease process as expressed by a patient. The most common symptoms of heart disease are chest pain, palpitation, dyspnea, syncope, presyncope, and fatigue.

*Signs.* These are *objective* manifestations of a disease process as observed by a physician or other observer. Signs of heart disease are numerous and include changes in blood pressures, changes in heart rate and rhythm, noises from lungs (rales), heart murmurs, abnormal heart sounds, and a plethora of abnormal laboratory test results.

#### *Relevant Statistics*

There are a number of statistics which impact importantly on cardiovascular medicine, law, and sociology in the United States. These include the following:

1) Over 40 million people currently have some form of cardiovascular disease.

2) Over 25 million individuals are currently judged disabled due to cardiovascular diseases.

3) Cardiovascular diseases cause more than half of all the deaths in this country; more than all other causes of death combined (cancer, accidents, infections, etc.).

4) There are over 1 million deaths a year due to cardiovascular disease.

5) There are over 1 million myocardial infarctions a year in this country and more than 600,000 victims do not survive.

6) There are over 400,000 sudden and unexpected natural deaths in this country each year and over 95% of these are due to cardiovascular disease. In the large majority (perhaps over 95%) of the latter cases, no preceding initiating or precipitating event can be identified which caused the death (although in the great majority pre-existing cardiac disease is found at autopsy).

7) There are now approximately 100 million working individuals in this country.

In dealing with these statistics, it is important to realize that no one dies until the heart stops (cardiac arrest). For statistical purposes here the concept of "brain death" can be ignored. Obviously, if all deaths are then assigned to "cardiac arrest", little light is shed on mechanisms of death. Thus it is important to utilize the terms "primary cardiac death" and "secondary cardiac death." In the latter instance, for example, when a person dies of cancer or of a gun shot wound, the ultimate cardiac arrest is termed secondary. To the contrary, if the death is due to heart disease, the cardiac arrest is termed primary. In the latter group there are infrequent instances in which no cardiac disease or any other cause for death can be determined, even after careful autopsy study. This small group, then, would frequently be termed "sudden unexpected death due to cardiac arrest from unknown causes."

*Medical, Legal, Sociological, and Philosophical Interfaces*

In light of the statistics noted above, particularly that over half of all deaths are due to cardiovascular disease, one needs to ponder the following syllogism:

- (1) Stress is a medically recognized cause of cardiovascular disease, and since
- (2) there is no job entirely free of stress, therefore,
- (3)

over half of the individuals who ever worked will die because of their job.

Clearly the reasoning noted above is without scientific basis and illogical. The "usual stresses" of a job, at least for the good of society, cannot be judged as causally related to cardiovascular disease, especially for social or legal purposes. If this were allowed, the effects on society would be devastating. It would indicate further, for example, that of the 100 million individuals currently working in this country, over 50 million will die (at least in part) because of their job. These numbers are multiplied by the influx into (younger individuals) and the efflux out of (older and dying) this period.

Chronic atherosclerotic heart disease (ASHD) and other related cardiac disorders, as indicated above, are by far the most common underlying cause of death in this country. In the determination of causation in cardiovascular catastrophes (*e.g.*, myocardial infarction and/or cardiac death) relative to work activities, one needs to consider the following. In so doing, assume that a 100% "factor-effect" would need to be exceeded ("over the cliff" syndrome or "the straw that broke the camel's back") before the catastrophe would occur (*i.e.*, in spite of the existence of adverse influences the catastrophe would not result until a total effect exceeding 100% had developed). A few examples are as follows:

*Catastrophe occurring on the job (potential for adverse physical and/or emotional stress):*

- 1) Atherosclerotic heart disease 101% plus job stress 0% = 101%;
- 2) Atherosclerotic heart disease 99% plus job stress 2% = 101%;
- 3) Atherosclerotic heart disease 97% plus job stress 2% plus something else 2% = 101%;
- 4) Atherosclerotic heart disease 51% plus job stress 50% = 101%;
- 5) Job stress 51% plus atherosclerotic heart disease 50% = 101%;
- 6) Job stress 99% plus atherosclerotic heart disease 2% = 101%;
- 7) Job stress 97% plus atherosclerotic heart disease 2% plus something else 2% = 101%;
- 8) Job stress 101% plus atherosclerotic heart disease 0% = 101%.

Questions raised:

1) Would the catastrophe not have occurred had job stress (physical or emotional) not been present?

2) Would the catastrophe not have occurred had atherosclerotic heart disease not been present?

3) Would the catastrophe not have occurred had "some other" factor not been present?

In daily living away from employment, many events are rewarding and favorable for an individual's emotional and physical welfare. The same applies in the workplace. All events occurring on the job clearly cannot be viewed as adversely stressful and, indeed, some must be favorable and rewarding to the individual's emotional and physical welfare ("enjoy the job," "sense of fulfillment," "sense of pride," "job well done," "economic reward," "regular exercise," etc.). When these factors are placed in the above examples, even greater problems arise when attempting to determine causation. Thus, consider again:

*Catastrophe occurring on the job*

- 1) Atherosclerotic heart disease 120% with favorable job influence 19% = 101% (catastrophe occurred);
- 2) Atherosclerotic heart disease 120% with favorable job influence 21% = 99% (catastrophe did not occur).

