Impact of Arthritis and Other Rheumatic Conditions on the Health-Care System—United States, 1997

MMWR. 1999;48:349-353

2 tables omitted

Arthritis and other rheumatic conditions are the leading cause of disability in the United States, affecting approximately 43 million persons and costing $65 billion in 1992. By 2020, these numbers will increase as the population ages. This report examines several measures of the impact of arthritis on the U.S. health-care system; the findings indicate that arthritis and other rheumatic conditions have a large impact on hospitalizations, ambulatory-care visits, and home health care, with women accounting for most of this impact and all persons aged <65 years accounting for a substantial portion.

The impact on the health-care system was measured using the most recent data on inpatient care, ambulatory care, and home health care. The 1997 National Hospital Discharge Survey was used to measure the number of discharges (by first-listed discharge diagnosis), days of care, and average length of stay at short-stay, nonfederal hospitals. The 1997 National Ambulatory Medical Care Survey and the 1997 National Hospital Ambulatory Medical Care Survey were used to measure the number and percentage (recorded by principal diagnosis and setting) of ambulatory-care visits. The 1996 National Home and Hospice Care Survey was used to measure the number and percentage (recorded by first diagnosis at admission) of home health-care discharges and the average length of service. Arthritis and other rheumatic conditions (e.g., lupus, bursitis, and fibromyalgia) were defined using the National Arthritis Data Workgroup definition. When appropriate, data were examined by age group (<15, 15-44, 45-64, and ≥65 years) and sex. Data were analyzed using SUDAAN, and the results were weighted to account for the complex sample design.

Persons with arthritis and other rheumatic conditions accounted for 2.4% (approximately 744,000) of all hospital discharges and 2.4% (approximately 4 million) of days of care in 1997, with an average length of stay similar to that for all conditions (approximately 5 days). Of these discharges, women accounted for 60.7% and persons aged less than 65 years for 44.2%. Persons with arthritis and other rheumatic conditions accounted for 4.6% (approximately 44 million) of all ambulatory-care visits, including 38.9 million visits to physicians’ offices, 2.9 million visits to outpatient departments, and 2.2 million visits to emergency departments. Of these visits, women accounted for 63% and persons aged <65 years accounted for 68%. Arthritis and other rheumatic conditions accounted for 4.8% (approximately 372,000) of all discharges from home health care, with an average length of service of 88.7 days. Most (60%) home health-care discharges were attributable to osteoarthritis. Of these discharges, women accounted for approximately 70% and persons aged <65 years for approximately 26%.

CDC Editorial Note: The findings in this report indicate that arthritis and other rheumatic conditions cause large numbers of persons to receive care in hospita,l ambulatory, and home health settings. Women and all persons aged less than 65 years accounted for much of this impact. The impact of arthritis has been underrecognized, and key interventions that reduce arthritis pain and health-care costs have been underused. Primary (e.g., weight control and injury prevention), secondary (e.g., early diagnosis and appropriate management), and tertiary (e.g., self-management and rehabilitation services) prevention measures can help reduce this impact. These findings are subject to at least one limitation. These data sources do not measure health care in other settings important to persons with arthritis, such as rehabilitation services, chiropractors’ offices, physical and occupational therapy services, and mental health services.

Recognition of arthritis and other rheumatic conditions as a large public health problem is increasing; the problem has been addressed in the National Arthritis Action Plan: A Public Health Strategy and the first-ever draft objectives for arthritis in the national health objectives for 2010. Future research will expand analyses of health-care system data to explore arthritis trends, the interaction of arthritis and other chronic conditions, and other settings of care. In 1999, CDC is initiating funding to increase public health activities targeting arthritis prevention at the national and state levels. State-level arthritis programs should consider collaboration with components of the health-care system because of the large impact of arthritis.

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Vaccine.

The position of the 1999-2000 influenza vaccine strain; however, the 1998-99 influenza A(H3N2) vaccine strain, A/Sydney/5/97, and 32 (10%) had antigenically drifted from A/Sydney/5/97 based on hemagglutination inhibition testing. Six U.S. influenza A(H1N1) isolates were characterized as A/Bayern/7/95-like viruses, antigenically distinct from A/Beijing/262/95, the 1998-99 A(H1N1) vaccine strain; however, the 1998-99 A(H1N1) vaccine strain produced high titers of antibodies that cross-react with A/Bayern/7/95. All 180 antigenically characterized B isolates were similar to the recommended type B vaccine strain, B/Beijing/184/93.

