

## ATTACKING HEART DISEASE IN SUFFOLK COUNTY<sup>1</sup>

“Suffolk County is experiencing elevated cardiovascular disease mortality relative to New York State,” explained Dr. Humayun Chaudhry, Commissioner for the Department of Health Services of Suffolk County. “It has been difficult to get public attention focused on this issue, even though heart disease is far more prevalent than cancer, which tends to get more attention here. We don’t understand why our cardiac death rates are higher than state or national averages.... But we can’t be satisfied with the status quo.”

In 2005, the age-adjusted mortality rate from cardiovascular diseases for Suffolk County residents ranked 13<sup>th</sup> worst among the state’s 62 counties, worse than even its next-door neighbor, Nassau County. Although both counties experienced a steady decline in the average mortality rate over the previous five years, the state rate had declined faster. In 1999, Suffolk County’s age-adjusted cardiovascular mortality rate per 100,000 residents was 368.3, roughly at the state average of 366.7, while Nassau’s was slightly higher at 372.8. However, between 2000 and 2005, Suffolk County mortality rates per 100,000 dropped only to 308.6, while the state average dropped to 285.0, and the Nassau County rate dropped to 287.8.

Both Suffolk and Nassau counties, which divide Long Island, New York (east and west respectively) have high proportions of affluent and well-educated residents. A number of communities in western Suffolk were ranked among ‘America’s 250 Richest Towns’ by *Worth* magazine in 2002 and, in 2006, six of its postal zip codes were identified in the group of 110 most expensive by *Forbes* magazine. In 2004, *Forbes* Magazine ranked Long Island 1st for having the lowest crime rate out of 150 cosmopolitan areas, 8<sup>th</sup> best in culture and leisure, 7<sup>th</sup> highest in cost of living and 39<sup>th</sup> best overall in terms of quality of life.

“This is a paradoxical situation,” continued Dr. Chaudhry. “We need to determine strategies to address this high priority health issue for our county.”

### Suffolk County

The first European settlers arrived in the Suffolk County region in 1614. In 1683, Suffolk was incorporated as one of the twelve original counties in the state of New York. Presently, it is one of 62 counties in the state. Located on Long Island, to the east of New York City, Suffolk County covers 912 square miles, with 10 townships and 32 incorporated villages. It is bordered by Nassau County to the west, the Atlantic Ocean to the south and east, and Long Island Sound to the north.

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<sup>1</sup> © 2008 by the President and Fellows of Harvard College. This case was prepared by Professor Nancy M. Kane and Shehnaz Alidina, MPH, Harvard School of Public Health, as the basis for class discussion and education rather than to illustrate either effective or ineffective handling of an administrative or public health situation.

In 2007, Suffolk County had an estimated population of 1,453,229 people. Suffolk's population density was 1,611 persons per square mile, quite rural in comparison to its neighboring county, Nassau, with a 2007 estimated population of 1,306,533 living in 278 square miles, with a population density of 4,691 persons per square mile. The primary mode of within-county transportation was by private car; train service most commonly brought commuters and vacationers from New York City; however, most residents did not commute into the city. Bus service within the county was infrequent and some areas lacked any bus service.

Ninety one percent (91%) of Suffolk County's population lived in five western townships, including Huntington, Babylon, Smithtown, Islip and Brookhaven, which collectively covered 61% of the land mass. The remaining 9% of the population lived in East Hampton, Southampton, Riverhead, Shelter Island, and Southold. A large part of eastern Suffolk County was made up of farms and vineyards. See Exhibit 1 for a map of Suffolk County.

Suffolk had a diversified economy. In 2005, more than one-fifth of all jobs were in trade, transportation, and utilities sectors, with retail trade accounting for almost 60% of these jobs. Suffolk County's government provided almost 17% of all jobs. Manufacturing provided nearly 10% of Suffolk's jobs, with computer and electronic products and chemicals (primarily pharmaceuticals) together accounting for over one-third of manufacturing jobs. It was also a major center for tourism, especially in the area known as the East End, including the Hamptons and Montauk.

The county's health care system included one state-run hospital and 10 private not-for-profit community hospitals of varying sizes, as well as 11 community health centers owned by the Suffolk County Department of Health Services. These community health centers were operated, in part, by some of the hospitals, and they delivered primary and perinatal care to 80,000 residents, who were seen in 2007 during 330,000 patient care visits.

Suffolk's greatest population growth came between 1950 and 1970, when the county's population quadrupled. However, in more recent years, population growth slowed; from 1990 to 2000 population grew by 7.4%; over that time, the white population decreased by 1%, the black population increased by 19% and the Hispanic population increased by 70%. The growth in the Hispanic population was largely made up of migrant and seasonal farm workers (MSFWs), many working in the farms and vineyards of eastern Suffolk County. It was estimated that 90% of them were uninsured, and 100% of them spoke Spanish as their primary language. See Table 1 for a demographic profile of the various townships as of 2000.

