

AMAR PRASAD RAY

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(1913-1996)

Elected Fellow 1962

EARLY LIFE, EDUCATION AND FAMILY

AMAR PRASAD RAY was born in Kolkata on 26th February 1913. He belonged to Zamindar family from Sugandha in Hoogly district, West Bengal. His parents Shri Hemant Kumar Ray and Smt. Nirmal Nalini gave birth to four children. The eldest daughter was Mrs. Anshu Mala; Amar was second followed by two sisters Mrs. Urmila Mala and Mrs. Renuka. Father of Amar joined the Bihar and Orissa civil services and mostly remained posted in Patna and Bhubaneswar. His grand father Shri Sidheswar Kumar Ray served in the Audit and Accounts Service of United Province i.e. Bihar and Orissa and settled in Patna, Bihar. Amar's early education was in Patna where he attended Raja Ram Mohan Roy Seminar School, and subsequently completed intermediate in science from Patna Science College. Amar's maternal uncles were in legal profession and one of them was in the judicial service i.e. a district judge. Mother's side of the family wanted Amar to join their profession, but Amar was interested in becoming a medical doctor. Amar joined the Prince of Wales Medical College and Hospital, Patna University obtaining MBBS with distinction in all subjects. He completed the internship and house job and later in 1957 did his PhD in Medicine from Patna University. Throughout his academic career Amar's performance was simply brilliant. His doctoral thesis was on "Cirrhosis due to Malaria Infection in Monkeys". This thesis was considered as one of the break through contributions on experimental malaria in the 1950s. Professor Dr TN Banerjee (who was personal physician of Dr Rajendra Prasad and Pt Jawahar Lal Nehru the first President and the first Prime Minister of India) was his teacher, and on his advice Dr AP Ray joined as the Chief Medical Officer in the state of Maharaja of Hathuwa (an independent state under the British rule) in 1938.

Dr AP Ray hailed from a very orthodox Hindu family. He married Miss Kalyani of Christian faith in 1942. This infuriated his parents who severed all relations with Amar and his wife. Young Amar remained calm and determined on his decision and succeeded in convincing his parents to give his wife her due place and respect in the family. Finally his parents relented and gracefully accepted the daughter-in-law in to the family. Thereafter, the family remained fully united and caring for each other.

PROFESSIONAL CAREER

Dr AP Ray was selected in the Indian Medical Service and joined the armed forces in 1939 as Captain. He was posted in Middle East, travelled extensively in war torn countries which are now part of South East Asia Region of the WHO. Dr Ray participated in the II World War



and trekked the most difficult terrain in Middle East serving the Allied Army Regiments at the war front. While serving at the front he was very compassionate with the wounded and sick soldiers. During his service in defence, he had providential escape many a times. In his private conversations Dr Ray often narrated interesting stories of war period and many dangerous situations he had witnessed. One such story narrated by him was that towards the closing years of World War II, when Japanese forces had advanced on the eastern theatre Dr Ray was entrusted to organize chemoprophylaxis among Allied Forces fighting Japanese on Assam and Arakan Front. Later after the surrender of Japanese Forces in 1945, Dr AP Ray who was member of the British contingent took charge of health component from the Japanese. In 1945 he was deputed by the Army Medical Headquarters to undergo training in malaria control methods at the Malaria Institute of India, Delhi. In the initial training courses in malariology, he attended in 1945, Dr SP Ramakrishnan and Dr NGS Raghavan were his co-participants. The three stalwarts joined Malaria Institute of India within a gap of six months. In 1946 Dr Ray joined the Malaria Institute of India as Assistant Director (presently National Institute of Communicable Diseases) after demitting office as Major in the Army Medical Corps of British India. At that time Major General G Covell was Director, Malaria Institute of India. He was highly impressed by Dr Ray's brilliant career, enthusiasm and his commitment to research. Dr AP Ray was promoted to the post of Assistant Director at the first opportunity superseding many senior officers in the Institute. Because of his brilliant performance at the Institute, he was promoted to the post of Deputy Director in 1956. The former two colleagues superannuated as Director's of NICD while Dr AP Ray retired as Director of NMEP in 1968.

