

Alzheimer's in California

Between now and 2030 there will be a doubling in the number of Californians living with Alzheimer's disease. This dramatic increase will affect all race and ethnic groups as well as all regions of the state.

- 480,000 Californians 65 and over live with Alzheimer's disease.
- By 2030, this number will nearly double in California; growing to almost 1 million.
- Due to a rapidly aging population, the number of California's Latinos and Asians living with Alzheimer's disease will triple by 2030. The number of African-Americans living with Alzheimer's disease will double.

Lifetime Risk for Alzheimer's in California

Among California's baby boomers aged 65 and over:

- One in eight will develop Alzheimer's disease.
- One in six will develop dementia.

Deaths from Alzheimer's in California

- Alzheimer's disease is now the sixth leading cause of death in California.
- Compared to other leading causes of death in California, Alzheimer's disease showed the greatest increase (58.3 percent from 2000–2004).

Innovations for Diagnosis and Treatment

According to a 2011 report released by the Alzheimer's Association, an estimated 5.4 million people are living with Alzheimer's disease, and someone develops the disease every 69 seconds. The United States, like many other countries, has an aging population with nearly one in five residents reaching the age of 65 or older by 2030. Additionally, in 2010, 14.9 million family members and friends provided 17 billion hours of unpaid care to those living with Alzheimer's and other dementias — care valued at approximately \$202 billion. With the imminent increase in dementia caused by Alzheimer's disease and other conditions — and without a cure — the development of new innovations and treatments remains all the more critical to assist in improving the quality of life for those affected.

Treatment of Alzheimer's Disease

Scientists around the world are focused on developing and validating reliable ways to detect and diagnose Alzheimer's disease and other forms of dementia. Two recent reports indicate that biomarkers in the cerebrospinal fluid or blood may be useful for detecting Alzheimer's disease, even in people who have no noticeable symptoms. Significant advances are also being made in the ability to detect accumulation of beta-amyloid plaques in the brain, which are a characteristic feature of Alzheimer's disease.

No treatment is available to slow or stop the deterioration of brain cells in Alzheimer's patients. The U.S. Food and Drug Administration has approved five drugs that temporarily slow worsening of symptoms for about six to 12 months. They are effective for only about half of the individuals who take them. However, researchers around the world are studying numerous treatment strategies that may have the potential to change the course of the disease.

The Importance of Early Detection

Early detection of Alzheimer's disease or related dementia allows individuals and their families to become better informed and plan for the future. A diagnosis of Alzheimer's allows an individual to take part in decisions about care, transportation, living options, financial and legal matters. It may also increase an individual's chance to participate in clinical trials that help advance research into Alzheimer's. The Alzheimer's Foundation recommends seeking out support services for caregivers and other loved ones, including support groups, telephone buddies and respite care.

Caregiving for People with Alzheimer's Disease in California

There are 1.1 million Californians caring for people living with Alzheimer's disease and other dementias, about 11 percent of our nation's caregivers. While caregiving has its satisfactions, for many, the burden of care is substantial.

In every case, Alzheimer's disease results in a progressive decline in one's ability to care for oneself, ultimately leaving the individual dependent on others for help with basic activities of living. As a result, caring for a person with Alzheimer's is often very difficult and poses physical, emotional, and economic challenges.

This is particularly true because, contrary to common belief, most care is delivered at home by families. Traditionally, most caregivers have been the wives or adult daughters of the individual with dementia. With more women participating in the workforce, there has been a decrease in the number of women available to fill these caregiving roles. In addition, family members are increasingly likely to live far apart from one another. These changes have significant implications for families, businesses and society at large.

Who will care for our aged?

Caregiving negatively impacts the individual's ability to work outside the home. Disproportionately high percentages of these caregivers report being forced to miss work (21 percent), reduce their work hours (8 percent), quit their jobs (11 percent) or change jobs due to caregiving demands (4 percent). California caregivers provide 952 million hours of unpaid care per year with an economic value of slightly more than \$10 billion dollars.

Source: Alzheimer's Association

LEGISLATORS ON THE FRONT LINES



Rep. Linda Sanchez and Rep. Loretta Sanchez confront Alzheimer's disease

Few have a better appreciation for the impending healthcare crisis than do two sisters from Orange County. Reps. Loretta (D-Santa Ana) and Linda (D-Lakewood) Sanchez represent their respective districts in the U.S. House of Representatives. The sisters have learned firsthand the costs and challenges that families face when their father was diagnosed in 2003.

Loretta Sanchez said that upon diagnosis, getting basic information on Alzheimer's was a challenge. "We didn't know anything about Alzheimer's," she said. They met with a counselor who specializes in caring for loved ones with dementia and were surprised by how little of what they could do came instinctively.

Linda Sanchez said it was particularly difficult to take over decisions for their father, who had always been so capable and independent. Establishing such legal arrangements as deciding who would have power of attorney, make medical decisions and oversee the financial planning are tough steps. Both sisters mentioned the financial toll of the disease and the time commitment — time taken away from work, children, friends and other activities.