Between 2000-2006, overall population grew by only 3.5%, although out-migration was greater than in-migration. Most of the migration into the county over the last seven years came from citizens of countries other than the U.S. As of 2006, 7.8% of the population was black, 13% was of Hispanic origin, and 75% was non-Hispanic white.

As of 2007-2008, thirteen percent of Suffolk's population was uninsured. Racial groups were disproportionately represented in this figure, with blacks representing 16% of the uninsured population and Hispanics representing 24% of the uninsured population.

### **Health Care in Suffolk County**

Suffolk County had one university-type teaching hospital, the Stony Brook University Medical Center (SBUMC) which provided acute, chronic and emergency care. The county was also home to ten other acute care community hospitals, four of which (besides SBUMC) had the facilities necessary to perform emergency coronary angioplasties. The Eastern Long Island Health Referral Region,<sup>2</sup> which included both Suffolk and Nassau counties, was rated in the 70<sup>th</sup> percentile (high rate) nationally for the rate of acute myocardial infarction (heart attack) discharges among Medicare beneficiaries, and in the 69<sup>th</sup> percentile for the rate of inpatient coronary angiographies; however, it had a relatively low rate of inpatient coronary artery bypass grafts, in the 30<sup>th</sup> percentile nationally (2005 data). Table 2 shows the quality metrics of the eleven Suffolk County hospitals for heart attack care of Medicare beneficiaries in 2006.

There were 1,562 physicians in Suffolk County, of whom 722 were in primary care, including 164 in Family Practice, 282 in Internal Medicine, 155 in Pediatrics, and 121 in OB-GYN. An increasing number of physicians did not accept Medicaid-insured patients as the state paid very low rates for office visits; Medicaid was a federal-state program insuring low-income populations, and was administered by states. Medicaid rates were expected to rise in 2009 as the state agreed to pay rates similar to those paid by Medicare, the federal program covering people over 65; but some physicians did not accept new Medicare patients either, due to payment rates that were lower than those provided by private insurers.

The Emergency Medical Response System (EMS) in Suffolk was provided through 99 individually run volunteer fire departments or ambulance improvement districts, each with its own policies for staffing, operations and dispatch/response times. Eighty three of them operated at the Advanced Life Support Level, and 63 had the capability of providing 12-lead EKG's in the field, which enabled prompt diagnosis and the start of definitive care of an acute heart attack while in transit. In 2005, the annual call volume in Suffolk was approximately 109,000 and had increased by about 8,000 calls (approximately 8%) each year for the last four years. Roughly 1,000 out-of-hospital cardiac arrests occurred per year.

### **Suffolk County Department of Health Services**

Suffolk County Department of Health Services (SCDHS) was the second largest county health department in New York State, after New York City. In 2008, it had 1,500

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<sup>2</sup> As defined in the Dartmouth Atlas, see [http://www.dartmouthatlas.org/data\\_tools.shtml](http://www.dartmouthatlas.org/data_tools.shtml); at the time of this case, there were 306 health referral regions in the U.S.

employees and a budget of \$436 million. Its mission was “to educate and work with the public in a cooperative manner to promote health and wellness in order to prevent disease, to protect the public’s health, safety and environment, both proactively and reactively by utilizing best practices, and to actively provide high quality, equitable, and affordable health services that were culturally and linguistically appropriate.”

Dr. Chaudhry was appointed Commissioner for the SCDHS in March 2007. An internist by training, Dr. Chaudhry earned his medical degree from the New York College of Osteopathic Medicine at the New York Institute of Technology and a Master’s degree in Health Care Management from the Harvard School of Public Health. From 1996 to 2001, he served as the Director of Medical Education of Long Beach Medical Center, New York, and from 2001 to 2007, he served as Chair of the Department of Medicine and Assistant Dean for Health Policy at the New York College of Osteopathic Medicine. In 2004, he published a textbook on the fundamentals of clinical medicine.

In taking on his position as the new Commissioner, Dr. Chaudhry remarked to the Health and Human Services committee of the Suffolk County legislature,

*My personal vision for the department is a straightforward one, to be the best County Department of Health in the United States. We are already the ninth largest County Department of Health in the nation by size and by budget; there is absolutely no reason why we cannot also be the best in the delivery of quality health care, in our preparedness for any public health threat, and in our commitment, collectively as well as individually, to compassion and to humanism.<sup>3</sup>*

The Suffolk County Board of Health included seven members and was chaired by Dr. Chaudhry. Other members included the Chair of the Health Committee of the Suffolk County legislature and three other physicians. The Board of Health was governed by the Public Health Law and State Sanitary Code which gave the board the power to adopt, change or repeal rules and regulations affecting public health and to consider any matters related to the preservation and improvement of public health in the county.

The SCDHS provided both public health and patient care services. Its ten divisions included: public health, patient care services, emergency medical care services, preventive medicine, environmental quality, community mental health hygiene, office of the medical examiner, children with special needs, the Suffolk Health Plan (a health plan enrolling Medicaid, and low-income children and adults otherwise not eligible for Medicaid) and a 264-bed skilled nursing facility (nursing home). It also had a jail medical unit, an office of health education and an office of minority health. See Exhibit 2 for an overview of the services provided by the county.