RESEARCH CAREER

Dr Ray was residing in Metcalf house which is in the vicinity of the Malaria Institute of India—a great help as this allowed him to work till late evening hours. At the Malaria Institute of India he devoted all his time and energies in research on malaria. Dr AP Ray's first research paper was on prophylactic effect of Paludrine in tea estate which was published in 1948 in the *Indian Journal of Malariology*. In the next two decades (1948-1966) Dr Ray published more than 125 scientific papers mostly on therapeutic and prophylactic effect of antimalarial drugs and the development of drug resistance in animal models. He worked with antimalarial drugs such as Acridines (Mepacrine), Pyremethamine (Daraprim), 4-aminoquinolines (Chloroquine and Rasochine), antifolate compounds (Proguanil), Amodiaquine (Camaquine), Pamaquine, Stabrin, Bromoguanide and used experimental models of *Plasmodium knowlesi*, *P. inui*, *P. gallinaceum*, *P. cynomolgi*, *P. berghei*. He pioneered the work on parasite resistance and cross-resistance against Paludrine in *Plasmodium knowlesi*, and induced chloroquine resistance in *P. knowlesi* in chicks. He successfully cultured *Plasmodium gallinaceum* *in vitro* in 1951. He isolated a new strain of *Plasmodium knowlesi* (*Nature* 172 p. 122, 1953). He again reported his work on two fold resistance to chloroquine in *Plasmodium gallinaceum* (*Nature* 176 p.1291-1292, 1956). The same year he discovered the synergistic action of quinine and pyrimethamine in *P. falciparum*, and reported the development of resistance to pyrimethamine in *P. cynomolgi*. His work on chemotherapy of malaria and drug resistance was acclaimed internationally. His studies on human malaria infections of *P. vivax* and *P. falciparum* helped in formulating Anti Malarial Drug Policy in India. Dr Ray was himself



spending time in the laboratory cutting sections, screening slides and recording data for communication. It is notable to mention that he was himself conducting experimental work with little help. He was interested in pathology of the disease and invariably he could be seen examining liver sections of infected monkeys. When the discovery of hypnozoites was announced by Dr WA Krotoski in 1980, he recalled having seen the hypnozoites in the liver sections. He wanted to re-visit these slides but all his slides were lost during the period of his long absence from the country. He regretted that a great discovery in malaria had slipped away from his hands.

In 1959, Dr AP Ray took over as the Director of the National Malaria Eradication Programme (NMEP). NMEP was a centrally sponsored activity and one of the biggest health programmes in the world. During this period at the Malaria Institute of India he was pioneer in many fields of research and field operations. Before undertaking the community based field trials with antimalarial drugs, he used to personally monitor experimental studies in confined communities like police hospitals, jail hospitals etc. After fully satisfying himself with preliminary results, he used to extend the field operational studies in endemic areas. He laid the foundation of field studies related to drug trials and testing of insecticides. His work in UP Terai on chloroquine efficacy is valid even after 5 decades. He carried out many pilot studies in difficult terrain throughout the country to control malaria by combination of anti-parasitic and anti-vector measures. All his work was directed to benefit the community by reducing malaria related morbidity and mortality using different strategies in space and time. He blossomed in full fragrance in the conduct of his work and enjoyed visits to tribal and inaccessible areas like Bastar district in Madhya Pradesh, the entire Andaman and Nicobar Island.

His blue book entitled "Administrative and Technical Guidelines of NMEP" is a bible for all malaria workers concerned with the eradication of malaria. In the field every malaria worker had area-wise time bound programme of movement schedule for each working day of the week. The field worker was supervised by the malaria inspector who was directly responsible to guide any work-checking visitor to the village/area with exactness. There was a saying that during AP Ray's time sun rays may miss a village but not the visit of malaria field worker. He himself used to wade through a rivulet and flood waters, and muddy terrain taking his trousers and shoes in hands to inspect the surveillance and DDT spraying in houses. Dr Ray used to walk long distances of more than 20 km in a single stretch to verify the spray of insecticides in the remotest parts of the difficult terrain. It is worth mentioning that Dr Ray was the longest distance trekker and probably no other malariologist could break his record till date. He must have personally visited >90% villages of India. This is a record worth finding a place in the Guinness Book of World Records. Because of the lack of communication in early phases of the NMEP, he used to supervise the field work himself by visiting almost all rural areas, particularly the remotest tribal areas in "holoendemic" malarious belts. He used to make the NMEP unit officers to lead the way to the tribal villages to detect whether these officers had ever visited this place, and more often the officers used to confess that they visited the remote village for the first time because of him. He introduced the surveillance at fortnightly interval to collect the blood smears of all the fever cases and administer radical treatment to malaria positive cases. He was a man with indefatigable energies. Truthfulness and devotion to work were the key words of his approach in dealing with any problem.