So what does a legislator who has a fiscal responsibility to her country, a leadership commitment to her constituency, and firsthand knowledge of the debilitating realities of dementia recommend?

Both Sanchez sisters acknowledge that funding is a hard sell in Washington now. In 2009, Linda Sanchez introduced the Cure and Understanding through Research for Alzheimer's (La CURA) Act. The bill sought to increase funding for the National Institutes of Health (NIH) and the Centers for Disease Control and Prevention (CDC) to conduct adequate Alzheimer's research, outreach and education.

"It was, unfortunately, a victim of financial constraints," Linda Sanchez said. "People are concerned about 'unnecessary spending.'" She reiterated that she believes that the impending growth in the number of Alzheimer's patients will "create an emotional, financial and economic crisis that will necessitate action," and that upfront investments would be less costly and more effective than the expenses incurred by waiting.

Both congresswomen applauded the cooperative efforts of researchers, industry and government in seeking new understanding of Alzheimer's as well as new therapies for the disease. Supporting that work into the future will require added funding, which could come in the form of government grants and, Linda Sanchez suggests, through private-public partnerships.

Looking ahead

Linda Sanchez notes that society needs to be gearing up right now for the increased demand for care for Alzheimer's patients. "The [Alzheimer's care] industry is expected to double as the baby boomers age," she said. "There are no standards for care, no standards for training. There is a high vacancy rate for care providers and a high turnover rate." She said that regulators and employers need to establish training programs, pay scales and working environments to ensure that Alzheimer's care staff stay in the field and are prepared to provide the necessary care as the patient population "explodes."

ADVANCES IN ALZHEIMER'S TREATMENT: WORKING TOWARD A CURE

Sanford-Burnham Medical Research Institute

is known for its world-class capabilities in stem cell research and drug discovery technologies. Neurodegenerative diseases such as Alzheimer's, Parkinson's and Huntington's all have one thing in common: the untimely death of nerve cells. New research at Sanford-Burnham shows that these diseases also share the molecular mechanism that leads to cellular death, a finding that identifies new targets for diagnosis and treatment of these diseases. The study, which appeared in *Molecular Cell*, was led by Dr. Stuart Lipton, director of Sanford-Burnham's Del E. Web Center for Neuroscience, Aging and Stem Cell Research, and Dr. Tomohiro Nakamura, research assistant professor. Together with their collaborators, Lipton and Nakamura showed how a gaseous molecule known as nitric oxide can throw a molecular switch to turn a cell from the path to survival to the path to death.

Source: Sanford-Burnham

The University of California, Irvine

UC Irvine's Institute for Memory Impairments and Neurological Disorders (UCI MIND) seeks to conduct research to enhance the quality of life for the elderly by identifying factors and life-style approaches that promote successful brain aging. Toward this end, the Institute facilitates and coordinates a number of activities including:

- recruiting research cohorts;
- providing investigators with biological resources such as brain tissue, serum, and DNA;
- cultivating AD-related programs and transmitting new information to community professionals and the general public, and;
- training the next generation of graduate students and postdoctoral fellows.

UCI MIND has had considerable success in the past five years. It was designated as an Alzheimer's Disease Research Center by the National Institute on Aging (NIA), and as a funded Alzheimer's Disease Research Center

of California by the state Department of Public Health. The Institute received multimillion dollar funding to investigate the successful aging process in 90+ year-old individuals, and has received continued funding for pre- and postdoctoral students and collaborative research to identify factors that promote the progression of Alzheimer's disease. UCI MIND research generated the first transgenic mouse model of Alzheimer's disease, which has been widely distributed throughout the world, and its facilities have achieved recognition as a high ranking national site for conducting clinical trials.

Source: The University of California, Irvine

Pfizer

Pfizer is committed to applying science and its global resources to improve health and well-being at every stage of life. Today, Pfizer is relentlessly exploring research to shed light on the brain's complex pathways to further advance Alzheimer's treatments. It is also working on multiple compounds at one time to find more answers faster and to give those living with Alzheimer's more life to live. Currently, Pfizer has more than a half dozen compounds including biologics, small

molecules, and a vaccine in various phases of clinical trial testing (Phases 1-3).

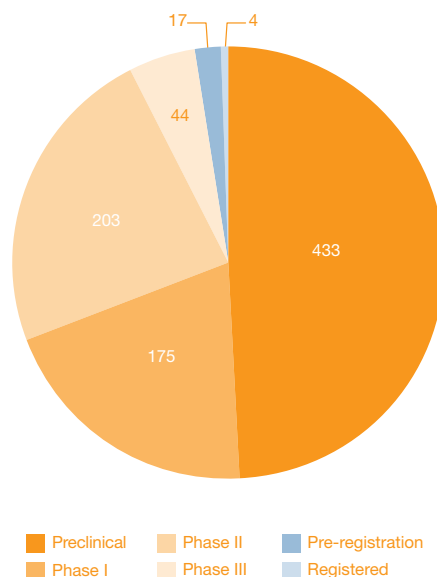
Source: Pfizer

Genentech

Considered the founder of the biotechnology industry, Genentech has been delivering on the promise of biotechnology for more than 30 years, using human genetic information to discover, develop, manufacture and commercialize medicines to treat patients with serious or life-threatening medical conditions. Today, Genentech is among the world's leading biotech companies, with multiple products on the market and a promising development pipeline including a proposed treatment for Alzheimer's disease known as Anti-Abeta. Anti-Abeta is a humanized monoclonal antibody, which binds to amyloid beta (Abeta) – the main constituent of amyloid plaque in the brains of patients with Alzheimer's disease, and proposed to be causative in the development of the disease. Mid-stage clinical trials evaluating Anti-Abeta for Alzheimer's disease are planned. This molecule is being developed in collaboration with AC Immune SA.

