Name ARVIND CHOPRA
Nationality INDIAN Date of Birth: 06 June 1954
Address Baba House, 765 Dastur Meher Road, Camp, Pune 411001, INDIA
Qualifications

1976: MB,BS (Honours in Physiology and Surgery)
1882: MD (General Medicine)
1983: DNB (General Medicine)
1992: International Fellow, American College of Rheumatology
2017: FRCP (London)

Education

1965-1970: Cambrian Hall, Dehra Dun
1971-1972: DAV Intermediate College, Dehra Dun
1972-1976: Armed Forces Medical College (AFMC), Pune
1980-1982: AFMC, Pune

ACADEMICS Awards & Scholarships

1970:National Talent Merit Scholarship (Indian School Certificate, Distinction)
1972:Distinction in Physics, Chemistry and Biology (Intermediate Science)
1972:Certificate for standing First in District (Intermediate Science, Class XII)
1973:Chief of Army Staff Silver Medal (First in College in Anatomy)
1973:Chief of Army Staff Silver Medal (First in College in Physiology)
1973:Krishna Menon Scholarship (First in College at 1st M.B., B.S. Exam)
1973:Dr. S.B. Gadgil Scholarship in Anatomy (First in Pune University)
1973:Shri Dutt Prize for Anatomy and Physiology (Top score, Pune University)
1973:Dr. H.M. Joshi Prize (First in Anatomy in Pune University)
1973:Dr PW Shrikhare Scholarship in Physiology (First in Pune University)
1973:Distinction in Physiology (Pune University)
1975:Chief of Naval Staff Silver Medal (First in College in Pathology)
1975:Maj. Gen B. Basu Trophy and Medal (First in College, Ophthalmology)
1975:Anil Chadha Memorial Silver Medal (First in College, ENT)
1975:Late Dr.MM Limaye Scholarship(First, 2nd MBBS Exam, Pune University)
1976:Lt. Col. O.P. Malhotra Gold Medal (First in College in Medicine)
1976:HQ Central Command Gold Medal(First in College, Obstetrics and Gynaecology
1976: HQ Southern Command Gold Medal (First in College in Surgery)
1976: Lt. Gen. Dayaram Thapar Gold Medal (First in College in Final MBBS)
1976: Distinction in Surgery (Pune University)
1976:Kalinga Trophy (Best outgoing student, AFMC)
1976: President Gold Medal (Best All round Outgoing Student, AFMC, Pune).
1982: Gold Medal in General Medicine (First in MD Exam, Pune University)
1982: Gold Medal in Advance Training in General Medicine (AFMC, Pune)

Present Appointment

Director and Chief Rheumatologist, Centre for Rheumatic Diseases, Pune.
Visiting Consultant (Rheumatology), Inlaks & Budhrani Hospital, Jehangir Hospital, Ruby Hall Clinic, Poona Hospital & Research Centre, Pune

Previous Appointment

1977 Intern Medical Officer,
Command Hospital (Southern Command), Pune

1978	Adjutant & Medical Officer, Medical Battalion, Eastern Sector (Armed Forces India)
1979-80	Officer Commanding, Staging Section Hospital, Eastern Sector (Armed Forces India)
1980-82	Advanced Trainee in Medicine/ Registrar, Dept. of Medicine, Armed Forces Medical College & Medical Division, Command Hospital (Southern Command), Pune
1983-85	Clinical Tutor/Asst Prof in Medicine, Dept. of Medicine, Armed Forces Medical College, Pune
1985-88	Physician (Graded Specialist in General Medicine), Military Hospital, Belgaum
1988-92	Physician & Rheumatologist, Sancheti Institute for Orthopaedics & Rehabilitation, and Poona Hospital & Research Centre, Pune
1990-1998	Honorary Consultant Physician & Rheumatologist, Inlaks & Budhrani Hospital, Pune
1992	Visiting Fellowship Trainee in Advanced Rheumatology, The St George Hospital, Sydney, Australia
1993	Observer in Rheumatology (Short term), Arthritis Unit, Massachusetts General Hospital, Boston, USA
1993	Observer in Rheumatology (Short term), Guy's Hospital , London, UK
1993-2008	Associate Professor (Medicine), Honorary Consulting Physician and Rheumatologist Bharati Vidyapeeth Medical College & Hospital, Pune
1998-2015	Honorary Rheumatologist, Co-ordinator Research (2005-7) Inlaks and Budhrani Hospital, Pune
2015 till date	Visiting Consultant (Rheumatology), Inlaks & Budhrani Hospital, Jehangir Hospital, Ruby Hall Clinic, Poona Hospital & Research Centre, Pune
2016-17	Senior Research Professor, SRM Medical College and University, Chennai.
1993 till date	**Director & Chief Rheumatologist** **Centre for Rheumatic Diseases, Pune**

Honorary Appointments, Executive Positions (other than Professional Services)

1. Member, Editorial Board, International Journal of Rheumatology (APLAR)
2. Member, Editorial Board, Clinical Rheumatology (ILAR)
3. Member Executive Committee (1996-1998, 2006-2008), Indian Rheumatology Association (IRA)
4. Academic Editor, PLOS One
5. International Coordinator, WHO-ILAR COPCORD (Community Oriented Program For Control Of Rheumatic Diseases) (since 2005)
6. Coordinator & National Secretary, BJD–India (Endorsed By WHO & UN & Govt Of India)(2000-2010)
7. Chairman, BJD-India (2015-2017)
8. Medical Advisor, Mission Arthritis India (MAI) – A Pune Based Patient

Support Group (2001 till date)
9. Principal Coordinator, New Millennium Indian Technology Leadership Initiative (NMITLI) Arthritis Project, CSIR, GOI (2003-6)
10. Chair, Task Force on Musculoskeletal Disorders for Population Surveys, ICMR, Govt of India (2007-2010)
11. Executive Committee Member, OMERACT (an international body of rheumatologists for outcome measures (2010 till date)
12. Consultant, 1422/ Epirus USA (A US based Biopharmaceutical Company for Biologic Biosimilar Drugs) (2011-2013)
13. Consultant, Troika Pharmaceuticals, Ahmedabad (focus on musculoskeletal pain)
14. Advisory Boards : Epirus/1422 USA, Lupin India, Pfizer India, Janssen India, Novartis India, Roche India
15. Chairman, Musculoskeletal Burden India Expert Group 2016-17 (ICMR-PHI project)
16. Country Lead and Principal Investigator, Meteor India (an international RA Data base Project, The Netherlands)
17. President, Association of Rheumatologists of State of Maharashtra (MRA) (2015-2019)