**Worldwide**

During October 1998-April 1999, influenza A(H3N2) viruses predominated in Austria, Bulgaria, Canada, China, Croatia, the Czech Republic, Denmark, Finland, France, Germany, Hong Kong, Iran, Israel, Japan, Korea, Latvia, Norway, Portugal, Romania, Russia, Slovakia, Sweden, Ukraine, and United Kingdom. Influenza A(H3N2) isolates also were reported from Algeria, Argentina, Australia, Belarus, Brazil, Ecuador, Egypt, French Guiana, Greece, Guam, Hungary, India, Italy, Malaysia, Martinique, the Netherlands, Nepal, Peru, the Philippines, Poland, Saudi Arabia, Senegal, Singapore, South Africa, Spain, Switzerland, Taiwan, and Thailand.

Influenza A(H1N1) viruses were isolated from sporadic cases in China, Croatia, France, Hong Kong, Japan, Korea, Martinique, the Philippines, Portugal, Russia, Slovakia, South Africa, Spain, and Thailand. During outbreaks in Peru in February and March, influenza A(H1N1) was the most frequently isolated influenza virus type/subtype. Other countries reporting influenza type A viruses include Belgium, Iceland, Lithuania, and Yugoslavia.

Influenza B isolates predominated in Belarus, Hungary, Poland, Spain, and Taiwan. The number of influenza type B isolates was approximately equal to the number of influenza type A isolates in Belgium, Italy, the Netherlands, and Switzerland. Outbreaks associated with influenza type B viruses were reported in Brazil, French Guiana, and Japan. Influenza B viruses also were reported in Australia, Austria, Bulgaria, Canada, Chile, China, Croatia, the Czech Republic, Denmark, Finland, France, Germany, Greece, Guam, Hong Kong, Iceland, Israel, Latvia, Lithuania, Martinique, Nepal, Norway, Portugal, Romania, Russia, Saudi Arabia, Singapore, Slovakia, South Africa, Sweden, Thailand, United Kingdom, and Yugoslavia.

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**Update: Influenza Activity—United States and Worldwide, 1998-99 Season, and Composition of the 1999-2000 Influenza Vaccine**

MWR. 1999;48:374-378

2 figures omitted

In collaboration with the World Health Organization (WHO), the WHO international network of collaborating laboratories, and state and local health departments, CDC conducts surveillance to monitor influenza activity and to detect antigenic changes in the circulating strains of influenza viruses. This report summarizes surveillance for influenza in the United States and worldwide during the 1998-99 influenza season and describes the composition of the 1999-2000 influenza vaccine.

**United States**

Influenza activity began to increase in mid-January 1999 and peaked during the weeks ending February 6 through February 27. The predominant virus was influenza A(H3N2), although influenza type B viruses also circulated widely and were reported in all nine influenza surveillance regions. Influenza A(H1N1) viruses were sporadically isolated during the season in six of nine regions. During the weeks ending February 6 through February 27, 1999, >40 state and territorial epidemiologists reported widespread or regional influenza activity, with widespread activity first reported from a state during the week ending January 16 and reported last during the week ending April 10. Beginning the week ending January 23, the proportion of patient visits to U.S. influenza sentinel physicians attributed to influenza-like illness (ILI) increased above baseline levels (0-3%) to 4% and remained elevated for 7 consecutive weeks. The proportion of visits for ILI was at baseline levels in all surveillance regions by the week ending March 20.

From October 4, 1998, through May 1, 1999, WHO and National Respiratory and Enteric Virus Surveillance System collaborating laboratories in the United States tested 86,826 specimens for respiratory viruses; 12,993 (15%) were positive for influenza. Of these, 10,041 (77%) were influenza type A, and 2952 (23%) were influenza type B. Of the 2501 subtyped influenza A viruses, 2481 (99%) were type A(H3N2), and 20 (1%) were type A(H1N1).

Beginning the week ending January 30, the proportion of deaths attributed to pneumonia and influenza (P&I) reported by 122 U.S. cities exceeded the epidemic threshold† for 12 consecutive weeks. During the week ending March 13, the proportion of deaths attributed to P&I peaked at 8.8%.