Source: Genentech

California companies are researching and developing 876 pipeline products



California's pipeline is concentrated in six major areas each of which represent significant unmet needs for patients.

Disease focus	Number in CA pipeline
Oncologics	237
Immune system and inflammation	109
Central nervous system	107
Anti-infectives and anti-virals	96
Cardiovascular and blood diseases	56
Diabetes and metabolics	47

Additional Resources:

Alliance for Aging Research:
www.agingresearch.org

Alzheimer's Association:
www.alz.org

Alzheimer's Clinical Trials:
www.clinicaltrials.gov

Alzheimer's Disease Education
and Referral Center:
www.nia.nih.gov/alzheimers

Alzheimer's Foundation of America:
www.alzfdn.org

Genentech:
www.gene.com

The Institute for Memory Impairments
and Neurological Disorders:
www.alz.uci.edu

National Institute on Aging:
www.nia.nih.gov

Pfizer:
www.pfizer.com

Sanford-Burnham Medical
Research Institute:
www.sanfordburnham.org

Ten Warning Signs of Alzheimer's

1. Memory loss that disrupts daily life

One of the most common signs of Alzheimer's is memory loss, especially forgetting recently learned information. Others include forgetting important dates or events; asking for the same information over and over; relying on memory aides (e.g., reminder notes or electronic devices) or family members for things they used to handle on their own.

2. Challenges in planning or solving problems

Some people may experience changes in their ability to develop and follow a plan or work with numbers. They may have trouble following a familiar recipe or keeping track of monthly bills. They may have difficulty concentrating and take much longer to do things than they did before.

3. Difficulty completing familiar tasks at home, at work or at leisure

People with Alzheimer's often find it hard to complete daily tasks. Sometimes, people may have trouble driving to a familiar location, managing a budget at work or remembering the rules of a favorite game.

4. Confusion with time or place

People with Alzheimer's can lose track of dates, seasons and the passage of time. They may have trouble understanding something if it is not happening immediately. Sometimes they may forget where they are or how they got there.

5. Trouble understanding visual images and spatial relationships

For some people, having vision problems is a sign of Alzheimer's. They may have difficulty reading, judging distance and determining color or contrast. In terms of perception, they may pass a mirror and think someone else is in the room. They may not realize they are the person in the mirror.

6. New problems with words in speaking or writing

People with Alzheimer's may have trouble following or joining a conversation. They may stop in the middle of a conversation and have no idea how to continue or they may repeat themselves. They may struggle with vocabulary, have problems finding the right word or call things by the wrong name (e.g., calling a "watch" a "hand-clock").

7. Misplacing things and losing the ability to retrace steps

A person with Alzheimer's disease may put things in unusual places. They may lose things and be unable to go back over their steps to find them again. Sometimes, they may accuse others of stealing. This may occur more frequently over time.

8. Decreased or poor judgment

People with Alzheimer's may experience changes in judgment or decision-making. For example, they may use poor judgment when dealing with money, giving large amounts to telemarketers. They may pay less attention to grooming or keeping themselves clean.

9. Withdrawal from work or social activities

A person with Alzheimer's may start to remove themselves from hobbies, social activities, work projects or sports. They may have trouble keeping up with a favorite sports team or remembering how to complete a favorite hobby. They may also avoid being social because of the changes they have experienced.

10. Changes in mood and personality

The mood and personalities of people with Alzheimer's can change. They can become confused, suspicious, depressed, fearful or anxious. They may be easily upset at home, at work, with friends or in places where they are out of their comfort zone.

Source: Alzheimer's Association

CHI-California Healthcare Institute

CHI-California Healthcare Institute is a non-profit public policy research organization for California's biomedical R&D industry. CHI represents more than 250 leading medical device, biotechnology, diagnostics and pharmaceutical companies and public and private academic biomedical research organizations. CHI's mission is to advance responsible public policies that foster medical innovation and promote scientific discovery. CHI's website is www.chi.org. Follow us on Twitter @calhealthcare and Facebook.



Headquarters
888 Prospect Street, Suite 220
La Jolla, California 92037
858-551-6677
858-551-6688 fax

Sacramento
1215 K Street, Suite 940
Sacramento, California 95814
916-233-3497
916-233-3498 fax

Washington, D.C.
1608 Rhode Island Ave. N.W., 2nd Floor
Washington, DC 20036
202-974-6313
202-974-6330 fax