Professional, Research & Services Recognition / Prestigious Awards and Orations

1. Dr Berry Memorial Award (Best Research Paper), Association of Physicians of India National Conference 1987
2. E MERCK Award 1988 (Best Research Paper), Association of Physicians of India
3. BOOTS Best Research Paper and Gold Medal 1990, Indian Rheumatism Association
4. Advanced Fellowship & Study Grant Award 1992, Asia Pacific League against Rheumatism (APLAR)
5. IRACON ORATION 2003, Indian Rheumatology Association
6. BJD Partnership Award 2003 by The Bone & Joint Decade (BJD) International (endorsed by UN & WHO) 2000-2010
7. BJD Special Achievement Award for the decade (2000- 2010), Lund Sweden 2010
8. BJD Ambassador (appointed by BJD International Steering Committee), Pune 2008
9. Excellence in Integrative Medicine Research Award 2013 (Clinical) by the European Society of Integrative Medicine, Berlin 2013
10. Teacher/ Guide for PhD studies, University of Pune (2004 till date) & Symbiosis International University Pune (2011-2016)
11. Commendation (Medical & Social Science, Service to the Civil Society) on the occasion of the 8th Salute the Soldier Program by Trishakti Foundation Pune, 2014
12. Lifetime Achievement Award for outstanding contributions to Medicine and Society on 'Vijaya Diwas' (National Armed Forces Victory Day) by the Karad (District) Civic Administration, 2015
13. 25th Prof PK Devi Memorial Oration Award 2016 (instituted by Kasturba Health Society-Medical Research Centre), Mumbai

Special Invitee /Representative for Government of India

1. Represented India in the WHO Scientific Experts' group meeting to launch the Bone and Joint Decade 2000-2010 in Geneva, 2000
2. Member of the Govt of India sponsored/facilitated expert group on ' NMITLI Ayurveda Arthritis Project' for several meetings held with US FDA in Oxford, Memphis (USA) and Delhi during the period 2006-2010
3. Member of a Government of India core team of experts to address recognition of Ayurveda by the European Medicinal Evaluation Agency in a special meeting held in London from 13-16 May 2006
4. Special Observer, Sixth Joint WHO/ILAR Task Force Meeting on rheumatic diseases, 16 Jan 2000, Geneva Switzerland
5. Member & Adviser, Council Scientific Industrial Research- Aroma and Phytopharmaceutical Mission Committee, Expert Review Meeting at CDRI Lucknow, 7-8 July 2016

Membership (Life time)

- Indian Rheumatology Association
- Mission Arthritis India
- Indian Cardiology Society
- The Bone and Joint Decade India
- Society of Osteoarthritis Research
- Association of Rheumatologists of Maharashtra

Research

Overview of Research Projects:-

Principal subjects [In house and Collaboration projects- national (CSIR, ICMR, BJD India) and international (ILAR, APLAR & BJD]: epidemiology & quality of life, Immunogenetics-HLA Profiles, anti-nuclear antibodies, outcome measures, rheumatology database , clinical drug trials, Ayurveda (Indian ethnic medicinal system) herbal formulations/medicinal plants, Chikungunya, cytokines, biomarkers, pharmacogenomics (methotrexate).

Summary of major research projects:

1) *Title*: A clinical study of 'arthritis' with special reference to rheumatoid arthritis (RA) and spondyloarthritis (SpA) in an Indian Community

Background: Though a common disorder, clinical data in the Indian scenario is sparse.

Design: Investigator Initiated, tertiary hospital outpatient & inpatient based, observational case series, cross sectional clinical descriptive, limited prospective follow up (6 months-1 year); a cohort with Atypical Seronegative Polyarthritis was followed for 18 months

Sites: Armed Forces Medical College and Command Hospital, Pune (1000 bedded services teaching hospital with some free of cost services for civilian population; Military Hospital, Belgaum (250 bedded referral services hospital)

Duration: 1981-87

Methods: Clinical examination, immunologic, radiologic and epidemiologic aspects. 200 patients and 100 healthy subjects (for rheumatoid factor (RF) and HLA B 27) were included.

Conclusions:

(i) RA is predominantly an arthritis with ~60% seropositive RF
(ii) Clinical mimics include lupus, scleroderma and other connective tissue diseases, secondary syphilis
(iii) RA-overlap may exist in young servicemen and is a diagnostic challenge with uncertain prognosis
(iv)Undifferentiated SpA was the commonest entity in the cohort and may be a forme-fruste of 'reactive arthritis'
(v) Full blown Reiter's syndrome was uncommon
(vi) HLA B 27 was positive in ~70% SpA with higher positivity in ankylosing spondylitis (AS)
Contributions & Awards:
(i)Comprehensive clinical profile of the initial 50 patients was published as a dissertation and submitted to the University of Pune for the award of MD (general medicine)
(ii) Presented in national and international meetings and papers published (first publication in ***British J Rheumatology 1988*** ;see detail CV, publications)
(iii) Awarded ***Dr. Berry Memorial Award*** for the best research paper by the Association of Physicians of India Congress, Madurai, 1987
(iv) Awarded ***E. Merck Award*** for the best research paper by the Association of Physicians of India Congress, Pune, 1988.

