Recognition of Dr. Carl Taylor and Dr. Rajanikant Arole as Recipients of the Gordon-Wyon Award for Excellence in Community-Oriented Public Health, Epidemiology and Practice

Henry Perry, 8 November 2010[1]

International Health Section Awards Session

American Public Health Association Annual Meeting, Denver, CO

Dr. Carl Taylor and Dr. Rajanikant Arole are this year's recipients of the Gordon-Wyon Award for Excellence in Community-Oriented Public Health, Epidemiology and Practice, presented by the International Health Section. The award was established to honor the pioneering contributions of John Gordon and John Wyon to community-oriented public health as well as individuals who have made outstanding contributions to this field.

Dr. John Gordon[2] and Dr. John Wyon

As a young bacteriologist and physician directing the huge fever hospital in Detroit in the 1930s, Dr. John Gordon was appalled by the high prevalence of infectious diseases, particularly among young children. Longing to document and understand a scarlet fever epidemic from its first to its last case, he found the Rockefeller Foundation ready to support his goal. In his chosen site in Rumania he drew on the experience of the Rockefeller Foundation scientists in China, notably John Grant, who had pioneered a community-based approach to primary health care.[3] Meanwhile, the Harvard University School of Public Health pursued John Gordon to head its Department of Epidemiology, even before the now meticulously documented scarlet fever epidemic in Rumania ended.

World War II claimed John Gordon's for six years. Initially, he was responsible to the British government to identify all unrecognized epidemics in Britain. From 1943 to 1945, he was Chief of Preventive Medicine for all U. S. forces, first in Europe and then in Asia. In this capacity, he learned to

[1] Because of time limitations, only a portion of this was given at the time of the presentation of the award.
[2] John Wyon provided some of this information about John Gordon.
[3] John Grant is widely considered to be the founder of primary health care as we know it in global health terms and as later defined in the Declaration of Alma Ata at the International Conference on Primary Health Care in 1978. John Grant was the father of James Grant, who served as the extraordinary Executive Director of UNICEF from 1980 to 1995.

use military units as the denominator base for studying the frequencies of every conceivable kind of disease and injury affecting the military. He quickly applied findings to the design, management and evaluation of preventive and curative programs.

Figure 1. John Gordon

Returning to Harvard in 1946, John Gordon was one of the first epidemiologists to investigate new areas beyond infectious diseases. At the level of concepts, Gordon returned the word "epidemiology" from its earlier restriction to only infectious diseases to its broad meaning in Greek of "the study of things that happen to people." With Carl Taylor and Nevin Scrimshaw, who were his students at the time, John Gordon synthesized recent research findings into an understanding of the interrelationships between infection and nutrition.[4] With John Wyon, another of his students he carried out a longitudinal field study of rapid population growth and of its component rates of birth, death and migration.[5]

John Wyon led the field work for that study in north India, and for 10 subsequent years he focused on analyzing the data and reporting the findings. These included analyses of causes and determinants of child death, the social and biological determinants of conception, pregnancy, and lactation, migration (in and out of the study villages). Gordon and Wyon also produced the first published study of the epidemiology of injuries.[6]

Both John Gordon and John Wyon became champions of the idea that public health and epidemiology need to give priority to involving communities in the work of public health and to collecting local epidemiological data for designing and implementing health programs.

John Gordon was an early proponent of longitudinal home-based epidemiological surveillance. He developed methods for a variety of settings, including in Rumania from 1934-1938. This early experience led the way for the Khanna Study, in which households were visited monthly by surveillance

[4] Taylor, C. E., N. S. Scrimshaw, and J. E. Gordon. “Interactions of Nutrition and Infection.” *American Journal of Medical Sciences* 237 (March 1959): 367-403.
Taylor, C. E., N. W. Scrimshaw, and J. E. Gordon. *The Interactions of Nutrition and Infection.* WHO Monograph Series No. 57. Geneva: World Health Organization, 1968.

[5] Wyon, J. B. & Gordon, J. E. *The Khanna Study: Population Problems in the Rural Punjab,* Cambridge, MA, Harvard University Press. 1971

[6] Gordon JE, Gulati PV, Wyon JB. Traumatic accidents in rural tropical regions: an epidemiological field study in Punjab, India. Am J Med Sci1962 Mar;243:382-402.

officers for seven years. The Khanna Study proved to be one of the world's pioneering studies in community epidemiology. This same approach was applied in the famous Narangwal Project led by Carl Taylor and in the INCAP village studies in Guatemala led by Nevin Scrimshaw.