Of the 327 U.S. A(H3N2) isolates collected from October 4 through May 1 and antigenically characterized at CDC, 295 (90%) were similar to the 1998-99 A(H3N2) vaccine strain, A/Sydney/5/97, and 32 (10%) had antigenically drifted from A/Sydney/5/97 based on hemagglutination inhibition testing. Six U.S. influenza A(H1N1) isolates were characterized as A/Bayern/7/95-like viruses, antigenically distinct from A/Beijing/262/95, the 1998-99 A(H1N1) vaccine strain; however, the 1998-99 A(H1N1) vaccine strain produced high titers of antibodies that cross-react with A/Bayern/7/95.
In April 1999, the first two cases of human influenza A(H9N2) illness were identified among children hospitalized in March in Hong Kong, Special Administrative Region, People’s Republic of China. Case-patients were girls, aged 1 and 4 years; both recovered from their illnesses. Investigations are under way in Hong Kong to determine the potential impact of this new subtype in humans. Surveillance in Hong Kong has been maintained at enhanced levels since human influenza A(H5N1) infections were identified in 1997. An additional five suspected human cases of H9N2 illness from Guangdong Province, China, were reported in March 1999.1 No human cases of influenza A(H5N1) illness have been identified since December 1997.

**Composition of the 1999-2000 Vaccine**

The Food and Drug Administration’s Vaccines and Related Biologic Products Advisory Committee (VRBPAC) recommended that the 1999-2000 trivalent vaccine for the United States contain A/Sydney/5/97-like (H3N2), A/Beijing/262/95-like (H1N1), and B/Beijing/184/93-like viruses. This recommendation was based on antigenic analyses of recently isolated influenza viruses, epidemiologic data, and post-vaccination serologic studies in humans.

Most influenza A(H3N2) isolates were A/Sydney/5/97-like viruses. A small percentage were distinguishable antigenically by hemagglutination-inhibition testing. However, these viruses were heterogeneous, and antigenic and genetic analysis did not reveal the emergence of a representative variant. Therefore, A/Sydney/5/97 will be retained as the influenza A(H3N2) 1999-2000 vaccine component.

A/Beijing/262/95-like (H1N1) viruses were identified in Asia and South America and A/Bayern/7/95-like (H1N1) viruses were identified in Europe and the United States during the preceding year. Persons who were vaccinated in an experimental vaccine trial with A/Beijing/262/95 in 1998 developed equivalent antibody levels against A/Bayern/7/95 and A/Beijing/262/95. Because A/Beijing/262/95-like viruses produce a cross-reactive antibody response to A/Bayern/7/95-like viruses, VRBPAC recommended retaining A/Beijing/262/95 for the 1999-2000 vaccine.

Influenza type B isolates from all continents except Asia were similar to B/Beijing/184/93, the 1998-99 recommended influenza B vaccine component. In the United States, circulating influenza B viruses remained similar to B/Beijing/184/93. Viruses antigenically related to the B/Victoria/2/87 reference strain were isolated in China, Japan, Singapore, and Thailand and co-circulated with B/Beijing/184/93-like viruses in these countries. However, B/Victoria/2/87-like viruses were not isolated outside of Asia. For the United States, VRBPAC recommended retaining a B/Beijing/184/93-like virus for the vaccine. Manufacturers will use the B/Yamanashi/16/98 strain as the 1999-2000 influenza B vaccine component because of its growth properties and its antigenic similarity to circulating B/Beijing/184/93-like viruses.

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**CDC Editorial Note:** During the 1998-99 influenza season, both influenza A(H3N2) and influenza B viruses circulated worldwide, and influenza A(H3N2) predominated in the United States. This is the third consecutive year that influenza A(H3N2) viruses have predominated in the United States and the fourth consecutive year in which the proportion of deaths caused by P&I reported by 122 U.S. cities was elevated for several consecutive weeks. Overall, the 1998-99 influenza vaccine strains were well matched with the circulating virus strains.

Although influenza epidemics generally peak during December-March each year in temperate regions of the Northern Hemisphere, sporadic cases of influenza and occasionally large outbreaks can occur during the summer.2,3 In temperate regions of the Southern Hemisphere, the influenza season generally peaks during May-August. Influenza epidemics can occur any time of the year in the tropics. Therefore, U.S. physicians should continue to include influenza in the differential diagnosis of febrile respiratory illness during the summer, particularly among travelers to the tropics or Southern Hemisphere or among persons traveling with large international groups.

The identification of two cases of human influenza A(H9N2) infection in Hong Kong underscores the need for continued international virologic surveillance for influenza and the timely subtyping of influenza type A isolates. No plans exist to produce a vaccine against influenza A(H9N2). However, several laboratories are working to develop a candidate vaccine should the need arise.

Strains to be included in the influenza vaccine usually are selected during the preceding January through March because of scheduling requirements for production, quality control, packaging, distribution, and vaccine administration before the onset of the next influenza season. Recommendations of the Advisory Committee on Immunization Practices for the use of vaccine and antiviral agents for prevention and control of influenza were published in an MMWR Recommendations and Reports on April 30, 1999.