SCDHS operated 11 health centers which served approximately 80,000 mostly uninsured patients annually with 330,000 patient encounters. The patients were largely young families, but some chronically ill patients came to the centers as well. Services were

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<sup>3</sup> Minutes of the Health and Human Services Committee of the Suffolk County Legislature, March 15, 2007

provided on a sliding fee scale, with the average patient payment of between \$15-\$18 dollars for all services involved in a visit. Nine centers provided limited evening services during the week and three sites were open either Saturday or Sunday. Seven of the facilities had contracts for specialty services with local hospitals; however, waiting time for specialists at the hospitals was often months from the initial referral time. The centers did not provide free medications, although they assisted patients in applying for pharmaceutical assistance programs. Exhibit 3 provides an overview of the health center facilities and provider staff.

## **Cardiovascular Disease in Suffolk County**

Cardiovascular disease (CVD), which was defined as any disease of the circulatory system, was a leading cause of death, illness and disability, both in the U.S. and more globally. The broad category of CVD included coronary heart disease (CHD, including heart attack), stroke, congestive heart failure, and other diseases of the heart and coronary arteries. Once considered an affliction of the western world, cardiovascular disease was now the leading cause of death in middle-income countries and the second leading cause of death in low-income countries. It imposed significant direct and indirect costs on those with the disease, their families, and the society that ultimately paid for the care.

Forty-five percent of all deaths in New York State were caused by CVD, which was almost twice as many deaths as the next leading cause, cancer. For every death due to CVD, there were five hospitalizations, and almost 18 people were living with one of these heart-related conditions. Total costs of CVD in New York State were estimated at close to \$16 billion in 2002, including \$9.7 billion in direct costs and another \$6.3 billion in lost productivity.

The largest subcategory of CVD, CHD (including heart attack) was the number one killer in the state, and was responsible for just over half of the direct costs, and three-quarters of the indirect costs of CVD. In Suffolk County, the 2002 direct and indirect cost of cardiovascular disease was just over \$1 billion, with \$659 million of that incurred by CHD. CHD is observed in all but the youngest age groups, and was the number one cause of death for those ages 55-64, the third leading cause for ages 45 – 54, and the fourth for ages 35-44.

Another CVD subcategory, congestive heart failure (CHF), is a condition in which the heart loses its ability to pump blood effectively, and is the end stage of many forms of heart disease. CHF accounted for 2% of all deaths in New York, and death rates increase dramatically with age. For every death due to CHF, there were 22 hospitalizations.

## Exploring the Possible Causes for Elevated Cardiovascular Disease Mortality in Suffolk County

Elevated death rates from heart disease in New York State have been documented for decades; even suburban areas of the state had worse death rates than in 42 other states. Dr. Lorna Thorpe, state Deputy Commissioner of Health, commented, "Heart disease is high compared to the national average, and the first thing you do as an epidemiologist is to ask, is it real? I don't see strong evidence that we have more risk factors. But that said, New York is a unique living environment." Dr. George Howard, a researcher at the University of Alabama at Birmingham expressed, "It really is a head-scratcher. This is something we should be embarrassed that we don't know."<sup>i</sup>

That perplexity carried over to the local scene in Suffolk County, where death from heart disease was even higher than that of the state. Dr. Alan Guerici, Chief Executive of St. Francis Hospital in Nassau County, where many Suffolk County residents went for cardiac surgery, commented,

*Suffolk is three times the size of Nassau with a slightly larger population, but many of its demographics are similar. Both are affluent and well educated, which usually correlate with favorable health behaviors. I've never understood it. And we know we have good cardiac surgery. It doesn't add up.*<sup>ii</sup>

In speculating over the reasons for the even higher cardiovascular death rates in Suffolk, Dr. Chaudhry had received a variety of ideas from constituencies in the county, including clinicians, and from the professional literature.

- Lack of public awareness of the signs and symptoms of a heart attack: Dr. Chaudhry had recently read a research article concluding that many people did not recognize the signs and symptoms of heart disease, even after having suffered from coronary symptoms for which they saw a doctor.<sup>iii</sup>
- Disadvantaged neighborhoods: Other research Dr. Chaudhry had read found that, even after controlling for personal income, education, and occupation, living in a disadvantaged neighborhood was associated with an increased incidence of coronary heart disease.<sup>iv</sup>
- Access to care: While Nassau had 4 hospitals with full cardiac capabilities, Suffolk County only had one university teaching hospital with a full range of cardiac services; four other Suffolk hospitals provided emergency angioplasties. Depending on where in the county a resident experienced a heart attack, it could take as long as 90 minutes to get to a hospital with angioplasty capabilities. The vast majority (90%) of Nassau residents received heart surgery within the county, while only 47% of Suffolk residents received cardiac surgery within Suffolk County. In 2005, Nassau County hospitals did five times more angioplasties than did hospitals in Suffolk County. Suffolk also had many fewer specialists in cardiovascular diseases (133) compared to Nassau (263).