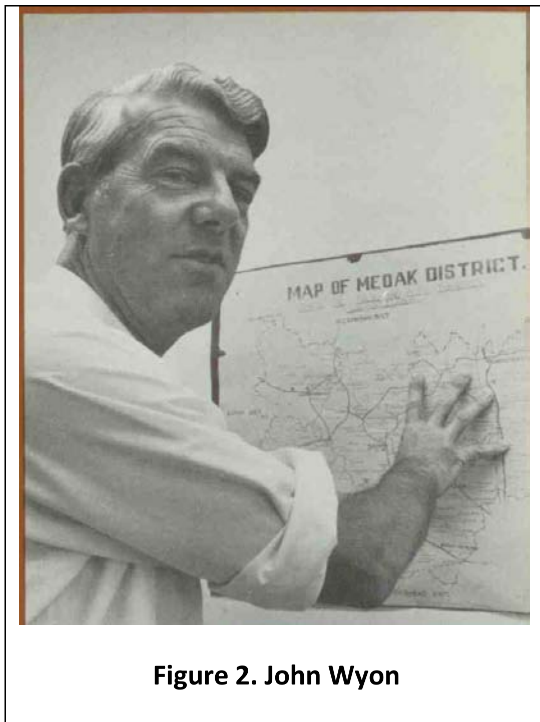

Figure 2. John Wyon

Building on this experience, John Wyon became a passionate advocate for community-oriented public health. His oft-repeated comments were (more or less) as follows:

> Public health should be thought of as a three-legged stool. One leg consists of disease-oriented public health, another of services-oriented public health, and the third of community-oriented public health. The goal of disease-oriented public health is to control a specific condition or disease within a population. The goal of services-oriented public health is to ensure that health-related services reach those that need them. The goal of community-oriented public health is to, in close collaboration with the community, improve the health within a community (or a set of communities) by (1) determining the most serious, frequent and preventable causes of death and illness and addressing them as well as (2) determining and addressing the community's priorities. Unless these three legs are strong, the platform upon which public health rests will be weak.

The International Health Section and its Working Group on Community-Based Primary Health Care honor the contributions of John Gordon and John Wyon for their pioneering work and for their vision for public health by establishing the Award for Excellence in Community-Oriented Public Health, Epidemiology and Practice in their name. Their work has had a long and enduring effect on the global health community. They have influenced generations of public health practitioners who have established evidence-based community-oriented approaches to health programs in developing countries.

Dr. Carl Taylor and Dr. Rajanikant Arole

In addition to honoring the pioneering work of Dr. John Gordon and Dr. John Wyon, the International Health Section recognizes other individuals who have made outstanding contributions in the field of community-oriented public health, epidemiology and practice. This year, we honor two such individuals: Dr. Carl Taylor and Dr. Rajanikant Arole. Of particular note is that both have strong personal ties to John Gordon and John Wyon.

No one has done more than Carl Taylor to build the foundation for current and future health programs for the poorest in our global family. Carl Taylor had an 88-year career in global health, probably longer than anyone ever has or ever will. He grew up in the villages of North India where he assisted his parents in their medical mission work. Carl Taylor began his career as a missionary doctor and surgeon. He carried out pioneering research into the links between nutrition and infection. Then, he

founded the first department of preventive medicine in Asia at Lucknow Christian Medical College. His signature field project at Narangwal, India, was one of the first to demonstrate that community-based services provided by village-level workers can reduce child mortality, improve nutrition, and reduce fertility. Narangwal investigators developed a practical means of diagnosing childhood pneumonia, the current leading single cause of under-five mortality in the world. Their method was to have a community health worker identify a syndrome that included cough, fever and labored respirations. Narangwal also provided the first demonstration of the effectiveness of the community-based administration of antibiotics by non-physicians in reducing mortality from childhood pneumonia.[7] The Narangwal Project was one of the earliest examples of participatory community-based research, and it clearly demonstrated the cost-effectiveness of integration of services.[8]