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**Outbreak of Poliomyelitis—Angola, 1999**

**MMWR. 1999;48:327-329**

On March 23, 1999, the Pediatric Hospital in Luanda, Angola, reported 21 cases (three deaths) of acute flaccid paralysis (AFP). By April 3, 102 AFP cases had been reported in Luanda and neighboring areas of Bengo province. A preliminary investigation by the Ministry of Health (MOH) indicated that these cases primarily occurred among children aged <5 years; 90% had received two or fewer doses of oral poliovirus vaccine (OPV), 4% had received three doses, and 6% had received four doses. Many case-patients resided in overcrowded municipalities where families displaced by civil war had settled. On the basis of preliminary data, MOH suspected the outbreak was poliomyelitis and began planning a vaccination campaign to control the epidemic. Surveillance was strengthened to identify and rapidly investigate reports of AFP cases to determine the extent of the outbreak.

On April 8, the National Institute of Virology in South Africa isolated wild poliovirus type 3 from 11 (50%) of 22 stool specimens from AFP cases submitted by MOH. By April 11, the number of AFP cases increased to 276 (19 deaths). By April 25, 634 AFP cases (39 deaths) were reported. Field investigations confirmed two cases of AFP in children aged <5 years in Benguela, a city approximately 300 miles (480 km) south of Luanda. On April 17 and 18, a mass vaccination campaign was carried out targeting 526,036 children. OPV was administered to 634,368 children aged <5 years in Luanda and the rest of the province. A World Health Organization (WHO) team is assisting with the investigation of the outbreak. Three rounds of National Immunization Days (NIDs)† at monthly intervals are planned to begin in July.

Reported by: Ministry of Health, Luanda, Angola. World Health Organization, Luanda, Angola. Regional Office for Africa, World Health Organization, Harare, Zimbabwe. Vaccines and Other Biologicals Dept, World Health Organization, Geneva, Switzerland. National Institute of Virology, Univ of the Witwatersrand, Johannesburg, South Africa. Respiratory and Enterovirus Br, Div of Viral and Rickettsial Diseases, National Center for Infectious Diseases; Vaccine Preventable Disease Eradication Div, National Immunization Program, CDC.

CDC Editorial Note: The outbreak in Angola represents one of the largest epidemics of poliovirus type 3 in the vaccine era and one of the largest polio epidemics recorded in Africa.† Preliminary data from the investigation suggest that the outbreak primarily resulted from failure to vaccinate, with a high proportion (approximately 90%) of case-patients being unvaccinated or partially vaccinated (three or fewer doses of OPV). With the intensification of civil war at the end of 1998, large groups of displaced persons moved from areas where vaccination services had been suboptimal to the capital, Luanda, and other cities. Sub-National Immunization Days (SNIDs)† were conducted in national and provincial capitals of Angola in 1996, and NIDs were conducted in districts under government control: 147 (89%) of 165 districts in 1997, and 121 (73%) of 165 districts in 1998. Excluding districts not under government control from the denominator, ≥90% coverage was obtained in each round of NIDs. Estimated vaccination coverage for the 1998 NIDs was <50% in three of Angola’s 18 provinces.

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4 available

* Nationwide mass campaigns over a short period (days to weeks), in which two doses of oral poliovirus vaccine are administered to all children in the target age group (usually aged <5 years), regardless of vaccination history, with an interval of 4-6 weeks between doses.

† Focal mass campaigns in high-risk areas over a short period (days to weeks) in which two doses of OPV are administered to all children in the target age group, regardless of vaccination history, with an interval of 4-6 weeks between doses.

Displaced persons settled in crowded areas where sanitation is poor and water supply inadequate and created an ideal environment for the spread of poliovirus. Movement of refugees out of the country increases the probability that the epidemic will spread into neighboring countries, some of which have been reporting no cases of polio. These countries have been informed and are increasing surveillance in border zones and developing plans to vaccinate refugee children from Angola.

Travelers to Angola are advised to review their polio vaccination history to ensure that they have received a complete primary series of three doses before initiating travel. In addition, travelers who already have received a complete primary series should receive an additional dose of either inactivated poliovirus vaccine (IPV) or OPV before leaving for Angola. If there is insufficient time before travel to administer a three-dose primary vaccination series, then travelers should receive a minimum of a dose of either IPV or OPV, depending on age and vaccination history. To achieve the target of polio eradication by 2000, implementation of polio eradication strategies in Angola needs to be accelerated and to reach all areas of the country, including those not under government control. The planned three rounds of NIDs during July-September are a significant step in this direction, but success will depend on achieving high vaccination coverage levels in all areas of the country. In Angola and other countries in conflict, reaching agreements for cease fires to carry out vaccination campaigns for polio eradication are becoming increasingly urgent.