- Poor medical practice: Dr. Chaudhry noted that in New York State, physicians were not required to participate in continuing medical education (CME) unless the hospital required it, and the medical literature showed less than 100% clinical compliance of nationally-accepted guidelines about the best means of primary and secondary prevention of coronary heart disease. Dr. Chaudhry was concerned that many primary care practitioners not formally affiliated with hospitals for admitting privileges were not required to maintain annual CME credits and, consequently, perhaps were not staying up-to-date on the latest medical findings.
- Patient compliance with prescribed statins and blood pressure medicine: Recent national research suggested that only half of patients were taking statins at 6 months after their initial prescription, and only 30% to 40% were taking them at one year. Women and people of low socioeconomic status were less likely to be adherent.<sup>v</sup> More than 40% of treated hypertensives in the U.S. did not have their blood pressure under control, partly due to noncompliance with prescribed medication; between 32% and 53% of newly treated patients stop taking their medication within one year.<sup>vi</sup> More locally, the Suffolk Health Plan, sponsored by the county for low-income beneficiaries, did not achieve good “grades” on chronic care compliance issues.
- Air quality: Research over the last decade has shown that people living in communities with elevated concentrations of fine particulate air pollution experienced elevated cardiovascular disease and mortality. The mechanisms by which air pollution influenced the risk of CVD was still under investigation.<sup>vii</sup> Ambient air quality in Suffolk County was measured on an ongoing basis at five air monitoring sites spread across the county. One of the five, located in the middle of the western half of the county, did continuous monitoring of fine (2.5 micron) particulate matter, while all five monitored ozone levels and certain other air pollutants.

Major sources of fine particulate air pollution in Suffolk County included road dust from paved and unpaved roads, and diesel fuel, which generated the bulk of the almost 23 tons of fine particulate pollution<sup>4</sup> generated each year in the county. Industrial processes generated most of the rest. Particulate matter is made up of a number of components, including acids (such as nitrates and sulfates) and allergens such as mold spores or pollen fragments.

- Selected reader responses to local news about the elevated rate of cardiovascular mortality in Suffolk County are below<sup>viii</sup>:

*Instead of looking at the density of hospitals in Suffolk county, ..[we]should look at the density of McDonalds, Burger Kings and Wendy's restaurants. Early "suggestions" are naive. Aren't we constantly told that life style (i.e. diet and exercise) is the major factor right after genetics? So, how are people in Suffolk*

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<sup>4</sup> Pollution with particles that are 10 microns or smaller, of which roughly 4 tons/year were 2.5 microns or smaller.

*living, eating and exercising? Perhaps a big negative by-product of such an "affluent" society is that we "biggie size" our deep fried life and feel compelled to drive our SUV to the end of the block to drop the kids at the bus stop....*

*It's because people's hearts can't take the strain from looking at their tax bills.*

*People move to Suffolk into their homes and sit inside watching their TVs in air conditioning, nobody's outside because of cold or heat, humidity or mosquitoes.*

*This is couch potato country! Walking is not encouraged. There are no sidewalks. Walking on road sides is "high risk" due to speeding drivers. Suburbia was not designed for "health", perhaps for home equity. Developers were not forced to build sidewalks or parks for people to walk for exercise! Doctors don't need a bazillion dollar study to find out that Couch Potato Country won't change anytime soon. And heart disease will continue to rise in Suffolk and nearby in suburbia – the longtime creation of developers, auto makers and gasoline industry. Lots of profits for them, lots of heart disease for us!*

### **Suffolk County Task Force**

In order to address the problem of elevated heart disease in Suffolk County, a task force was initiated by Dr. Chaudhry in February of 2008. The mission of this group was “to stop heart disease progression by educating the residents and health care providers of Suffolk County to prevent, screen, diagnose and treat this disease.” The task force, named “HEART” (the acronym stood for “Heart Education Awareness and Resources Task Force”), was chaired by Dr. Chaudhry and its membership included practitioners from the fields of internal medicine, preventive medicine, public health, cardiology, family medicine, vascular surgery, cardiac electrophysiology, emergency medicine, and a nurse practitioner (see Exhibit 4 for the participants and their professional backgrounds/affiliations).

They had a number of intervention models to start with, including initiatives developed by the American Hospital Association (AHA), and the Centers for Disease Control and Prevention (CDC). The *AHA Mission: Lifeline Initiative* was announced by the American Heart Association in 2007, “to improve the quality of care and outcomes in heart attack patients” by improving the “health care system readiness and response to ST-elevated myocardial infarction... patients.”<sup>ix</sup> The *Mission:Lifeline* program had four components:

- 1) Public education to improve understanding of the signs and symptoms of a heart attack and the need to activate the EMS response system in a timely manner through 911.
- 2) Improving EMS diagnosis of (heart attacks) by ensuring that EMS in the field are equipped with 12-lead EKGs and trained staff to diagnose a patient who is having a heart attack. It also includes activating the receiving hospital's catheterization



lab so that the patient can be brought directly there, instead of to the emergency room.

- 3) Quick, efficient transfer to hospitals equipped with cardiac catheterization teams.
- 4) Hospital incentives and certification to provide this care.