2) *Title*: A clinical study of 'neurological complications following hemorrhagic conjunctivitis outbreak' in Pune
Background: In 1981, there was a spurt of patients suffering from complex peripheral neurological disorders and Guillain-Barre syndrome (GBS) like profile in particular following an outbreak of hemorrhagic conjunctivitis in the Pune region in the outpatient clinic of Armed Forces Medical College and Command Hospital, Pune. The etiology of the ocular disorder was identified as 'Enterovirus-70' (EV 70) by National Institute of Virology (NIV), Pune (a national facility). Very little was known about the neurological complications of EV 70.
Design: Investigator initiated, tertiary hospital outpatient & inpatient based, observational case series; cross sectional clinical descriptive with a prospective follow up (18 months)
Methods: 11 patients were enrolled. Comprehensive neurological examination with focus on peripheral nerves and neurophysiological studies; evaluation of autonomic nervous system. Laboratory work up included serological markers of EV 70, cerebrospinal fluid examination including viral antibodies. Ocular diagnosis confirmed by ophthalmologist. EV 70 markers assayed in NIV, Pune.
Conclusions: (i) A Guillain Barre Syndrome (GBS)-like profile was seen in six patients; remaining had features of radiculomyelitis
(ii) Patients with GBS showed features of dysautonomias- fatal paroxysmal hypertensive and hypotensive crises in one patient and self-limiting tachycardia, episodic profuse sweating, abnormal expiration-inspiration ratio and Valsalva ratio in four patients
(iii)High serum antibody titers to EV-70 virus were seen in five patients

(iv) severe neurodeficit at 18 month follow up in patients with radiculomyelitis: good recovery in patients with GBS profile except one fatality
Contribution:
Published in ***J Tropical & Geographical Medicine 1986***

3) *Title*: A study of arthritis and rheumatism in the community through medical camps
Background: There is little if any data on the pattern and spectrum of arthritis in the community
Methods: Investigator initiated study; cross sectional design. Free of cost (to patients) diagnostic evaluation and therapy guidance medical camps were held in a central popular medical facility in the Pune metropolis and neighboring rural areas and towns during the period 1992 to 1996. The entire program was well advertised through local news media. Detail clinical examination and selected laboratory tests were completed. A rheumatology case record form was used to capture the clinical data which was then entered into a MS Windows based database program.
Sites: Sancheti Institute for Orthopedics and Rehabilitation (SIOR), Poona Hospital & Research Center, Medinova Diagnostics Pune, Modern High School, School of Health Sciences (Pune University)
Conclusions: 3000 patients were evaluated. About 30% each suffered from inflammatory arthritis, degenerative arthritis and non-specific/soft tissue pains. Less than 10% were due to infections and trauma. A wide spectrum of rheumatologic disorders was described. Patients and community were educated in a public health education campaign in conjunction with the School of Health Sciences, Univ Pune.
Awards:
(i)The **IRA gold medal and the BOOTS best research paper award** at the national conference of the Indian Rheumatism Association, Hyderabad 1990
(ii)**APLAR travel fellowship** to present the results in the APLAR (Asia-Pacific League of Associations for Rheumatology) Congress, Bali, Indonesia, 1992.
Funding and Material Help: SIOR, Medinova, Arthritis Research Care Foundation- CRD Pune

4) *Title*: WHO COPCORD Bhigwan (District Pune) & India Arthritis Project 1996-2018
Background: COPCORD (Community oriented program for control of rheumatic diseases) was launched by World Health Organization (WHO) in 1980. The aim was to collect data on pain, disability and arthritis across the World but with a focus on developing countries using a core standard protocol and local resources. COPCORD was to begin with carrying out a population survey (Stage I) followed by a planned follow up to identify newer cases and risk factors and impart health education (Stage II) and a preventive and control strategy that could be generalized to the region (Stage III). 22 countries and several more in the process from Asia, Africa and Latin America have completed COPCORD and mostly Stage I (www.copcord.org). Few

countries like China, Mexico, Iran and India have completed several site surveys and extended COPCORD. However, epidemiological data from India was sparse and a need to launch COPCORD India was realized. The maiden COPCORD India was begun in village Bhigwan (district Pune) in 1996 by Dr Arvind Chopra (rheumatologist).

Aims & Objectives: (i) To describe and determine the burden and spectrum of arthritis in the Indian population

(ii) To determine risk factors for arthritis, impart health education and carry out preventive program (arthritis) using the COPCORD model.

Methods: Initially a planned and house to house survey of 7000 villagers was carried out in village Bhigwan (Pune) in 5 weeks' time by locally trained volunteers and a team from Centre for Rheumatic Diseases (CRD) Pune in 1996. Modified and validated COPCORD questionnaires were used. All patients were examined by rheumatologist. The survey was meticulously followed for one year and then on public demand extended from time to time. A resurvey of adult population was carried out in 1999 to validate the earlier findings. The Bhigwan COPCORD program has completed 22 years and continues till date. All services have been provided free of cost to the community from Day one by CRD Pune under leadership of Dr Chopra.

During the last 22 years, a rheumatology team (with laboratory technicians) has visited Bhigwan at regular intervals; 4-6 weeks during the first 5 years and later 6-12 weeks till date. 1-2 trained and paid health workers reside in the village to keep track of patients and program activities. Separate medical records are kept for bonafide Bhigwan residents and those from the neighbouring region (outside Bhigwan) and entered into an electronic database in CRD.

Based on the Bhigwan experience, a new COPCORD model (Bhigwan model) was designed for fast tract population surveys and community based arthritis management services. Bhigwan Model was used to complete survey (COPCORD Stage I) of almost 100,000 populations (urban and rural) in 17 sites spread across India under the auspices of Bone and Joint Decade India and Indian Council of Medical Research (government organization) from 2004-2012; program planned and co-ordinated by Dr Chopra & CRD (See Figure).

Summary Results:

Bhigwan: 6034 population inclusive of children was surveyed and 774 reported some kind of joint and/or related soft tissue pain; 6.6% men and 11.8% women. In a self-reported questionnaire, rheumatic aches and pains were the predominant community illness, much more than diabetes, hypertension or any other illness. The break down proportion of classification based disorders was 20% soft tissue rheumatism, 29% degenerative arthritis/osteoarthritis, 10 % inflammatory arthritis including rheumatoid arthritis and spondyloarthritis, 6 % miscellaneous and 35% ill defined rheumatism symptoms of uncertain origin. The data for the first time showed that the burden of arthritis in the community is predominantly due to non-inflammatory painful disorders- several are ill-defined and may be due to factors related with occupation, injuries, poor nutrition, life styles, and traditions. The adjusted prevalence of rheumatoid arthritis (RA) was strikingly

high- clinical 0.7% and ACR based 0.55%. The incidence of RA was 44/100,000. An unusually high burden of RA was reported in young women in the age group 20-40 years. There were some differences from the literature in the frequency of commonly used biomarkers (RF, anti-CCP, HLA-DRB1*) in RA; nil association with HLA DRB1*0404. The use of oral tobacco, both in men and women, was rampant. The odds ratio (OR) of tobacco use for rheumatic pain was 1.7 (95% confidence interval 1.4, 2).