MALARIA ERADICATION

Dr AP Ray has the credit of providing capable leadership to the country's most prestigious programme of malaria eradication. The menace of malaria was a great onslaught on the health of the people year after year and it was one of the biggest impediments to the socio-economic progress of the country. He was a perfect marshal of field work and its supervision. His unique innovative and clever methods of field work supervision were the key to success. While on tour he would start his field work early morning, begin with the checking and supervising field activities, taking a route decided by him. The criteria of selecting areas for inspection were difficult, remote and inaccessible villages. He would leave vehicle on the road and move on foot either to "Straight Charge" or "Lateral Charge" or "Loop Making". Singly located house on the top of the hillock were the preferred site for checking surveillance and insecticide spray works. At a single stretch, he used to walk miles together covering the adjoining NMEP units also. The Directorate of Health Services of the respective states and State Programme Officers used to accompany him on such field visits. He used to point out the lacunae in field work and the method of supervision to the senior officers accompanying him.

Dr. Ray invariably interacted with the entire gamut of staff – from grassroots level of malaria workers up to the State Directors/State Malariologists/District Malaria Officers, by giving constructive suggestions and inspiring them to do better supervision. He gave them the satisfaction that their work was key to the national development and so important as to be seen by the Director, NMEP himself. His dynamism, hard work, knowledge and objective assessment, and at times harsh comments, encouraged the staff to perform better with full dedication. As a result there was healthy competition in the performance of malaria control activities among the districts. Dr. Ray had the knack of catching the delinquent workers. Once he inspected a small town in Andhra Pradesh undergoing an epidemic. He enquired from the officials what the spray coverage was, and the reply was 100%. He made the officers and staff to climb the hillock behind the spray camp and found that a hut on the hillock was not sprayed at all. The supervisory staff realized that they should have checked these remote and inaccessible areas before claiming 100% coverage.

He was merciless to the non-performing staff. His emphasis was on total coverage with DDT of the indoors of houses, thorough search of fever cases and strict supervision of all field work to ensure operational efficiency. Dr Ray was an ardent admirer of the power of DDT. His belief in DDT remained unshaken all his life. There was always quality improvement in the supervision in every aspect of malaria eradication programme after the visit of Dr Ray. His visits were always educative and highly inspiring and welcomed by the field staff, though they entailed a lot of hard work to avoid his unpleasant comments. Dr. Ray put all his energies to achieve malaria eradication in the country. As a result of his stewardship, malaria was eradicated from 3/4th of the country by 1964- a rare achievement in the annals of medical history.

Dr Ray had frequent interactions with national leaders in the course of his field visits and was invited by the states on special occasions. Mention may be made of his meeting



Dr Rajendera Prasad, Pandit Jawahar Lal Nehru, Shri Lal Bhadur Shastri, Mrs Indira Gandhi, Dr Sushila Nayyar, Dr BC Ray, Mr Pratap Singh Kairon, and many other dignitaries. Dr Ray had the art of putting his point sarcastically even to the VIPs with a pinch of salt. Once he met the Director of Health Services and the State Finance Secretary Punjab, and during discussions Dr Ray was told that Punjab would not be able to spend the required money for malaria eradication as it had become a poor state. The same evening, Dr Ray happened to meet the State Finance Minister and narrated the story of state poverty to the Finance Minister. The Finance Minister took Dr Ray to meet Mr Pratap Singh Kairon, the most powerful Chief Minister in those days. When Mr Kairon asked Dr Ray how Punjab was doing in malaria eradication work, he responded by saying that Punjab was at the top of the country a few month back; but now the state has become poor and therefore the state officials want malaria work to be carried out by the central government. On hearing this Mr Kairon appeared upset and exclaimed "Dr Ray are you trying to threaten me?" Then Dr Ray narrated the discussion he had with the state officials. Mr Kairon immediately transferred both the Director of Health Services and Finance Secretary and requested Dr Ray to call on him whenever he visited Punjab. Later he used to brief Mr Kairon personally of his field visits to the endemic areas of Punjab.

A similar incidence happened in West Bengal when the famous Dr BC Roy was the Chief Minister. Dr AP Ray narrated to the Chief Minister the sad state of affairs of malaria work in the state. Dr BC Roy took prompt action to rectify the errors in the programme. When Dr Ray landed at Palam Airport after meeting him, he received a message from Dr BC Roy that he had already taken action as suggested by him for improving malaria work in the state. Such was the hold Dr Ray had on the top leaders of the state and the Centre. In the field of malaria, he was close friend of some of the most noted malariologists of his time such as PCC Garham, G MacDonald, EJ Cohen, D Clyde, SR Christophers, LJ Bruce-Chwatt, R Senior White, RH Black, Paul F Russel, G. Covell, MF Boyd, EY Pampana, W Peters, JFB Edison, G Davidson and many others. Among the Indian names that had association with him are BA Rao, T Ramachandra Rao, GK Sharma, Jaswant singh, S Pattanayak, IM Puri, MOT Iyenger, MK Afridi, DK Vishwanathan, SP Ramkrishnan, and of course a large number of his colleagues from the state services and research institutions. I myself had the good fortune of meeting him often on the NMEP campus, listening to his experiences of various meetings in WHO, interactions with experts and learning directly from him and listening to interesting anecdotes and untold stories. He was in direct contact with best of the malariologist of his time, exchanging information and providing his own inputs, wherever it was necessary.