The *U.S. Department of Health and Human Services' Healthy People 2010* agenda seeks to “improve cardiovascular health and quality of life through the prevention, detection, and treatment of risk factors; early identification and treatment of heart attacks and strokes; and prevention of recurrent cardiovascular events.”<sup>x</sup> Four objectives have been established to address this goal:

- Primary prevention of heart disease and stroke by addressing risk factors, such as high blood pressure, cigarette smoking, high blood cholesterol, overweight, physical inactivity, and diabetes through life-style interventions.
- Screening for risk factors to identify individuals who are undiagnosed and need to be referred to ongoing care, including pharmacologic therapy.
- Early identification and treatment of cardiovascular disease, particularly during the acute phase.
- Prevention of the recurrence and complications of heart disease and stroke.

## Closing

The Suffolk County DHS biostatistician, Ed Nadel PhD, commented, “We don’t have much data to help us understand our elevated cardiac morbidity. Most people are basing their assumptions on the mortality data on cardiovascular disease and more specifically on cerebrovascular mortality. But that is pretty volatile from year to year.”

Dr. K. Aletha Maybank MPH, Director of the Office of Minority Health added, “The data does not present the various ethnic subpopulations of the county. We have to go on assumptions because most data on mortality are not at the level we need for our heterogeneous community. The low income population in Suffolk is in mixed-income neighborhoods. Our image is that Suffolk County is ‘the Hamptons’ (a wealthy summer community) which does not raise a lot of sympathy in the state or at the CDC.”

She continued, “We’ve had a big influx of migrant workers, and many use our health centers. We don’t require a personal ID, which is important for them. Along with the language barriers, though, this complicates data collection.”

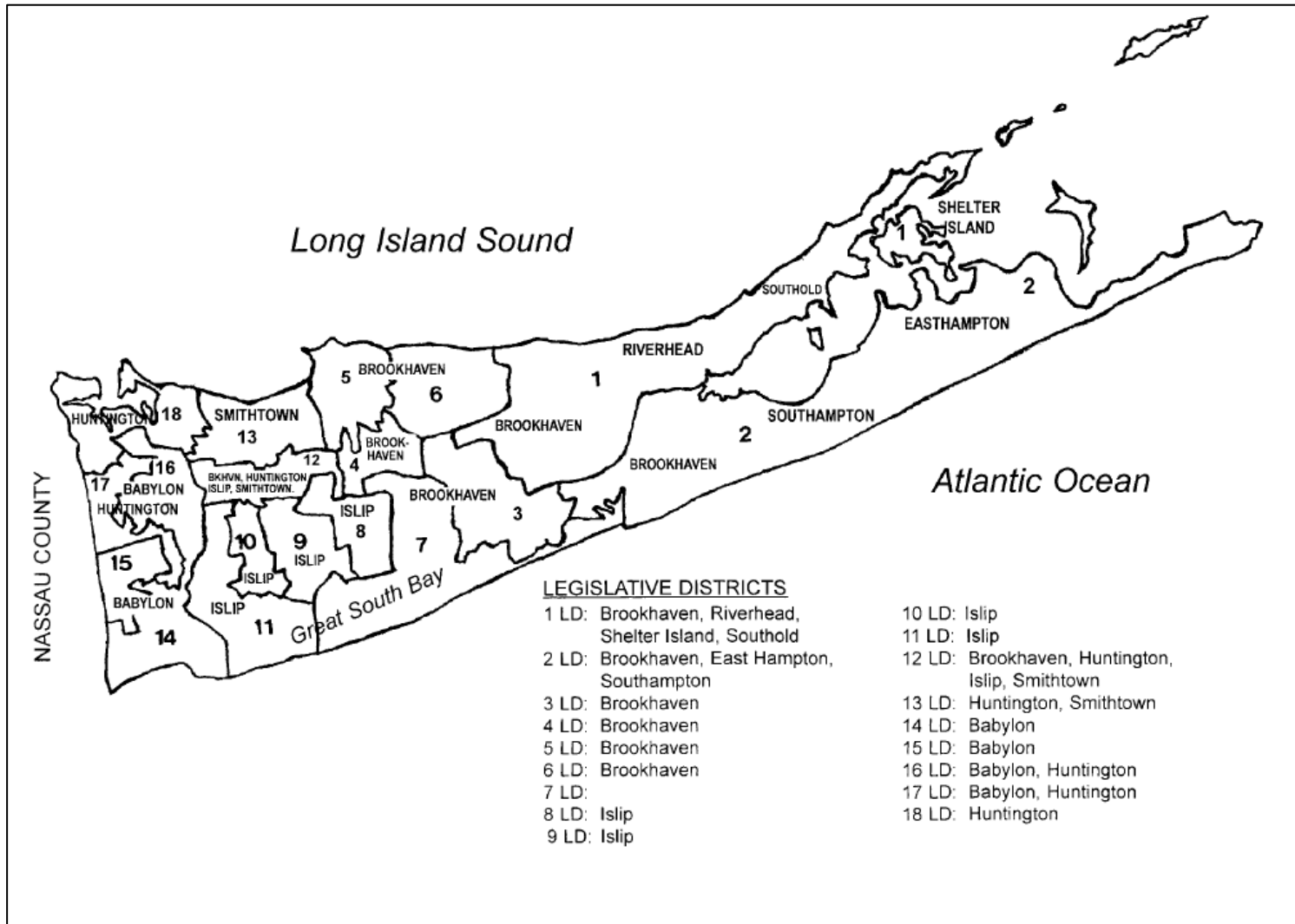
A physician member of the HEART Task Force commented, “We still don’t know after 18 hours of discussion why Suffolk is worse than Nassau County or the state. We don’t have the data to drill down, but we know patients with heart disease represent the full