Several annual health education programs were carried out both for the community and medical fraternity. Emphasis was laid on restriction of tobacco use and improvement in sanitation and hygiene.

India (excluding Bhigwan): The crude prevalence of rheumatic pain (joint and/or soft tissue) was 19.7%. The break down proportion of classification based disorders was 9% soft tissue rheumatism, 34 % degenerative arthritis/osteoarthritis, 6.5% inflammatory arthritis including RA and spondyloarthritis, 22 % miscellaneous and 35% ill-defined rheumatism symptoms of uncertain origin. The OR for tobacco use and rheumatic pain was 3.5 (95% confidence interval 2.9, 4.2). The adjusted prevalence was 0.34 for RA, o.22% for undifferentiated inflammatory arthritis, 0.23 for spondyloarthritis (axial), 0.03 for ankylosing spondylitis, 4.39 for osteoarthritis, 0.04 for gout, 1.31 for soft tissue rheumatism and 0.02 for lupus and other connective tissue disorders. The data also showed an urban rural divide with greater burden in rural India.

Other Contributions and Benefits: COPCORD Bhigwan and India results have been presented in several national and international forums and extensively published in peer reviewed journals (www.copcord.org). Notable applications were:

i. Bhigwan model was adopted by several countries (including Bangladesh, Lebanon, Mexico, Iran, Guatemala) to participate in global COPCORD
ii. Bhigwan COPCORD data was used by WHO to forecast the burden of rheumatoid arthritis and osteoarthritis knees in the South East Asia region (WHO Technical Research Series 919, 2003).
iii. The Bhigwan COPCORD was the basis to announce a special 'Pune Declaration by the Bone and Joint Decade International' to focus on arthritis and rheumatism in developing economies with special reference to disability and quality of life in their annual meeting in Pune in 2008 (www.bjdindia.org). This was followed intense deliberations by representatives from 32 countries during a one day workshop which was conceptualized and planned by Dr Chopra and CRD team an held in village Bhigwan in Nov 2008; several local doctors, patients, government & NGO personnel were invited.
iv. The published Bhigwan COPCORD data was pivotal in facilitating a protocol based and ICMR sponsored project to estimate the prevalence of RA, OA, spine disorders and soft tissue rheumatism in 3 selected regions in North, East and West India (each 10,000 population).

Funding: COPCORD Bhigwan was initiated by a seed fund of USD5000/= provided by the 'Asia Pacific league of Rheumatology (APLAR) in 1996. WHO provided a modest fund to publish health education material for free of cost distribution in the Bhigwan region. Bone and Joint Decade India provided Rs2 lacs as seed fund to initiate COPCORD survey in urban Pune. Similar seed funds were provided to each of the COPCORD survey sites in India. All other expenses including logistic, staff compensation, laboratory and other investigations, database till date were provided by Arthritis Research Care Foundation-CRD Pune.

5)*Title*: Detection of anti-nuclear antibodies (ANA) from serum and filter paper blood clots (FPBC) using indirect immunoenzyme (IIE)

Background: Indirect immunofluorescence (IIF) has been the gold standard for detection of ANA which is an important screening test for lupus and other systemic connective tissue diseases (CTD). However, IF is technically cumbersome and expensive and not easily available. IIE is a simpler method of using color enzymes to demonstrate ANA under light microscope but is not popular. FPBC have been used in epidemiological studies, mostly in pediatric diseases (e.g. poliomyelitis) for serodiagnosis of viral diseases.

Aim: to detect and standardize detection of ANA using IIE and FPBC

Methods: Blood was drawn intravenously to separate serum for IIF and drop 2-3 blood drops on each of the two standardized size filter paper; once blood drops were dry the FPBC were labeled and preserved at room temperature. As per protocol, serum equivalent elute was obtained from the FPBC and subjected to testing for ANA using IIE. The sera and FPBC were randomized and coded and tested by an expert in IIF and IIE. Positive samples and about 10% of negative samples were re-examined by a senior laboratory technician laboratory to validate results.

A pilot study was completed in the Dept. of Rheumatology, The St George Hospital, Sydney, Australia by the principal investigator. The current study was then carried out in CRD. 270 paired samples were collected both from patients and healthy controls.

Results: There was a good agreement between IIE and IIF thereby supporting the notion that IIE using FPBC was a viable and economic option in countries like India.

Funding: Investigator initiated noncommercial in-house project of CRD Pune. The pilot study was partly funded by an **APLAR study grant award 1992.**

6)*Title*: To validate functional and quality of life (QOL) questionnaire (Qs) instruments in Indian patients suffering from rheumatoid arthritis (RA) and osteoarthritis (OA).

Background: Patient centric outcome measures are pivotal to assess the disease symptoms, activity, functional and quality of life and therapeutic success. Standard functional and QOL questionnaire instruments were created and developed for use in Caucasian population and are influenced by traditions and culture. We need instruments for suitable use in Indian patients suffering from arthritis.

Aim: to validate modified versions of standard QOL instruments for use in RA and OA.
Methods & Observations: Stanford modified HAQ (health assessment questionnaire) and WOMAC (Western Ontario McMasters University, Canada) were chosen for use in RA and OA knees respectively. Both the instruments were translated into the regional language and administered to 6-8 suitable patients attending the outpatient of CRD in first step (preliminary work up). Patients were questioned by dedicated paramedics about comprehension, feasibility and satisfaction with the Qs. The completed questionnaires were scored as per standard practice and meticulously reviewed by rheumatologists as per information contained in the patient case record form. Missing questions of relevance in the Indian setting were identified. The Qs were modified for Indian use and further administered (second step) similar to earlier exercise. The new Qs addressed the issues of dressing, travelling (bus and rickshaw), eating, hygiene, working (house hold and outside) and other activities of daily living and chores and especially toilet use. A consensus approach was used. Each of Qs were administered to 10 healthy people (control). Again the completed Qs and recorded comments from patients were reviewed by a local expert committee and a final version of the instrument prepared. It was back translated into English language to compare context and comprehension with the parent instrument Qs. All translations and back translations were carried out by independent experts. This final version of the Indian HAQ and WOMAC was finally validated including using appropriate statistics in two settings- ongoing Bhigwan COPCORD population program and standard control drug trials. The Qs are available at the CRD website (www.rheumatologyindia.org)
Instruction manuals for use were prepared and both the Indian version of HAQ and WOMAC were copyrighted and endorsed for ownership (CRD Pune).
Summary Results: Both the population studies and controlled drug trials have demonstrated the good comprehension, feasibility and validity (face, content, internal and external) of the Indian version of HAQ and WOMAC. Validation has been published in peer rheumatology literature. Both the Qs have been used in several drug trials carried out by other agencies all over India and for academic and research purpose by doctorate and post-doctorate students.
Funding: This was an in-house investigator initiated non-commercial project. Some of the later validation was covered by the appropriate funded drug trials.