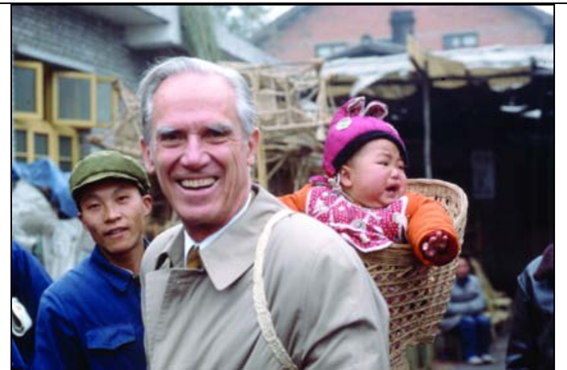

Figure 3. Carl Taylor

Carl Taylor founded the discipline of international health by chairing the first such department in the world at the Johns Hopkins School of Public Health from 1967 to 1983, and he taught and mentored two generations of students who went on to make major contributions to the field of international health, most notably Drs. Rajanikant and Mabelle Arole, who founded the Jamkhed Comprehensive Rural Health Project, and Drs. Abhay and Rani Bang, who founded the Society for Education, Action, and Research in Community Health, both in rural areas of the state of Maharashtra, India.

Carl Taylor was a close advisor to Dr. Halfdan Mahler, Director General of the World Health Organization from 1973 to 1988, and to James Grant, Executive Director of UNICEF for 15 years beginning in 1980. He was a behind-the-scenes inspiration and guiding force for the 1978 International Conference on Primary Health Care and the famed Declaration of Alma Ata. In his later years, Carl Taylor was a passionate spokesperson for community-based primary health care, for the empowerment of communities and of women, for linking grassroots efforts to top-down efforts, and for more emphasis on integrated approaches (including family planning). Halfdan Mahler said that, "Carl Taylor is the greatest public health professional I have come across."[9]

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[7] McCord, C. & Kielmann, A. A. (1978) A successful programme for medical auxiliaries treating childhood diarrhoea and pneumonia. *Trop Doct,* 8**,** 220-5.

[8] Arnfried A. Kielman, Carl E Taylor, Cecile DeSweemer, Robert L. Parker, Dov Chernichovsky, William A. Reinke, et al. (eds.), *Child and Maternal Health Services in Rural India, The Narangwal Experiment: Volume 1, Integrated Nutrition and Health Care.* Baltimore, MD: The Johns Hopkins University Press, 1983, pp. 215-227. Taylor CE, R.S.S. Sarma, R.L. Parker, W.A. Reinke, R. Faruqee. *Child and Maternal Health Services in Rural India: The Narangwal Experiment. Volume 2. Integrated Family Planning and Health Care.* Baltimore, MD: The Johns Hopkins University Press, 1983.

[9] Quoted in the New York Times, 12 March 2010. "Carl E. Taylor, Leader in Global Health Care, Is Dead at 93." Denise Gellene (http://www.nytimes.com/2010/03/13/world/13taylor.html?hpw).

Carl Taylor was a stalwart leader of the American Public Health Association (APHA). He was the founding chair of the International Health Section and one of the founding members of the Working Group on Community-Based Primary Health Care in that Section. He was also a member of the APHA delegation to the founding session of the World Federation of Public Health Associations. He was a recipient of the Lifetime Achievement Award of the International Health Section of APHA. He was also the founding chair of the National Council for International Health, now known as the Global Health Council. In 2008, he received the inaugural Lifetime Achievement Award of the Global Health Council.

Figure 4. Carl Taylor (center, in shorts) and John Wyon (in the white shirt) in Khanna in the 1950s

A recent issue of *The Lancet* contains his last publication, written just several weeks before his death.[10] It serves as a call to continue the effort toward the vision of Health for All as defined at Alma Ata in 1978, in which communities become partners with health professionals in maximizing the potential of programs in resource-constrained settings in reducing unnecessary death and suffering from readily preventable and treatable conditions.

Carl Taylor's fervent belief was that just and lasting change in health and in quality of life for the poorest and most marginalized people around the world can best be achieved by listening to the people, treating them with dignity and respect, and empowering them – especially women – to be able to address their health problems with the latest in appropriate technology, effective preventive and curative interventions, and healthy behaviors.

This year, we recognize Carl Taylor posthumously for his magnificent contributions to community-oriented public health, epidemiology and practice. This award is especially appropriate because John Gordon was perhaps Carl Taylor's most significant mentor and John Wyon was one of his closest colleagues. In fact, Carl Taylor recruited John Wyon into the field of academic public health after they became friends and kindred spirits as medical missionaries in India in the 1950s (see Figure 4).