Obviously, many more examples could be given. The relevant problem, however, in dealing with workers' compensation, is which of the above examples should be viewed as compensable?

The examples illustrate the problem for law in attempting to protect the individual on one hand and to prevent harm to society in general on the other. For the many reasons noted above, then, the "usual" activities involved in the performance of a job should not be judged as causally related to cardiovascular catastrophes even if those activities may be regarded as strenuous in comparison to nonemployment life.<sup>11</sup>

#### STATUTORY AND JUDICIAL BASIS FOR CARDIOVASCULAR CLAIMS

The statutory basis for workers' compensation in Louisiana provides:

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11. Further data on cardiovascular conditions is available in PHILLIPS, *The Heart and the Law: A Formula to Aid the Attorney in Establishing Causation*, 33 LA. B.J. 185-189 (1975); BURCH & PHILLIPS, *Angina Cerebri* (pts. 1 & 2), 80 AM. HEART J. 125, 268 (1970); AMERICAN HEART ASSOCIATION, REPORT OF THE COMMITTEE ON STRESS, STRAIN AND HEART DISEASE 825A-835A (1977); AMERICAN HEART ASSOCIATION, IMPACT OF ENVIRONMENT ON CARDIOVASCULAR DISEASE 242A-271A (1981).

If an employee not otherwise eliminated from the benefits of this Chapter, receives *personal injury by accident arising out of and in the course of his employment*, his employer shall pay compensation in the amounts, on the conditions and to the person or persons hereinafter designated.<sup>12</sup>

The workers' compensation act defines "accident" as "an unexpected or unforeseen event happening suddenly or violently, with or without human fault and producing at the time objective symptoms of an injury."<sup>13</sup> "Injury" includes "violence to the physical structure of the body."<sup>14</sup> Heart attacks have been recognized by the courts as personal injury by accident even though medical science may not necessarily view the cardiovascular event as "unexpected or unforeseen." Therefore, the issue is whether there must be an event which produces physical damage to the employee, or whether an accidental result is sufficient to satisfy the statutory requirements of "personal injury by accident." Louisiana has adopted the accidental *result* approach in defining a heart attack as an "injury by accident,"<sup>15</sup> a logical view of the term *accident* "if accidental content can be supplied by the unexpected effect on [an] individual."<sup>16</sup>

#### ARISING OUT OF EMPLOYMENT

An employee must show that the accident arose out of and was in the course of his employment in order to receive compensation benefits.<sup>17</sup> This requirement is consistent with the compensation principle.<sup>18</sup> The industry in which a worker is injured should bear the

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12. LA. R.S. 23:1031 (1950) (emphasis added).

13. LA. R.S. 23:1021(1) (1950 & Supp. 1975).

14. LA. R.S. 23:1021(6) (1950 & Supp. 1975).

15. Roussel v. Colonial Sugars Co., 318 So. 2d 37 (La. 1975); Leleux v. Lumbermen's Mutual Insurance, 318 So. 2d 15 (La. 1975); Ferguson v. HDE, Inc., 264 La. 204, 270 So. 2d 867 (1972); Bertrand v. Coal Operations Casualty Co., 253 La. 1115, 221 So. 2d 816 (1969).

16. Larson, *The Heart Attack Cases in Workmen's Compensation: An Analysis and Suggested Solution*, 65 MICH. L. REV. 441, 444 (1967).

17. LA. R.S. 23:1031 (1950).

18. Professors Malone and Johnson describe this principle as follows:

Workmen's compensation rests upon the sound economic principle that those persons who enjoy the product of a business—whether it be in the form of goods or services—should ultimately bear the cost of the injuries or deaths that are incident to the manufacture, preparation and distribution of the product. Certainly this has always been true with reference to the capital structures and the machinery and equipment necessary to process and distribute all industrial products. Expected wear and tear and breakage of every sort is anticipated by the producer and this cost is considered when he fixes the price of his commodity

cost of compensating the worker or his dependents. Of course, an injury which is not caused by the employment should not be charged to the employer. Courts must examine each claim to determine whether the accident arose out of and was in the course of the worker's employment. Malone and Johnson point out that the two requirements invite exploration in different directions:

The "during the course of" requirement suggests that the trier look into the place and time the accident occurred and what the worker was doing when he was injured, while the "arising out of" requirement focuses on the character of the risk that brought on the injury.

The requirement, then, is dual, and it must be satisfied *in toto*. It is not enough that the accident either happened during the course of employment or that it arise out of it. It must do both.<sup>19</sup>

The requirement that the accident occur during the course of employment does not present any problem in cardiovascular claims.<sup>20</sup> The real issue is whether the heart attack *arose out of* the employment. The "arising out of" issue presents little difficulty in most work accidents. In *Myers v. Louisiana Railway and Navigation Co.*,<sup>21</sup> the Louisiana Supreme Court presented a useful guide to determining whether an accident "arises out of" employment in most cases:

It ought to be sufficient that the nature of the employment was such that the risk from which the injury resulted was greater for the workman than for a person not engaged in the employment . . . .<sup>22</sup>

Application of the increased risk approach of *Myers* to cardiovascular claims, however, is inappropriate. Increased risk should not be the determinative factor in cardiovascular cases; there are innumerable other factors bearing on the "arising out of" issue.

or service. . . . The same should be true of the human wreckage that is involved in production. The expected costs of injury or death to workers can be anticipated and provided for in advance through the medium of insurance, and the premiums can be regarded as an item of production cost in fixing the price of the commodity or service.