7)*Title:* Ayurved Based Herbal Preparations For Degenerative Disorders: Osteoarthritis and Rheumatoid Arthritis {Validation of Ayurveda Medicines to Treat Arthritis for Global Use] A NMITLI , CSIR, Government of India Project 2002

Background: NMITLI (New Millennium Indian Technology Leadership Initiative) was launched by the CSIR (Council of Scientific and Industrial Research) which is a premier organization of India. The aim of NMITLI was to enable India occupy a niche position in domains with an inherent strength. Ayurveda, an ancient health and medicinal system, was recognized as one

such domain and 3 disease areas were chosen to explore for therapeutics-diabetes, hepatitis and arthritis. My mandate was to validate an Ayurveda drug to treat arthritis using modern medicine methods. I chose osteoarthritis knees as the primary target disorder. However, it was decided to carry out an exploratory evaluation in rheumatoid arthritis (RA). A dedicated team of rheumatologists (Delhi, Mumbai and Pune) was created to work closely with a-priori identified (by CSIR) Ayurveda Physicians, pharmacologists and pharmacists, several basic scientists and other research personnel (such as biostatisticians, cell culture scientists) and pharma industry. We were to reviewed by steering and monitoring committee set up by CSIR at predetermined intervals, and also obtain approvals from regulatory bodies. Several premier national and private facilities (such as National Institute for Botanical Research, Agarkar Research Institute, National Institute for Integrative Medicine and Research (earlier Regional Research Laboratory, Jammu), School of Health Sciences- Pune University, Interactive Research School for Health Affairs) were linked to rheumatology centers to create an all India NMITLI arthritis team. The rheumatology centers included All India Institute for Medical Sciences New Delhi, KEM Hospital Mumbai, Nizam Institute for Medical Sciences and CRD Pune (co-ordination center). We were to complete the project over 4 years beginning 2002.

Methods' Overview: An overarching protocol outlining principal methods of research and validation (deliverables along with timelines for completion) to be followed by each investigation agency was created and approved by the CSIR. Based on experiential reviews, published research, classic Ayurveda texts and expert Ayurveda opinion and several agenda driven project team discussions, we narrowed down to few medicinal plants for detail study and possible clinical use. The medicinal plants that were short listed for evaluation in this project were Shunthi (Zingiber officinale),Guduchi (Tinospora cordifolia), Amalaki (Emblica officinale), Ashwagandha (Withania somnifera) Guggul (Boswellia serrata), Gokshur (Tribulus Terrestris) and Shunthi.(Zingiber Officinale). Subsequently, standardized herbal drugs were made; standardization markers/ biomarkers (plus passport and fingerprinting data) for each herbal extract were identified. Suitable animal toxicity studies were completed for each drug that was administered in drug trials. Specific protocols were created for each drug trial and approved by the institutional ethics committee. In every trial, patients signed informed consent. Use of rescue analgesic was not permitted in the drug trials except for intolerable pain and in case of RA study. A central research lab (CRD, Pune) and imaging department carried out all investigations including cytokine and cartilage break down products assay (C-Tax) and measurement of joint space (X-Rays knees). All drug trials were monitored by an in-house team of trialists and a scientific audit under the aegis of CSIR was carried out by an expert independent agency.

As a first step, selected drugs were screened in exploratory randomized, blinded, placebo and active control multicenter drug trials of 16 weeks duration to identify the best candidate. Next dosing study of 6 weeks duration was carried out with the best candidate drugs. Considering both

Ayurvedic and modern medicine conclusions from the screening and dosing studies, the best candidate drugs were then evaluated in statistically designed appropriate controlled active drug trial for equivalence of 24 weeks duration. Post consent, 440 eligible (active pain VAS> 4 cm) patients (median age /weight/active painVAS=55.5 yrs/65 kg/6.55cm) with OA knees were enrolled and monitored as per protocol in the final study at 3 centers: 4 arm study (2 Ayurvedic drug arms-C01 and C02, 1 Glucosamine sulfate, 1 Celecoxib).

During the project, clinical inputs were also used to carry out some mechanistic studies in animal models and in vitro ex vivo cell culture studies.

Results' Overview:

OA: In the final study, the difference in the mean change score (ANCOVA adjusted), both by per protocol and intention to treat analysis, fell within the predetermined target range of equivalence. All adverse events were minor and not the cause for any withdrawal. 28% patients withdrew; no differences between groups. The mean (geometric) reduction in urinary CTX [C-telopeptide Collagen II; 1.63ng/mmol, 95% CI~ 1.04,2.54] was significant with the C-01 Ayurvedic formulation and minimal/nil in case of oral glucosamine and Celecoxib groups. This finding (CTX) was also corroborated by a significant reduction in cartilage break down products by C-01 as compared to active control intervention shown in cell culture chondrocyte studies set up in another center. It was concluded that in this first head to head equivalent drug trial study, C-01, a standardized Ayurvedic formulation, was equivalent in effectiveness but with marginal better safety as compared to glucosamine and celecoxib. Probably, it has a chondroprotective role as demonstrated by the lab and cell culture study.