Dr. Rajanikant Arole and his late wife, Dr. Mabelle Arole, founded the Comprehensive Rural Health Project at Jamkhed in Maharashtra, India, in 1970. Now, 40 years later, there is widespread agreement that no other health program in the world has an equivalent record of health improvement through long-term and innovative program design; promotion of new methods and technologies for community health; empowering communities, women and marginalized groups; addressing the root

[10] Taylor CE. What would Jim Grant say now? Lancet 2010 Apr 10;375(9722):1236-7.

causes of ill-health; collaborating with other individuals and organizations; and providing field training in practical implementation for people from around the world.[11]

Jamkhed was one of the first large-scale demonstrations of the effectiveness of illiterate community health workers (CHWs). Jamkhed works with communities to ensure that poor and marginalized people achieve an acceptable level of health using the principles of primary health care, as defined at Alma Ata in 1978. In fact, the Jamkhed Project was one of the inspirations for the International Conference on Primary Health Care and its Declaration of Alma Ata. The Jamkhed Project achieved all of the Millennium Development Goals many years ago through equity and integration of all health services, community empowerment, and addressing the social determinants of health, such as poverty, gender disparity and caste barriers.

Figure 5. Rajanikant Arole

In 1970 when the Jamkhed Project began, levels mortality and poverty were among the worst in the world. The infant mortality rate was 176 per 1,000 live births. 40 percent of under-five children were malnourished; coverage rates of childhood immunizations, family planning, prenatal care, and birth attendance by a trained provider were all less than 1 percent. Women were commonly treated as beasts of burden without personal rights. One-third of the population was migrating to sugar cane plantations to work in temporary jobs because no food or work were available in the Jamkhed area.

In the communities, children began to receive nutritional monitoring and mothers learned how to prevent and treat childhood diarrhea and pneumonia. Almost all births took place at home, and women who developed complications of pregnancy or childbirth were brought to the Jamkhed hospital without delay. Soon after the hospital opened, there were almost always three or four newborns hospitalized with neonatal tetanus, and half of the hospitalized patients were children. Today they account for less than 3 percent.

Within five years, the infant mortality rate fell to 52. The coverage of antenatal care increased to 80 percent. Seventy-four percent of deliveries were performed in the home with appropriate safety precautions, the immunization coverage of children was 81 percent, and leprosy prevalence dropped by

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[11] For further documentation about the Jamkhed, see the following:

(1) www.jamkhed.org;
(2) Arole M, Arole R. A comprehensive rural health project in Jamkhed (India). In: Newell KW, editor. Health by the People. Geneva, Switzerland: World Health Organization; 1975. p. 70-90.
(3) Arole M, Arole R. Jamkhed - A Comprehensive Rural Health Project. London, UK: Macmillan Press; 1994.
(4) Arole M. The Comprehensive Rural Health Project in Jamkhed, India. In: Rohde JE, Wyon J, editors. Community-Based Health Care: Lessons from Bangladesh to Boston. Boston, MA: Management Sciences for Health; 2002. p. 47-60.

half. After 20 years, the infant mortality rate was 26, and 60 percent of eligible couples were using family planning; less than 5 percent of the children were malnourished, and the prevalence of tuberculosis had fallen three-fold. Neonatal tetanus disappeared when mothers were immunized. Today, 100 percent of pregnant women receive antenatal care and have safe deliveries, and less than 1 percent of children are malnourished. According to statistics still maintained by the communities, the infant mortality is still 26 deaths per 1,000 live births, and the maternal mortality ratio is less than 100 per 100,000 live births. Compared to other program areas around the world with similar levels of socio-economic development, these mortality levels are among the lowest, and they are about half those for similar populations in rural Maharashtra.

Early on, Jamkhed managed to reduce greatly the social stigma of leprosy. The same is true now for HIV/AIDS. Almost 10,000 tuberculosis patients have been identified and treated, as have more than 5,000 patients with leprosy. These patients are now integrated into the life of their communities. With most common communicable diseases under control, other health and development problems are being addressed by the communities, e.g., non-communicable diseases (diabetes, hypertension, arthritis, mental illness, among others), adolescent girls' health and development, watershed management, agriculture and income-generation, especially for women.

The Jamkhed Project developed a replicable model of cost-effective secondary hospital care to support comprehensive community-based primary health care. Its 30 beds provide basic inpatient medical, obstetrical and surgical care as well as outpatient services for a catchment area of 1.5 million people within a 50 km radius. Each year the hospital staff treats 17,000 outpatients, conducts more than 200 deliveries, mostly for high-risk or complicated pregnancies, and performs more than 400 surgical procedures.