W. MALONE & A. JOHNSON, WORKERS' COMPENSATION § 32 in 13 LOUISIANA CIVIL LAW TREATISE 38 (1980).

19. W. MALONE & A. JOHNSON, *supra* note 18, at § 144.

20. A few cases are decided on this issue alone. *See, e.g.*, *Barnes v. City of New Orleans*, 322 So. 2d 821 (La. App. 4th Cir. 1975), *cert. denied*, 325 So. 2d 584 (La. 1976) (symptoms at work but heart attack at home; recovery allowed).

21. 140 La. 937, 74 So. 256 (1917).

22. 140 La. at 945, 74 So. at 259.

## BURDEN OF PROOF AS TO CAUSATION

A noted rule in workers' compensation is that an employer must take a worker as he finds him.<sup>23</sup> Thus, an employee who is abnormally susceptible to injury, such as one suffering from arteriosclerosis, may still recover compensation if the burden of proof on the causation issue is met. The only question to be resolved in a heart attack case has been the amount of physical stress necessary to complete the causal link between job and heart attack. For many years, a heart attack was not regarded as "arising out of" employment unless there was either *strenuous* physical exertion or *some* physical exertion in a hot environment.<sup>24</sup>

Considerable confusion developed due to the Louisiana Supreme Court's opinion in *Bertrand v. Coal Operators Casualty Co.*<sup>25</sup> The confusion developed when *Ferguson v. HDE, Inc.*,<sup>26</sup> cited *Bertrand* for the proposition that performance of even usual and customary duties may be sufficient exertion to conclude that an accident "arose out of" employment. The confusion stems from the fact that the *Bertrand* opinion did not involve the "arising out of" issue; the worker was engaged in strenuous physical labor outdoors, fulfilling the then prevailing jurisprudential requirement. *Ferguson* involved a heart attack attributable to mental, rather than physical, stress. Further, the *Ferguson* court required proof of extraordinary mental or emotional stress to complete the causal link. Yet, the two decisions have been cited repeatedly for the proposition that only proof of usual and customary actions and exertions of employment are required to meet the burden of proof on causation.

Some of the cases citing *Bertrand* and *Ferguson* for that proposition involved factual situations supporting an award of compensation even under the older jurisprudential requirements. For example, in *Roussel v. Colonial Sugars Co.*,<sup>27</sup> the court noted the "strenuous activity" of the plaintiff before his myocardial infarction. Also, in *Leleux v. Lumbermen's Mutual Insurance Co.*,<sup>28</sup> the plaintiff suffered a cerebral vascular accident after engaging in strenuous physical activity.

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23. See, e.g., *Behan v. John B. Honor Co. Ltd.*, 143 La. 348, 78 So. 589 (1918).

24. See, e.g., *Bryan v. Employers Casualty Co.*, 111 So. 2d 161 (La. App. 2d Cir. 1959); *Sepulvado v. Mansfield Hardwood Lumber Co.*, 75 So. 2d 529 (La. App. 2d Cir. 1954).

25. 253 La. 1115, 221 So. 2d 816 (1968).

26. 270 So. 2d 867 (La. 1972).

27. 318 So. 2d 37 (La. 1975).

28. 318 So. 2d 15 (La. 1975).



However, this language also was relied upon by some appellate courts to award compensation in cases involving little or no strenuous activity. The most striking example is *Barnes v. City of New Orleans*.<sup>29</sup> The employee in *Barnes* was a clerical worker who experienced chest pains at work and died at home the next day. The decedent was found to have had atherosclerosis, dying as a result of a myocardial infarction. Though noting an absence of proof of any strenuous activity, the court concluded: "[O]ur employee's condition was such that the activity of doing not strenuous but ordinary work brought about his infarct and death (as indeed ordinary activity at home could have done). But the connection of work to the infarct is not any less present."<sup>30</sup>

*Adams v. New Orleans Public Service, Inc.*

A new standard was presented when the Louisiana Supreme Court released its original opinion in *Adams v. New Orleans Public Service, Inc.*<sup>31</sup> The plaintiff, an automobile mechanic for over thirty years, had been working for NOPSI for only three months when he began experiencing shortness of breath and chest pains while at work. One evening while working the night shift, he again experienced pains in the chest, nausea, profuse perspiration, and a "heavy smothering." Tests conducted at the hospital the following day revealed that plaintiff had suffered angina pectoris due to arteriosclerosis. Plaintiff was advised not to engage in any hard physical labor. The court acknowledged that the plaintiff was not subject to extraordinary stress or exertion at the time of the angina pectoris attacks. However, the court concluded that an angina pectoris attack is an "accident" and "the only pertinent inquiry is whether, in fact, the accident happened on the job." This holding left Louisiana with only a single test of compensability for "heart attack" cases: whether the "heart attack" happened at work. The court later rejected this test and developed a new standard.