range of socioeconomic levels. We don't know if incidence is higher or whether it is just that the care is worse."

David Graham, MD, MPH, Suffolk's Chief Deputy Health Commissioner, explained, "It is always hard to get reliable data on chronic disease in order to figure out what to focus on. This is very different from the data available for reportable communicable diseases, which is the traditional focus of public health. We need a collective effort to gather the data....And we tend to focus our data collection efforts on where we get grants. We've had a lot of public interest in the environment and in elevated cancer risk in Suffolk County, so we've spent most of our time gathering information on cancer."

Dr. Chaudhry concluded, "In the absence of comprehensive data, our resources get allocated in sometimes random ways. The County ended up getting a better helicopter to improve access from places like Montauk (on the eastern tip of the County), which is intuitively a good thing, but it can take as much as an hour to set up the helicopter sometimes, so driving could be just as fast. Cardiovascular disease is worse than cancer in terms of incidence and prevalence, but it is frequently out of sight and out of mind here. We need to get beyond the one-patient-at-a-time approach, which is why we've formed this Task Force."

**Exhibit 1: Map of Suffolk County Legislative District Boundary Lines**



**Table 1: Demographics and Disease Prevalence by Township as of 2000**

	Babylon	Brookhaven	East Hampton	Huntington	Islip	Riverhead	Shelter Island	Smithtown	Southampton	Southold
<b>Population</b>	211,792	448,248	19,719	195,289	322,612	27,680	2,228	115,715	54,712	20,599
% of Suffolk County Population	14.9%	31.6%	1.4%	13.8%	22.7%	2.0%	0.2%	8.2%	3.9%	1.5%
<b>Black population</b>	33,137 (15.6%)	19,411 (4.3%)	706 (3.6%)	8,241 (4.2%)	29,110 (9%)	2,913 (10.5%)	16 (0.7%)	748 (0.6%)	3,624 (6.6%)	600 (2.9%)
% Change Black Population 1990-2000	9.4%	32.5%	0.4%	2%	42.1%	0.1%	23.1%	-29.9%	-10.2%	-14.5%
<b>Hispanic population</b>	21,275 (10%)	36,041 (8%)	2,914 (14.8%)	12,844 (6.6%)	65,031 (20.2%)	1,678 (6.1%)	53 (2.4%)	3,855 (3.3%)	4,700 (8.6%)	982 (4.8%)
% Change Hispanic Population 1990-2000	69.5%	60.8%	258.9%	65.1%	66.1%	178.7%	20.4%	31.3%	291.3%	158.4%
<b>Children under 18</b>	55,139 (26%)	119,621 (26.7%)	4,188 (21.2%)	49,719 (25.5%)	88,305 (27.4%)	6,372 (23%)	404 (18.1%)	30,091 (26%)	11,565 (21.1%)	4,421 (21.5%)
<b>Adults over 65</b>	26,284 (12.4%)	45,400 (10.1%)	3,271 (16.6%)	25,510 (13.1%)	31,871 (9.9%)	5,107 (18.5%)	638 (28.6%)	15,552 (13.4%)	9,083 (16.6%)	4,756 (23.1%)
<b>Adults over age 25 who did not complete HS</b>	25,187 (17.9%)	37,712 (13.1%)	1,955 (13.7%)	12,336 (9.2%)	35,356 (17%)	3,620 (18.3%)	107 (6.1%)	6,715 (8.5%)	5,342 (13.7%)	1,777 (11.8%)
<b>Population who have bachelor's degree or higher</b>	26,231 (18.6%)	71,089 (24.6%)	5,111 (35.6%)	59,888 (44.5%)	45,456 (21.9%)	4,361 (22.1%)	749 (42.9%)	28,893 (36.4%)	12,135 (31.2%)	4,760 (31.7%)
<b>Adults living below poverty</b>	9,663 (6.2%)	17,828 (5.6%)	1,271 (8.2%)	6,254 (4.3%)	13,759 (5.9%)	1,783 (8.5%)	110 (6.1%)	2,508 (3%)	3,185 (7.7%)	859 (5.4%)
<b>Age-adjusted death rates from heart disease</b>	320.9	335.7	224.3	274.7	323.6	265.9	207.2	304.7	237.9	285.6

### Table 2: Hospital Comparison of Suffolk County Hospitals

[illegible]