The key change agent in the community is the community health worker (CHW) selected by the community. She receives training in health, community development, communication, and personal development. At the outset, many of these CHWs were illiterate and from the untouchable (*dalit*) caste. The primary responsibilities of the CHWs are to share their knowledge with everyone in the community, to provide basic health care, to organize community groups, and to facilitate action, especially with the poor and marginalized. The CHWs are taught skills that help them earn their own living through micro-enterprise. Once each week, the CHWs come to the central training facility in Jamkhed where they stay overnight, learn from one another and from the mobile health team, have fun, and provide each other with social support. Most of these women have been CHWs for several decades, and dropouts have been rare. The CHWs maintain a simple health information system in each village. They record births and deaths, family planning usage, and other basic information. They place a summary of these statistics on a blackboard in the center of each village so everyone in the village is aware of the situation, able to discuss the problems identified and assess the progress being made.

The Jamkhed Project has a demonstration and training farm where it promotes new crops, new farming techniques (including organic methods), animal husbandry, and new income-generating activities. Over 2,000 men and women have improved their income from this training and have better

nutrition for their families and communities. The farm also provides a livelihood for destitute women with chronic illnesses, such as HIV/AIDS, and for women who are victims of domestic violence, giving them dignity and hope.

Jamkhed has, from the beginning, addressed broad community concerns and the needs of the whole person rather than simply providing narrowly focused curative and preventive health services. It has addressed the social determinants of health, e.g., the low status of women, the caste system and poverty. Farmers' clubs have planted millions of trees and established watersheds to build up the water table, and they have improved the land for agricultural production and learned to use appropriate technology (e.g., bio-gas and vermiculture). CHWs have learned about herbal medicines and home remedies, including home-based oral rehydration therapy and steam inhalation. A small team of local villagers received training in fitting artificial limbs ("Jaipur foot") and have helped more than 18,000 amputees throughout the state. This team also has trained groups in Angola, Liberia and Mozambique to produce and fit the "Jaipur foot" for landmine victims.

Increasingly, Jamkhed has placed emphasis on women's empowerment and the elevation of self-esteem, especially in girls. They have established a cooperative bank for women. There are now 175 women's self-help groups with 2,700 members in project villages. These groups have savings and loan programs and activities directed at domestic violence and alcoholism. Adolescent groups have been present for 10 years in 30 villages. These groups promote health education, self-confidence, creative expression, and deferral of marriage and pregnancy. Girls even learn karate for self-defense and to enhance their self-esteem!

In 1992, after two decades of program development and field implementation, Rajanikant and Mabelle Arole established the Jamkhed Institute for Training and Research in Community Health and Population to share Jamkhed's experience with others from around India and the world. Residential courses are now offered throughout the year for individuals and organizations. These courses include a diploma program, certificate training, special short-term courses, and tailored training to meet the specific needs of organizations and individuals. All courses are participatory, with practical training for those beginning or managing comprehensive community-based primary health care (CBPHC) projects. Instructors include CHWs and other members of project villages, Jamkhed staff, national specialists and international public health experts. Participants receive training in the principles and practice of community-based health and development, leadership skills and personal development. Participants also learn from each other, since they come from diverse backgrounds, disciplines, cultures and geographic settings.

To date, 28,000 persons from throughout India and 2,500 persons from more than 100 countries obtained training at Jamkhed. These persons are mostly health and development workers from governmental, non-governmental and faith-based organizations. They include grassroots workers, doctors, nurses, government workers, administrators, and medical and public health students. The Institute has relationships with the Australian International Health Institute, Maastricht School of Medicine in the Netherlands, Mt. Sinai School of Medicine in New York City, the Duke University Global

Health Institute in North Carolina, and Pune University in India. The United Methodist Church used the Aroles' expertise in establishing similar training centers in Bolivia, Venezuela and Honduras based on Jamkhed principles.

Recently, the Jamkhed Institute directed several major scaling-up projects in India:

- Training 700 ashram teachers and 450 CHWs in implementing the Jamkhed approach in tribal areas (inhabited by indigenous peoples, who are among India's poorest and most underserved) in eight districts of Maharashtra, with a population of 10 million. It is part of a program sponsored by the state government;
- Training 1,500 CHWs, 200 auxiliary nurse-midwives and 2,400 other community volunteers and health staff from all 22 rural districts in Andhra Pradesh, with a combined population of 60 million people in a program sponsored by the state's Society for the Elimination of Rural Poverty; and,
- Training of trainers and grassroots workers for national faith-based organizations and other NGOs in India.