The court of appeal in *Adams*<sup>32</sup> held that the plaintiff could not recover because no incident during plaintiff's employment *caused* his arteriosclerosis, or his disability resulting from the disease, because angina pectoris attacks are only *symptoms* of the disease. The supreme court rejected this rationale. Although the final opinion in *Adams* has not been released, the reasoning of the supreme court on this issue

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29. 322 So. 2d 821 (La. App. 4th Cir. 1975), *cert. denied*, 325 So. 2d 584 (La. 1976).

30. 322 So. 2d at 822.

31. \_\_\_\_ So. 2d \_\_\_\_ (La. 1982), *reh'g granted*, \_\_\_\_ So. 2d \_\_\_\_.

32. *Adams v. New Orleans Public Service, Inc.*, 395 So. 2d 470 (La. App. 4th Cir. 1981).

was not retracted in *Guidry*<sup>33</sup> or *Guillory*.<sup>34</sup> Indeed the reasoning in *Guillory* is almost identical to that in *Adams* on the causation issue. In *Adams*, the supreme court availed itself of the presumption first enunciated in *Bertrand*, that where there is proof of an accident and of a consequential disability, the accident caused the disability. The reasoning of the court in *Adams* was as follows:

- 1) "Accident" involves an examination of whether there is an accidental *result* or effect on the employee, rather than whether the disability had an accidental *cause*.
- 2) Thus, heart attack (and angina pectoris) is a compensable accident because it happens suddenly and unexpectedly and in the course of plaintiff's employment.
- 3) Following this "accident", the doctor advised the plaintiff that he should not engage in hard labor—that is, he is disabled from engaging in his prior occupation.
- 4) Thus, where there is proof of an accident and of a following disability without any intervening cause, it is *presumed* that the accident caused the disability.

The court thus ignored causation as a crucial element in the plaintiff's burden of proof.

#### *Guillory and the Bertrand Presumption*

The court of appeal's opinion in *Guillory*<sup>35</sup> was released before the original *Adams* opinion. The plaintiff was employed to excavate for concrete slabs using a pick and a shovel. At the end of the work day, he suddenly became dizzy, was short of breath, and fainted. A cardiologist diagnosed syncope (fainting) caused by aortic valve stenosis. (Stenosis reduces the flow of blood through the aortic valve. Physical exertion places greater demands on the heart for blood. An insufficient amount of blood reached plaintiff's brain, resulting in dizziness and fainting.)

The court of appeal noted that the attending physicians agreed that: (1) the fainting episode probably was causally related to the strenuous physical labor performed by the plaintiff, and (2) the plaintiff is now permanently and totally disabled. The court then applied the *Bertrand* presumption—when a job related "accident" and ensuing disability are proved, the disability is presumed to have been caus-

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33. *Guidry v. Sline Industrial Painters, Inc.*, \_\_\_ So. 2d \_\_\_ (La. 1982).

34. *Guillory v. United States Fidelity & Guaranty Co.*, \_\_\_ So. 2d \_\_\_ (La. 1982).

35. 401 So. 2d 543 (La. App. 3d Cir. 1981).

ed by the accident, absent an intervening cause. The court also noted that this presumption is rebuttable:

Applying these rules to the present case, we find a job related accident and disability were proved. Thus, it is presumed the accident caused the disability, there being no evidence of any intervening cause. This shifted the burden of proof to the defendant to rebut the presumption. We conclude that defendant has sustained this burden. The expert medical testimony is unanimous to the effect that plaintiff's aortic valve disease was not caused nor made worse by his work activities on December 15, 1978.<sup>36</sup>

The Louisiana Supreme Court reversed and also awarded penalties and attorney's fees to the plaintiff. The supreme court held that the defendant had not rebutted the presumption.

*Guillory* does not establish a new standard for heart attack cases, but it does reaffirm the *Bertrand* presumption. This is particularly important in cardiovascular claims in which the "accident" may be no more than a *symptom* of an underlying cardiovascular disease. In *Guillory*, the plaintiff experienced dizziness and fainting, symptoms of pre-existing aortic valve stenosis. Although the supreme court acknowledged that this condition "was not essentially different following the fainting incident than before the accident," the court nevertheless concluded that the plaintiff's subsequent disability was caused by the job "accident." Although the court's reasoning is somewhat confusing, it relies heavily upon the *Bertrand* presumption: the plaintiff was asymptomatic before the accident, was disabled after the "accident" and, therefore, the accident "caused" the disability. Such reasoning defies both logic and medicine. Logic calls this method of reasoning the inductive fallacy of false cause—*post hoc, ergo propter hoc*.<sup>37</sup> The fallacy is rooted in the assumption that because two events are circumstantially related to each other in time or place they are related also as cause and effect.

The court apparently has abandoned any effort to inquire as to whether the "accident" caused the disability. The importance of classifying an angina attack as an "injury by accident" is evident. The liberal statutory definition of "accident" leads the court to describe what medicine considers only a symptom of a diseased condition as the legal "cause" of that condition. Although three doctors testified that Guillory's pre-existing aortic valve disease was not aggravated

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36. *Id.* at 545.