RA: This was a 24 week exploratory 3 arm study comparing B1 (a standard NMITLI Ayurvedic formulation) with a single plant extract of Bhallataka (Semecarpus Anacardium) and Hydroxychloroquin (HCQS, a modern medicine disease modifying anti RA drug)) for efficacy and safety. 121 patients suffering from active symptomatic RA (81% seropositive for RF) and satisfying American College of Rheumatology classification criteria, were randomized. On completion, the groups did not differ significantly in any of the measures except physician global assessment. ACR 20% improvement response was demonstrated in 44%, 51% and 36% of the B-1, HCQS and mono-herb respectively. The ACR 50 index improvement response was seen in 12%, 3 % and 10% respectively in the B-1, monoherb and HCQS. On making pair-wise comparisons (corrected significant $p<0.02$), there were no differences between the 'B-1' group and HCQS. A significant reduction in RF titer was also seen in B1 and HCQS; no significant difference. Only mild adverse events were reported in each of the arms. This was probably the first ever head-head controlled comparison between an Ayurvedic medicine and a modern drug in the treatment of rheumatoid arthritis.

Other Contributions: Several publications were made. These drug trials were presented to US FDA in meetings organized by the CSIR. The validated drugs have not been marketed so far. This project was awarded for 'clinical research excellence' in integrative medicine by the European Society of

Integrative Medicine, 2013.
Funding: This project was sponsored by CSIR, Government of India

8) Title: **A Rural Population Based Study Of Chikungunya (CHIKV) Infection With Special Reference To Persistent 'Rheumatic Musculoskeletal Disorders (RMSK) (CHIKV-ICMR PROJECT 05/8/7/20/2006-ECD-I)**

Background: Chikungunya (CHIKV) is an acute arboviral febrile illness transmitted by mosquito. It usually occurs in epidemic forms and was considered to be an urban disease. The acute illness is characterized by severe excruciating musculoskeletal (MSK) aches and pains and arthritis. It is a self-limiting illness and majority of patients require symptomatic relief drugs. There are no specific drugs nor vaccination. About 10% of sufferers may develop chronic MSK aches and pains and arthritis. India has a long history of chikungunya epidemics which often occur along with Dengue (mosquito borne arboviral illness). However, following the 1972 epidemic there was a long period of quiet till the current epidemic of 2006 which swept across central and southern parts of India and ravaged millions of people. Suddenly, there were hundreds of patients suffering from arthritis following acute CHIKV who were referred to CRD Pune. A large spectrum of MSK and articular disorders was evaluated and reported (Arthritis Rheum 2008;58(9):2921-22) by the current investigator in this clinic cohort.

A comprehensive research project was designed and launched during the epidemic year 2006 in a village (Bavi) which is about 200 kms away from Pune (CRD) following an index case examined in CRD Pune in Aug 2006.

Aim and Objectives: Primary: to describe the clinical profile of acute CHIKV illness and its MSK sequel in the rural community

Secondary (i) to determine the cytokine and immunoglobulin response in real time in patients suffering from acute illness and those who went on to develop chronic MSK sequel (ii) to evaluate the therapeutic response to oral chloroquine in patients with early post CHIKV arthritis.

Methods: This was a protocol driven study carried out in village Bavi (district Sholapur). A dedicated team of doctors, paramedics and laboratory personnel from CRD visited the village as per predetermined schedule. On site, trained volunteers from the village also joined the team. The house to house survey was begun in Oct 2006 soon after the first case reports from the village. All subjects with a current or recent (3 months) febrile illness and/or body aches and pains was considered a respondent and evaluated. The clinical data was captured in a suitable rheumatology case record form modified for epidemiological investigation. Blood was drawn from all respondents and several healthy asymptomatic subjects (control) and sera separated and stored in CRD, Pune at -80^{o}C. MacELISA was used to detect specific IgM antibodies and IgG was detected by immunofluorescence. ELISA was used for cytokine assay. All respondents/patients with chronic sequel were followed every 4-6 weeks up to 24 months.

A protocol driven randomized single blind (assessor) 2 arm drug trial of 24 week duration was carried out in the village. Patients with onset of painful arthritis within 6 weeks of onset of acute CHIKV and residing in the village

were enrolled after consent. The investigational drug was oral chloroquine sulfate (250 mg daily). The active control was oral meloxicam (15 mg daily followed by 7.5 mg daily after 6 weeks). Patients were permitted to consume oral paracetamol (500 mg tablet, maximum 2 gm daily) as rescue analgesic and consumption recorded. Safety and laboratory investigations were carried out. Doctors and paramedics examined patients at 4 weekly intervals and were not aware of the treatment allocation.

Results:

Acute CHIKV: 509 clinical cases (43% attack rate) were identified. Laboratory investigations demonstrated normal blood cell counts, elevated acute-phase reactants [erythrocyte sedimentation rate, C-reactive protein and interleukin-6 (IL-6)] and excluded malaria and dengue. Acute CHIKV was characterized by high fever, severe peripheral polyarthralgia, axial myalgias and intense fatigue in over 90% of cases; skin rash (34%) and headache (19%) were uncommon. During acute illness, patients suffered from dominant lower limb pains and arthritism and often with ankle arthritis and adjoining tenosynovitis; substantial pain and synovitis seen in small joints of hands and wrists. One-fifth has substantial back ache and often neck. There were 49% and 62% of survey cases seropositive for IgM (rapid assay) and IgG (immunofluorescence) anti-CHIKV antibodies, respectively. Sixty-five percent of cases recovered within 4 weeks. None of the cases died. 69 children in the cohort showed mild illness while 137 late middle age-elderly subjects (> 55 years age) showed more severe symptoms and constitutional features including fatigue.

Post CHIKV arthritis: There was complete recovery (as perceived by the patient) in 6% and 17% of survey cases within 1–2 months, and 2–4 months, respectively, while 16% continued to suffer beyond 4 months. Of the population, 4.1% and 1.6% suffered from persistent rheumatic pains, predominantly non-specific, at 1 and 2 years, respectively. Chronic inflammatory arthritis was uncommon (0.3% at 1 year). 86% cases beyond 12 weeks were classified as non-specific arthralgias while 8.6% cases suffered from soft-tissue rheumatism that included regional (ankle tenosynovitis, foot fasciitis, heel pains) or a more diffuse scattered pattern; several were tender for fibromyalgia points. Twenty-nine (6%) cases were classified as inflammatory polyarthritis which was mostly confined to hands, wrists and feet. Among the latter, there were three known cases of rheumatoid arthritis (RA) with severe relapse (following CHIKV) and the remainder were best classified as undifferentiated in view of lack of diagnostic clinical criteria to diagnose a well defined rheumatic disorder (like RA or seronegative spondyloarthritis, None of the patients developed joint deformities. Overall the profile was mild-moderate compared to the clinic cohort (CRD).