**Table 2 (cont.)**

	U.S. Avg.	New York Avg.	BMH	ELIH	GSH	HH	JTMMH	PBMC	SHH	SSH	SCSH	SCH	UHSB
<b>Bed Size</b>			306	80	437	408	248	122	125	366	318	231	<b>540</b>
<b>Measures of Patients' Experience</b>													
Nurses "always" communicated well	74%	70%	Not Available	75%	71%	72%	72%	Not Available	70%	72%	72%	75%	72%
Doctors "always" communicated well	80%	77%	Not Available	81%	78%	76%	77%	Not Available	80%	74%	82%	80%	73%
Patients "always" received help as soon as they wanted	63%	55%	Not Available	57%	54%	52%	55%	Not Available	55%	50%	56%	55%	59%
Pain was "always" well controlled	68%	64%	Not Available	67%	64%	65%	65%	Not Available	67%	60%	69%	67%	64%
Staff "always" explained	59%	55%	Not Available	56%	50%	54%	59%	Not Available	55%	51%	56%	57%	54%
Patients provided with information about help at home and symptoms and health problems to watch	80%	78%	Not Available	79%	81%	73%	80%	Not Available	75%	77%	77%	82%	79%
Patients who gave a rating of "9" or "10" (high)	64%	56%	Not Available	65%	56%	57%	60%	Not Available	52%	51%	52%	69%	61%
<b>Patients would definitely recommend hospital</b>	68%	61%	Not Available	75%	70%	62%	68%	Not Available	57%	57%	67%	73%	67%

**Legend**

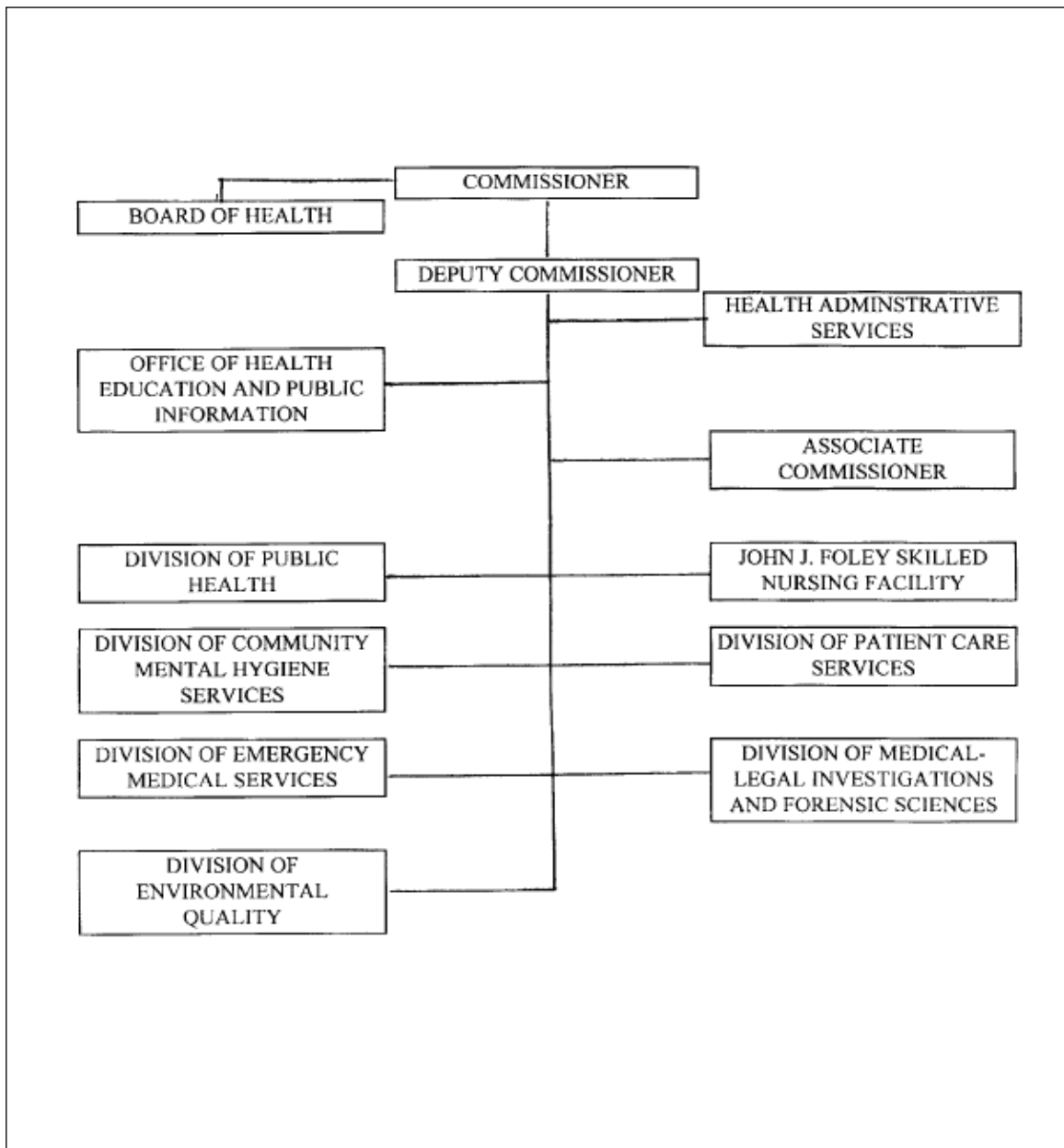
BMH - Brookhaven Memorial Hospital Medical Center  
 ELIH - Eastern Long Island Hospital  
 GSH - Good Samaritan Hospital Medical Center  
 HH- Huntington Hospital  
 JTMMH - John T Mather Memorial Hospital Of Port Jefferson  
 PBMC- Peconic Bay Medical Center