37. Literally translated: "after this, therefore on account of this."

or made worse by fainting, which was only a symptom of the disease, the supreme court concluded that the disability was caused by the fainting spell:

The ultimate determination concerning disability under the worker's compensation statute is by the courts, not the medical experts. The courts apply legislative definition to the medical science in order to achieve an equitable and just result.<sup>38</sup>

The court apparently refused to believe the medical experts' opinions as to causation. The court also found that the defendant was arbitrary and capricious in refusing to pay compensation benefits and ordered him to pay penalties and the claimant's attorney fees. The holding means that plaintiff benefits from a presumption which permits him to avoid the often difficult task of proving medically a causal relationship between the "accident" and the disability; the employer may rebut the presumption but risks payment of penalties and attorney's fees if he is unsuccessful. The authors suggest that the *Bertrand* presumption be eliminated from Louisiana's workers' compensation law by statutory amendment.

*Guidry and a New Standard for Arising out of Employment*

As a result of the courts' recognition that any cardiovascular event (even a symptom) is an "accident by injury", and with the operation of the *Bertrand* presumption to complete the causal link between accident and disability, one question remains to be resolved: whether the accident "arose out of" the employment. In the original *Adams* opinion, the court suggested a standard which, in essence, would have resulted in absolute compensability for all cardiovascular catastrophes occurring at work: "Where an injury occurs suddenly or unexpectedly, it is compensable despite the absence of stress or exertion . . . the only pertinent inquiry is whether, in fact, the accident happened on the job."<sup>39</sup> The above standard was expressly rejected by the supreme court in *Guidry v. Sline Industrial Painters, Inc.*<sup>40</sup>

The deceased worker, Alcide Guidry, was a fifty-three year old industrial painter whose primary duty on the day of his heart attack was to stand on the ground near the bottom of a ladder being used by a co-worker to insure that the ladder did not slide. All witnesses testified that the deceased's duties did not entail any stress, strain

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38. \_\_\_\_ So. 2d at \_\_\_\_.

39. \_\_\_\_ So. 2d at \_\_\_\_.

40. \_\_\_\_ So. 2d \_\_\_\_ (La. 1982).

or other exertion. He made no complaints of chest pains nor showed any other signs of exertion. While sitting in a designated smoking area, smoking a cigarette and talking with the other workers, Guidry suffered a sudden heart attack which resulted in his death several weeks later.

Although there was some medical testimony to suggest a causal relationship between the attack and the deceased's work that day, the trial and appellate courts were more impressed with the testimony of the other medical experts who found no evidence of a causal relationship between the acute myocardial infarction and the decedent's employment. Despite this medical evidence, the court of appeal reluctantly deferred to the controlling authority of the Louisiana Supreme Court and its recent pronouncement in the original *Adams* case:

We agree with the trial court that, the preponderance of medical evidence is to the effect that the decedent's heart attack was neither caused nor precipitated by any activity in which he was engaged in the course of and during his employment. However, on September 28, 1981, after the instant case was decided by the trial judge, our Supreme Court rendered its decision in *Adams v. New Orleans Public Service, Inc.* . . . reversing the judgments of both the trial court and the Court of Appeal, Fourth Circuit, and awarding disability benefits for two attacks of angina pectoris which the plaintiff suffered while at work. . . . This court, of course, is obliged to follow and apply the law as interpreted by the Louisiana Supreme Court.<sup>41</sup>

In a footnote, the author of the *Guidry* appellate opinion expressed his belief that *Adams* was contrary to the "compensation principle": "The writer of this opinion disagrees strongly with the decision in the *Adams* case, believing that the majority opinion disregards the legislature's explicit intention that an employee's disability must be caused in some way by his employment in order for him to recover workmen's compensation benefits from that employer."<sup>42</sup>

The Louisiana Supreme Court affirmed the court of appeal judgment in favor of the plaintiff:

not for the reason relied upon by the Court of Appeal and espoused originally in *Adams* (that the accident happened on the job and nothing more is required) but rather for the reason that Guidry's

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41. 406 So. 2d at 304-05.

42. 406 So. 2d at 305, n. 1.

myocardial infarction both occurred on the job and was causally related in some measure to physical stress, strain or exertion of his job. . . . In achieving this result in the case under consideration, we expressly reject the following language in *Adams* on original hearing:

"Where an injury occurs suddenly or unexpectedly it is compensable despite the absence of any physical stress or exertion, and' [t]he only pertinent inquiry is whether, in fact, the accident [heart attack] happened on the job."<sup>43</sup>

The court reviewed the history of cardiovascular compensation claims and acknowledged the confusion created by the language in *Bertrand* and *Ferguson* that only the "usual and customary actions, exertions . . . of the employment" are required for an accident to be causally related to the employment. The *Guidry* court nevertheless asserted that the supreme court had never taken the position "that the absence of physical stress or exertion is of no moment," or that the occurrence of a heart attack on the job is the only relevant inquiry:

[I]n summary the jurisprudence of this court has been fairly liberal in linking ensuing disability to admitted work accident (for example, there is the *Bertrand* presumption of causal connection between accident and disability), and insofar as linking work accident to work stress and exertion without the necessity for a traumatic incident. But there has been in this court's jurisprudence no determination that there exists a presumption that a heart accident sustained at work is caused by the employment. Also, except for *Adams* on original hearing, the cases in this court have always required that there be some causal relation between employment and accident.<sup>44</sup>

The court specifically denied that Louisiana jurisprudence recognizes a presumption that a vascular accident occurring while at work is caused by the employment. "There must be a causal link between the employment, or the work, and the accident."<sup>45</sup> The court also reaffirmed that the plaintiff in a compensation case, as in other civil cases, has the burden of proving that causal link by a preponderance of the evidence:

This burden of plaintiff's is to show by a preponderance of the evidence that the work effort, stress or strain in reasonable probability contributed in some degree to the heart accident. Anything

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43. \_\_\_\_ So. 2d at \_\_\_\_.