Serological Response- Auto-antibodies & Cytokines: Seropositivity for rheumatoid factor, anti-nuclear antibody and anti-cyclic citrullinated antibodies was very uncommon and despite clinical phenotype that resembled rheumatoid arthritis. A remarkable finding was early elevation of IL-6 and often with IL-13 which persisted up to 18-22 months follow up and did not seem to be correlated with severity of pain or any particular rheumatic disorder. During acute phase, both Type I and II cytokine response

was demonstrated with an early interferon elevation. This elevation often persisted in subjects with chronic arthritis and also asymptomatic subjects up to 12-16 weeks.

Serological Response 'Immunoglobulins': IgM response was not detected beyond 9 months of acute CHIKV. 53% and 38% study subjects (respondents) showed specific IgG response within 4 weeks of acute CHIKV and at 18-22 months of follow up.

Effectiveness of Chloroquine: This exploratory community intervention trial failed to identify an advantage of CQ over meloxicam to treat early musculoskeletal pain and arthritis following acute CHIK virus infection in an intent to treat analysis , but therapeutic efficacy of CQ was not ruled out. The inflammatory cytokine response was intense and was not consistent with clinical status

Clinic Cohort: On an analysis of 95 patients who were naïve for MSK disorders and arthritis prior to CHIKV, the following proportions were reported for post CHIKV chronic arthritis (within 24 weeks):- RA like illness 18%, Undifferentiated arthritis 42%, Spondyloarthritis 13%, soft tissue rheumatism 8% and non-specific arthralgias 19%.

Overall Summary: To the best of our knowledge, this is the first comprehensive study of its kind for CHIKV and MSK sequel in an epidemic and community setting. CHIKV is very much a rural infection also. Several research questions were answered. Undoubtedly, a small number of sufferers of acute CHIKV illness suffer from prolonged chronic inflammatory arthritis and the risk factors are yet to be found. But in a country like India, this burden is likely to be huge. It seems from this study, that chronic arthritis is marked with persistent synovial inflammation and probably due to persistence of virus in the host rather than a triggered autoimmune response. We continue to follow our patients.

Funding: ICMR (Govt of India), ARCF-CRD Pune

Clinical Drug Trials

1. A randomised, double blind, placebo controlled study of an Herbal Ayurvedic formulation in patients with active Rheumatoid arthritis
2. A single blind, long term clinical trial of dose related efficacy, of RA-11 (Native Indian Ayurvedic preparation) in the treatment of Rheumatoid arthritis and its effect on IL-6 and toxicity
3. A randomized, double blind placebo controlled evaluation of RA-11 (Artrex), in patients with symptomatic Osteoarthritis.
4. A randomised, double blind, multicentric study, to document the efficacy, safety and tolerability of Meloxicam in comparison to Piroxicam in patients suffering from Rheumatoid Arthritis.
5. A randomized, double blind, multicentric study, to document the Efficacy, safety and tolerability of Meloxicam in comparison to Diclofenac Sodium in patients suffering from Osteoarthritis
6. A randomized, double blind, multicentric study, to document the efficacy, safety and tolerability of Rofecoxib in comparison to Diclofenac in patients suffering from Osteoarthritis
7. A randomized, double blind, multicentric study, to document the

efficacy, safety and tolerability of Celecoxib in comparison to Piroxicam in Indian patients suffering from Rheumatoid arthritis.

8. A randomised, double blind, multicentric study, to compare the efficacy, safety and tolerability of Rofecoxib Betacyclodextrin with Rofecoxib in patients with Rheumatoid arthritis.
9. A randomized, double blind, multicentric study, to document the efficacy, safety and tolerability of Rofecoxib Betacyclodextrin in comparison to Rofecoxib in patients suffering from Osteoarthritis.
10. A prospective, randomised, double blind placebo controlled phase III multicentric study to evaluate the efficacy and safety of IRA-01(Ayurvedic derived multiplant drug) in patients with Rheumatoid arthritis.
11. A controlled study to test the efficacy and safety profile of IRA-01(Ayurvedic derived multiplant drug) in an open label phase: A follow up of the IRA-01 randomized drug trial.
12. A Randomized, Double Blind, Platform based multiplant formulation, Multicentric Study To Evaluate The Efficacy And Safety Of N1 (Ayurvedic) and further compare them to Glucosamine Sulfate and placebo in patients with symptomatic Osteoarthritis of the Knees; a 7 arm multicentric study. (NMITLI Project)
13. A Study to evaluate the Efficacy And Safety of a proprietary multiplant Ayurvedic formulation in patients with Osteoarthritis Knees. (NMITLI Project)
14. A Study to evaluate B1-(an Ayurvedic formulation) for efficacy and safety and compare it to K1 – (Ayurvedic proprietary formulation) and N3 (multiplant Ayurvedic formulation) in patients with symptomatic Osteoarthritis (OA) of the Knees. (NMITLI Project)
15. An open label, Ayurvedic comparator controlled study to further evaluate the efficacy of N3 (a multiplant Ayurvedic formulation) in patients with Osteoarthritis Knees. (NMITLI Project)
16. A Randomized, Double Blind comparator controlled multicentric study to evaluate the efficacy and Safety of B1 (a single plant Ayurvedic formulation) and compare it with Ayurvedic proprietary formulation and Hydroxychloroquine sulphate in patients with active Rheumatoid Arthritis. (NMITLI Project)
17. A crossover study to evaluate the efficacy of B1 (Single plant Ayurvedic formulation) patients with Rheumatoid Arthritis; a follow up of the randomized double blind 3 limb study of B1. (NMITLI Project)
18. An Open label clinical study to evaluate dose searching activity of B2 (Single plant Ayurvedic formulation) and safety in patients with symptomatic Osteoarthritis of the Knees. (NMITLI Project)
19. A Phase III, 12 weeks, Multicentre, Double-Blind Randomized, Placebo-and Active Comparator-Controlled, Parallel Group Study to investigate the efficacy and safety of GW406381, 5 mg, 10 mg, 25 mg, and 50 mg administered orally once daily, in Adults with Rheumatoid arthritis.