SHH- Southampton Hospital  
 SSH- Southside Hospital  
 SCSH- St Catherine Of Siena Hospital  
 SCH- St Charles Hospital  
 UHSB - University Hospital Stony Brook

1 The number of cases is too small (<25) to reliably tell how well a hospital is performing.

† "0 patients"-- This hospital treated patients in this condition, but no patients met the criteria for inclusion in the measure calculation

**Exhibit 2: Organization Chart, Suffolk County Department of Health Services**



**Exhibit 3: Number of Providers in SCDHS-Operated Health Centers**

			Provider Type				MD/DO Specialty								NP Specialty				
			MD/DO	NP	PA	DPM	Family Medicine	Internal Medicine	Pediatrics	OB-GYN	Surgery	Cardiology	Hem/Onc	Adult Medicine	Family Health	Pediatrics	Women's Health	Gerontology	
Health Center	Location	Hospital Affiliation	11	4	1	1	1	3	5	0	2	0	0	1	0	2	1	0	
Maxine S. Postal Tri-Community Health Center at Amityville	Amityville	None	21*	0	4	1	9*	1	2	6	1	0	2	0	0	0	0	0	
Brentwood Family Health Center	Brentwood	Southside Hospital	14	4	0	1	5	2	2	5	0	0	0	1	1	1	1	0	
Elsie Owens North Brookhaven County Health Center	Coram	Stony Brook University Hospital	14	3	0	0	4	3	3	2	2	0	0	1	0	1	1	0	
South Brookhaven Family Health Center, West	Patchogue	Brookhaven Hospital	18	6	1	0	5	3	2	8	0	0	0	0	3	1	1	1	
Riverhead Health Center	Riverhead	None	12	1	0	0	5	2	3	2	0	0	0	0	0	0	1	0	
Marilyn Shellabarger South Brookhaven Family Health Center, East	Shirley	Brookhaven Hospital	14*	0	0	0	5*	2	2	4	0	1	0	0	0	0	0	0	
Martin Luther King, Jr. Community Health Center	Wyandanch	Good Samaritan Hospital	3	1	2	0	1	1	0	1	0	0	0	0	0	0	1	0	
Central Islip Family Health Center	Central Islip	Southside Hospital	Included with Riverhead Data																
Kraus Family Health Center, Southampton	Southampton	None	Included with Riverhead Data																
The Suffolk County Health Center at East Hampton	East Hampton	None	Included with Riverhead Data																

\*Does not include Family Medicine Residents



**Exhibit 4: Suffolk County HEART members**

Members	Specialty	Professional Role
Humanyun J. Chaudhry, D.O., FACP, Chair	Internal Medicine, Public Health	Commissioner of Health Suffolk County Department of Health Services
George Carayannopoulos, M.D. Vice-Chair	Cardiology, Electrophysiology Specialist	Cardiologist in private practice, Smithtown Township
Thomas E Arnold, MD.D. FACS	Vascular Surgery	Vascular Surgeon in private practice in Brookhaven Township
Brenda J. Connolly, D.O., FACFP, FAODME	Family Practice	Family medicine in private practice, Islip Township
Maureen Crowley M.D., MPH	Internal Medicine	Director, Preventative Medicine Division, Suffolk Department of Health
Nick Fitterman, M.D. FACP	Internal Medicine	Hospitalist, Huntington Hospital, Huntington Township
Wendy Ladd, M.A.	Communications	Press Relations Assistant, Suffolk County Department of Health Services
Daniel R. Landolphi, M.D., FACC, FAAC	Cardiology	Cardiologist in private practice, Babylon Township
Gabriel T Leonte, M.D.	Internal Medicine	Hospitalist, St. Catherine of Siena
Michael A Matilsky, M.D. FACC	Cardiology	Cardiologist in private practice, Brookhaven Township
Adhi (Rob) Sharma, M.D.	Emergency Medicine	Chairman, Department of Emergency Medicine, Good Samaritan Hospital Medical Center in Islip Township
Yvonne L. Spreckels, MPA	Community Relations	Director, Community Relations, Stony Brook University Hospital
Margaret Sukhram N.P., Ed. D., MPH (Nursing)	Nursing	Nurse Practitioner, Suffolk County Department of Health Services
John J Vullo, D.O, FACOG, FACOOG	Ob-Gyn	Obstetrician / Gynecologists, Islip Township

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