44. *Id.* at \_\_\_\_.

45. *Id.* at \_\_\_\_.

less and it can hardly be said that the accident arose out of the employment or that the employment in any measure contributed to the accident.<sup>46</sup>

The importance of the *Guidry* decision is reflected in the following statement by the court:

If the physical exertion, stress, or strain on the job, and preceding the infarction, is no more than the worker would likely have experienced in a non-work situation, the attack may be the result of the natural progression of the pre-existing disease rather than the result of the employment activity.

This reality has led Professor Larson to suggest a rule which we draw upon to resolve this amorphous legal problem. *See generally*: 1B A. Larson, *Workmen's Compensation* Sec. 38.83, 7-233 (1980).

For the heart accident to arise out of or be connected with the employment, the exertion stress or strain, acting upon the *pre-existing* disease, must be of a degree greater than that generated in everyday non-employment life (e.g., as compared to the more or less sedentary life of the average non-worker).

In other words if the activities in which the worker with a pre-existing heart disease is engaged, whether for his job usual and customary or not, entail exertion, stress or strain greater than would be involved in everyday non-employment life and he experiences a heart accident, he has made a *prima facie* showing that the accident arose out of or was connected with, the employment.<sup>47</sup>

Since Louisiana apparently now has adopted the standard suggested by Larson, a review of that proposal may be useful.

While acknowledging the practical concern that heart cases and related types of injury and death will become uncontrollable unless some kind of arbitrary boundary is set, Professor Larson has rejected the "unusual strain" standard and proposed his own solution to this problem. Larson begins his proposal with a recognition of the fact that, "while limits must be put on heart liability, the essence of the problem is causation."<sup>48</sup> Causation is divided by Larson into two

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46. *Id.* at \_\_\_\_.

47. *Id.* at \_\_\_\_.

48. Larson, *supra* note 16, at 468-69.

distinct parts, the legal and the medical: "The *law* must define what kind of exertion satisfies the test of 'arising out of the employment' then the *doctors* must say whether the exertion which has been held legally sufficient to support compensation has in fact caused the heart attack."<sup>49</sup>

Larson's legal test for causation involves an examination of the worker's heart condition before employment. If the circumstances indicate that the claimant had a previously weakened or diseased heart, compensation for a heart attack would be available only if the employment contribution to the event is greater than that of nonemployment life. If there is no personal causal contribution (i.e., no prior weakness or disease), *any* exertion that is connected with employment and is, to any degree, medically connected with the collapse would be adequate to satisfy the *legal* test of causation. This part of Larson's proposal was also cited by the *Guidry* court, but whether this test will be applied to future cases remains to be seen. The medical aspect requires a showing that "whether or not there was prior personal weakness or disease, . . . *medically* the particular exertion contributed causally to the heart attack."<sup>50</sup>

Larson's standard has some attractive features. It does not employ a presumption to avoid the causation issue and the burden of proof remains with the plaintiff. His standard also recognized the inequity in placing the full economic burden on the employer where a worker has a history of cardiovascular disease and the work exertion preceding the heart attack is minimal. However, in an effort to create a universal standard, Larson uses a comparison between the particular employment exertion at issue with "the exertions present in the normal *nonemployment* life of this or any other person."<sup>51</sup> Larson has been critical of the "usual-unusual-strain" test because "the distinction assumes that there is a quantum of exertion or exposure in any occupation which is usual or normal—an assumption which is questionable at best, and certainly difficult to apply."<sup>52</sup> Nevertheless, it is not clear how Larson's standard will be any easier to apply.<sup>53</sup>

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49. *Id.* at 469.

50. *Id.* at 470.

51. *Id.*

52. A. LARSON, THE LAW OF WORKMEN'S COMPENSATION § 38.63 (1980).

53. To illustrate this standard, Larson presents two workers, X and Y. X normally lifts 200 pounds during the work day; Y does no lifting at all. On a particular day at work X lifts 200 pounds and suffers a heart attack. Y, also at work, lifts 15 pounds



Larson's proposal is preferable to prior Louisiana jurisprudence which recognized the compensability of a cardiovascular "accident" occurring at work even if there was *no exertion*. However, Larson's proposal is faulty in two respects. It also demonstrates the fallacious belief that strenuous labor has a long-term detrimental effect on the cardiovascular system.