These people come to Jamkhed for short-term training over several weeks, and later a team of Jamkhed staff and CHWs travel to their locales for follow up.

The diploma course is a two-month residential learning experience in Jamkhed followed by eight months of field work back home under the supervision of the students' sponsoring organizations. Since 1992, there have been 23 diploma courses, with 414 participants from 22 states in India (mainly from north and northeast, where health conditions are the worst in India) and from 30 other countries, primarily from developing nations in Asia, Africa and Latin America.

Field research in Jamkhed villages focuses on assessments of the impact and effectiveness of comprehensive CBPHC, prevalence of HIV/AIDS and sexually transmitted infections, reducing the stigma of leprosy, effective tuberculosis control, anemia in pregnant women and adolescent girls, pregnancy outcomes and levels of maternal mortality, empowerment processes, and mental health problems. Villagers are actively involved, learning information and skills as partners and colleagues.

Having developed an effective methodology for implementing primary health care as envisioned at Alma Ata, Rajanikant and Mabelle Arole began to share their experiences with others. An early effort was *Jamkhed: A Comprehensive Rural Health Project,* a book which is a classic of global health throughout the world. It is a practical and inspiring story that animates academicians and practitioners alike.

The Aroles have received international acclaim. Only two years after starting the Jamkhed Project, the Christian Medical Commission of the World Council of Churches invited Rajanikant Arole to report on the Jamkhed experience in its influential periodical (*Contact*). In 1975, the World Health Organization and UNICEF published the seminal volume entitled *Health by the People,* which had a critically important chapter on the pioneering role of Jamkhed. This book was pivotal as the preparatory

volume for the Alma Ata conference in 1978, where, again, Jamkhed was cited as a premier example of Health for All.

Rajanikant and Mabelle Arole helped to found the Voluntary Health Association of India (VHAI) in 1973, and it is now the largest NGO in India. It advocates for primary health care and the rights of the poor throughout the country. The Aroles also helped to found the Society for Service to Voluntary Agencies of Maharashtra. Mabelle was a leader of the Christian Medical Commission of the World Council of Churches, which promoted comprehensive CBPHC internationally.

Although Mabelle Arole died in 1999, Rajanikant Arole has continued to run the organization and the Institute as Founder and Director. Their daughter, Dr. Shobha Arole, is Associate Director, ably directing the activities of the hospital and the community programs, a role she began in 1989. Their son, Ravi Arole, serves as Director of Operations and Finance, running day-to-day operations since 2005.

Rajanikant Arole has served many organizations around the world, most notably as a long-term member of the National Planning Commission of India. He has been a long-term advisor to the United Methodist Church, the Catholic Health Association of India, and the Church of North India. He served on the Board of Directors of Andean Rural Health Care (now Curamericas Global). He is a member of the International Association of Agricultural Medicine and Rural Health. Over the years, he served on numerous governmental policy and planning commissions at state and district levels.

Rajanikant Arole is currently one of the two NGO representatives on the National Rural Health Mission (NRHM), chaired by the Prime Minister, which has incorporated aspects of the Jamkhed approach in its rural health initiatives throughout the country. The NRHM is revitalizing India's governmental programs for the rural poor, especially in the areas with the highest mortality rates. It is spearheading the training and support of more than 500,000 CHWs (ASHAs), making it the largest such program in the world.

Rajanikant Arole has dedicated his life to serving the least fortunate of our global family through community-oriented public health. He is one of the great champions of the ideals pioneered by John Gordon and John Wyon, namely that public health and epidemiology need to give priority to involving communities in the work of public health and to collecting local epidemiological data for designing, implementing and evaluating health programs.

In summary, Rajanikant Arole is receiving the Gordon-Wyon Award because of his lifelong service to improving the health of the communities of Jamkhed, other parts of India, and around the world; for his leadership – with his wife Mabelle – in the founding and development of the Jamkhed Comprehensive Rural Health Project, one of the world's finest examples of community-oriented public health; for his seminal contributions to advancing the practice of community-oriented public health through the empowerment of communities and women; for his scholarship in sharing the work at Jamkhed through writing – with his wife Mabelle – one of the great public health classics of our time as well as other important publications, and for his tireless efforts to share his knowledge, experience and wisdom with thousands of grassroots health workers and health professionals around the world.