Dr Ray as a person was very compassionate and considerate. He would instantly come for help of his staff physically, financially and morally. Dr Ray treated his entire staff as one family. He created comradeship among the staff members who literally moved as single unit. The staff put the maximum effort with total dedication and involvement bringing out the best in them. When his staff had completed the hard task assignment in difficult areas, he would ensure that they get a holiday in Nainital for full one week to recoup from the hardships faced in the discharge of duty. He never bothered about the money, when he was to meet the expenses for the welfare of his staff. He used to share food with his staff and many



slept under the same roof with them. Often in the field they lived on the fruits and water when no other cooked food was readily available in the remote tribal belts. He would become very angry if the work was not done to his satisfaction but the anger never persisted for more than a few minutes. After his day's work he was very jovial, narrating hilarious anecdotes and stories. One could see best of Dr AP Ray almost daily in the evenings over the drinks.

When Dr Sushila Nayar, former Minister of Health, Government of India informed Dr AP Ray that she wanted to recommend his name for Padma awards, Dr Ray pleaded that his juniors should be the first to receive the national award. He was fully convinced that the entire work of malaria eradication was meticulously carried out by the team of officers which he was leading. At the time of awarding Padma Shree, Dr Ray had no prior knowledge about it since he was away from Delhi on tour. Dr Sushila Nayar gave a ring at his residence at 7 a.m. and having come to know that he was on tour, she requested Mrs Ray to convey to him that he should not refuse the honour being conferred on him by the President of India.

AWARDS AND HONOURS

Dr AP Ray was elected Fellow of the National Academy of Science, Fellow of the Indian Society for Malaria and other Communicable Diseases, Fellow of the National Academy of Medical Sciences and Fellow Royal Society Tropical Medicine and Hygiene. In 1967, he was honoured by the President of India with Padma Shree. In 1968 he was offered the post of Dean and Director, International Malaria Training Centre under the World Health Organization at Manila, Philippines. In 1970 he was promoted as the Senior Malaria Adviser, Western Pacific Regional Office, WHO, Manila. He remained on this post up to 1972. After his superannuation from WHO, he became Director, Malaria Research Centre, Ingleburn, Sydney. In 1974 WHO honoured Dr A.P. Ray by awarding him the Darling Foundation Prize. He was honoured with Geoffrey Harkness Medal in Australia. He left Australia in 1978 due to illness of his wife, and back home he served as the Chief Co-ordinator of the *Plasmodium falciparum* Containment Programme (PfCP) from 1979-1987. He was the longest serving Member of the WHO Expert Committee on Malaria for 32 years.

PERSONAL QUALITIES

Dr Ray was a tall, slim, well built, impressive personality who was least bothered about his dress. In his personal life he was very simple and a caring head of the family. Dr Ray was a sportsman and used to participate in the annual sports events of the Institute and was a winner in slow cycle race for many consecutive years. He was an expert in cycling and used to cycle long distances in the foothill terrain where the terrain facilitated cycling. He never desired to be a rich man and led the austere life believing in the philosophy of simple living and high thinking. Dr Ray was affectionately called "Pitamah" of the Indian Malaria and Filaria Workers family, a "Karma Yogi" in true sense of the word. The Indian Society for Malaria and other Communicable Diseases has instituted "Dr AP Ray Memorial Oration Award" in his memory. Dr AP Ray built a house in Kailash Hills in a South Delhi locality for his retirement. He passed away on 24th September 1996 after a brief illness at his home. He is survived by his wife, a son, two daughters and five grand children.



Dr AP Ray had become a legend in his life time. Malariologist, malaria control programme officers, public health specialists from throughout the world visiting India would make it sure to visit him and personally convey to him their highest regards. In him, the country has lost a great son of India who did proud to the country. He set an exemplary example of service to the Nation. On behalf of the world community of malaria workers we salute this great son of India and pray to almighty that his soul rest in peace.

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