Larson seeks to examine particular job stress, but does not examine that stress as it relates to a *particular individual*. Individuals are able to accommodate themselves over a period of time to physical stresses.<sup>54</sup> In addition, individuals react differently to emotional stresses.<sup>55</sup> Therefore, it is necessary to place the numerators (*e.g.*, stress) with their denominators (reactivity of the individual). To consider only if the exertion is the type that is present in the "normal nonemployment life of this or any other person" is to ignore medical realities.

Larson's proposal also assumes that where there is no history of cardiovascular disease, any exertion producing heart failure should be compensable. He recognizes that doctors may say that there must have been such a history, on the theory that a healthy heart could not have given way under the particular exertion. Cardiologists maintain that where there is altered function in an organ, one would also expect to find altered structure even if there were no apparent symptoms.<sup>56</sup> Larson's response is a suggestion that the party alleging the existence of a prior heart condition should have the burden of proving an altered structure. The practical effect of Larson's suggestion is an irrebuttable presumption against the employer because he does not have the discovery tools necessary to present a defense (*e.g.*,

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and suffers a heart attack. Larson states that, under the usual-unusual strain test, X would not recover compensation because this activity was not unusual for this particular worker. However, he suggests that, using this test for Y, there would be recovery because lifting 15 pounds would be regarded as unusual for this particular worker. Larson also suggests that X would meet the legal test for causation because lifting 200 pounds is not an exertion present in normal nonemployment life of this or any other person; Y would not meet the test if he had personal risks that contributed to his heart attack because lifting 15 pounds is something to be expected in normal nonemployment life. But if Y had no prior history of heart disease, compensation would be awarded since the employment contributed something to the employee's collapse and his personal life contributed nothing. See A. LARSON, *supra* note 53, at 470.

54. See text at pages 19-20, *supra*.

55. Medical studies to quantitate individual responses to stress, such as those being conducted by Dr. Robert Elliot of the University of Nebraska, are currently in progress.

56. See text at pages 19-25, *supra*.

compulsory autopsy).<sup>57</sup> Thus, Larson's suggestion produces the same erroneous result as the *Adams* court's reasoning.

#### AN ALTERNATIVE PROPOSAL

Medically, the term "cause" may be considered as that activity or agent without which a condition would not have appeared.<sup>58</sup> To philosophers of metaphysics, a cause must not only be sufficient for the occurrence of an event, but also necessary: X is only the cause of Y if X is always followed by Y, and also Y never occurs unless X has occurred.<sup>59</sup> The "common-sense" notion views a cause as essentially something which intervenes in the normal course of events.<sup>60</sup>

In adopting a particular concept of causation in law, one is required to go beyond a metaphysical inquiry. The legislator or judge is faced with the question of public policy. In drafting the various compensation acts of the states, legislatures placed a legal obligation upon every employer for all injuries, diseases, or deaths which are associated with that particular employment. This obligation exists even if the employer is without fault. The sole criterion is a showing that the injury, disease, or death was causally connected with the employment.

The unresolved issue in Louisiana is how to approach the case in which a workman's pre-existing heart disease has advanced to the extent that any strain, or some other incident of employment, becomes

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57. Larson recognized the difficulty of this burden of proof and suggested that more frequent use of autopsies "may be justified in cases in which this issue can be foreseen." Larson, *supra* note 16, at 473.

Several states have incorporated provisions for the use of autopsies in compensation cases where cause of death is an issue. Georgia permits this practice, but provides no penalty for refusing to permit an autopsy. GA. CODE ANN. §§ 114-503 (Supp. 1931). In *Employees Mutual Liability Ins. Co. v. Carson*, 111 S.E.2d 918 (Ga. Ct. App. 2d Div. 1959), the court refused to withhold benefits for refusal to permit an autopsy because the statute did not permit such action. Without some enforcement mechanism the autopsy provisions are meaningless.

Other states which have authorized autopsies are: ALASKA STAT. § 23:30.95(e) (Supp. 1981); IDAHO CODE § 72-449 (1973); IND. CODE ANN. § 22-3-3-6 (West 1982); MASS. ANN. LAWS ch. 38, § 6 (Michie/Law. Co-op. 1982) (autopsies in "work-related" deaths); MINN. STAT. ANN. § 176:155.64 (West 1981); MO. ANN. STAT. § 287.210 (Vernon 1981); NEB. REV. STAT. § 48-135 (1978); S.D. CODIFIED LAWS ANN. § 62-8-41 (1978); TEX. REV. CIV. STAT. ANN. art. 8307 sec. 14 (Vernon 1967).

58. AMERICAN HEART ASSOCIATION, REPORT OF THE COMMITTEE ON STRESS, STRAIN AND HEART DISEASE, 1976.

59. See H. HART & A. HONORE, CAUSATION IN THE LAW 18 (1959).

60. *Id.* at 27.

the "final straw" which precipitates a heart attack. Most physicians will agree that various facets of a workman's job can bring an advanced stage of heart disease to its climax. The policy question is at what point, for compensation purposes, shall the element of work-connection be viewed as *de minimis* and the cardiac disability held to be merely coincidental with, rather than "caused" by, the work-connected event?

Professor McNiece has stated:

A basic issue which underlies much of the controversy surrounding possible solutions to the cardiac problem is whether cardiac disorders and their effects among the working class truly present a question of industrial injury, or whether in reality, they represent a broad public health problem with only a peripheral relationship to workmen's compensation.<sup>61</sup>

The *Guidry* standard will have the effect of finding all but perhaps office and sedentary employment to be sufficiently stressful to present a prima facie case for the plaintiff that the heart attack arose out of the employment. Although this standard is certainly preferable to that of the original *Adams* opinion, it is not supported by medical evidence and should be overruled by a legislatively-created standard.

One such standard was adopted by the Nevada Legislature in its definition of "injury by accident": "[F]or the purposes of this chapter, coronary thrombosis, coronary occlusion, or any other ailment or disorder of the heart, and any death or disability ensuing therefrom, shall not be deemed to be an *injury by accident* sustained arising out of and in the course of the employment."<sup>62</sup> The definition expresses the Nevada Legislature's dissatisfaction with any standard, even one that requires a showing of unusual stress or strain, for heart claims.

Many states have allowed their judiciary to adopt either the "usual strain" standard or the requirement of "unusual strain." Others have incorporated into their workers' compensation statute a particular standard to be applied in cardiovascular claims. Arizona, for example, has a special provision for heart-related claims:

A heart-related or perivascular injury, illness or death shall not be considered a personal injury by accident arising out of and in the course of employment and is not compensable pursuant to this chapter unless some injury, stress or exertion related to the

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61. H. MCNIECE, HEART DISEASE AND THE LAW 110 (1961).

62. NEV. REV. STAT. § 616.110 (1979) (emphasis added).

employment was a *substantial contributing cause* of the heart-related or perivascular injury, illness or death.<sup>63</sup>

Colorado presents the following test in its statute: "'Accident,' 'injury,' and 'occupational diseases' shall not be construed to include disability or death caused by heart attack unless it is shown by competent evidence that such heart attack was proximately caused by an *unusual exertion* arising out of and within the course of the employment."<sup>64</sup> Similar provisions are found in the state compensation statutes of Kansas,<sup>65</sup> Michigan,<sup>66</sup> New Jersey,<sup>67</sup> and North Dakota.<sup>68</sup> While not pronouncing a standard for heart claims, the statutes of Mississippi<sup>69</sup> and Nebraska<sup>70</sup> do express a rejection of any presumption that the occurrence of a heart attack at work is causally related to the employment.

The present Louisiana jurisprudence, if not substantially altered

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63. ARIZ. REV. STAT. ANN. § 23.1043.01 (Supp. 1980) (emphasis added).

64. COLO. REV. STAT. § 8-41-108 (Supp. 1981) (emphasis added).

65. KAN. STAT. ANN. § 44-501 (1981) provides: "Compensation shall not be paid in case of coronary or coronary artery disease or cerebrovascular injury unless it is shown that the exertion of the work necessary to precipitate the disability was more than the employee's usual work in the course of the employee's regular employment."

66. MICH. STAT. ANN. § 17.237 (401) provides: "Mental disabilities and conditions of the aging process, including but not limited to heart and cardiovascular conditions, shall be compensable if contributed to or aggravated or accelerated by the employment in a significant manner."

67. N.J. STAT. ANN. § 34:15-7.2 (West 1981) provides:

In any claim for compensation for injury or death from cardiovascular or cerebral vascular causes, the claimant shall prove by a preponderance of the credible evidence that the injury or death was produced by the work effort or strain involving a substantial condition, event or happening in excess of the wear and tear of the claimant's daily living in reasonable medical probability caused in a material degree the cardiovascular or cerebral vascular injury or death resulting therefrom.

68. N.D. CENT. CODE § 65-01-02 (Supp. 1981) provides: "If an injury is due to heart attack or stroke, such heart attack or stroke must be causally related to the worker's employment, with reasonable medical certainty, and must have been precipitated by unusual stress."

69. MISS. CODE ANN. § 287.020 (19 ) provides:

The said terms shall in no case except as herein provided be construed to include occupational disease in any form, . . . nor shall they include death due to natural causes occurring while the workman is at work.

70. NEB. REV. STAT. § 48-151 (1978) provides:

The terms [injury and personal injury] shall not be construed to include disability or death due to natural causes but occurring while the employee is at work, nor to mean an injury, disability or death that is the result of a natural progression of any pre-existing condition.

by the supreme court in the final *Adams* opinion, should be overruled by legislative enactment. A standard similar to that of Arizona or Colorado would be in keeping with the compensation principle and would more closely reflect the true medical relationship between employment and cardiovascular catastrophes. A job stress should be *unusual* before the responsibility for a resulting heart attack is placed on the employer. It should be a stress that is severe, unexpected and unaccustomed. Further, public policy (*i.e.*, limiting the financial cost of doing business in this state) demands that a rational standard in the administration of cardiovascular compensation claims be established. The financial cost of these claims is staggering in comparison to all other types of compensation claims. To suggest that we should define cardiovascular events as "accidents" and impose a series of presumptions to bring almost all cardiovascular catastrophes into the compensation system is to ignore the scientific laws of causation and discourage industrial development in this state. The allocation of responsibility for these events is clearly a task for the legislative branch of our government, and legislative initiative is clearly needed in this area of our workers' compensation law.