20. A Randomized, double-blind, parallel group, placebo controlled, prospective, pilot study to evaluate the efficacy and safety of TNF alpha inhibitor SPHIRA in patients of active rheumatoid arthritis with inadequate response to Methotrexate.
21. A Phase III equivalence drug trial for evaluation of efficacy and safety of SGPF 'C' (an oral standardized herbal preparation) and SGPF 'C' plus (with GI) in patients with syptomatic osteoarthritis Knees: A randomized, double blind comparison with Oral Celecoxib and Glucosamine.
22. Efficacy and Safety of Nimesulide Extended Release Tablets in Symptomatic Treatment of Osteoarthritis Knee: A Double Blind Randomized Controlled Comparison with Placebo and Diclofenac Sustained Release Tablets
23. A randomised, open label, four arms parallel study to evaluate the safety & efficacy of anti-CD6 monoclonal antibody (TihmAb) in combination with Methotrexate in patients with active rheumatoid arthritis
24. Multi-National Open-Label Study to Evaluate the Safety, Tolerability and Efficacy of Tocilizumab in Patients with Active Rheumatoid Arthritis on Background Non-biologic DMARDs who have an Inadequate Response to Current Non-biologic DMARD and/or Anti-TNF Therapy.
25. An Open Label, Prospective Clinical Study to Evaluate The Efficacy and safety of TLPL/AY/03/2008 in Patients suffering from Osteoarthritis of the Knee(s)
26. Phase 3 Randomized, Double-Blind, Placebo-Controlled Study of the Efficacy and Safety of 2 Doses of CP-690,550 in Patients with Active Rheumatoid Arthritis on Background Methotrexate
27. Phase 3, Randomized, Double-Blind, Placebo-Controlled Study of the Efficacy and Safety of 2 Doses of CP-690,550 Monotherapy in Patients with Active Rheumatoid Arthritis
28. An Open label, balanced randomized, Multiple –dose Two –period, Two- treatment, Two-sequence, Steady state, Crossover Comparative Bioequivalence Study of Two Formulations of Azathioprine in Adult Patients with Rheumatoid Arthritis (RA)
29. A Long Term, Open-Label Follow-Up Study of CP-690,550,A Moderately Selective Janus-Kinase-3 Inhibitor, For Treatment Of Rheumatoid Arthritis.
30. A Non Interventional Study to Understand Disease characteristics with Regards to Presenting Features, Demographics, Disease Duration, Basis of Diagnosis and Treatment Paradigms in Rheumatoid Arthritis
31. A Randomised, double-blind, placebo controlled, multicenter, two-part, dose ranging and confirmatory study with an operationally seamless design, evaluating efficacy and safety of SAR153191 on top of methotrexate (MTX) in patients with active rheumatoid arthritis who are inadequate responders to MTX therapy.
32. A Phase 3,Randomised,Double-Blind,Active Comparator Study of the

efficacy and Safety of R-TPR-015(1422015) in patients with Active Rheumatoid Arthritis on a stable dose of Methotrexate.

33. An Open label, Randomized, single-Dose, two-period, two-treatment, two-sequence, crossover, multicentre, bioequivalence study of Methotrexate tablets 2.5 mg of Cadila healthcare ltd., India and Methotrexate tablets 2.5 mg of Dava pharmaceuticals, USA in adult patients with Mild to Severe Psoriasis Rheumatoid arthritis under fasting conditions.
34. Prospective, multi-centre, randomized, double blind, two arm, parallel group, active control, comparative clinical study to evaluate efficacy and safety of R-TPR-021/Humira in patients with active Rheumatoid arthritis on a stable dose of Methotrexate

Publications

1. Dekkers JS, Bergstra SA, Chopra A, Tikly M, Fonseca JE, Salomon-Escoto K, Huizinga TWJ, Diane van der Woude. Autoantibody status is not associated with early treatment response to first-line methotrexate in patients with early rheumatoid arthritis. **Rheumatol** 2018, https://doi.org/10.1093/rheumatology/key263
2. Kulkarni N, Chopra A. Clinical Profile of Primary Sjogren's Syndrome with Hypokalemic Periodic Paralysis. **J Assoc Physicians India** 2018: 66; 69-70
3. Kianifard T, Chopra A. In the absence of specific advice, what do patients eat and avoid? Results from a community based diet study in patients suffering from rheumatoid arthritis (RA) with a focus on potassium, **Clinical Nutrition ESPEN** 2018: https://doi.org/10.1016/j.clnesp.2018.07.008
4. Bergstra SA, Allaart CF, Ramiro S, Chopra A, Silva C, Murphy EA, Landewé RBM. Sex-associated treatment differences and their outcomes in rheumatoid arthritis: from the METEOR registry. **J Rheumatol** 2018, doi: 10.3899/jrheum.171176.
5. Kianifard T, Chopra A. A therapeutic role for potassium (K) to reduce pain and complications related to the cardiovascular system and bone in rheumatoid arthritis (RA): A clinical research perspective. **Rheumatol Res J** 2018: 3 (1); 1-12. doi: 10.22631/rr.2017.69997.1035
6. SA Bergstra, A Chopra, M Saluja, D Vega-Morales, N Govind, TWJ Huizinga, A van der Helm-van Mil. Evaluation fo the joint distribution at disease presentation of patients with rheumatoid arthritis: a large study across continents. **RMD Open** 2017; 3(2):e000568.
7. SA Bergstra, CF Allaart, R van den Berg, A Chopra, N Govind, TWJ Huizinga, RBM Landewé. Similar short term clinical response to initial treatment with high versus low dose methotrexate in mono- and combination therapy in early rheumatoid arthritis patients. **Arthritis Res Ther** 2017 22; 19(1):258.
8. Chopra A, Saluja M, Kianifard T, Chitre D, Venugopalan A. Long term effectiveness of RA-1, a standardized Ayurvedic medicine as a monotherapy and in combination with disease modifying anti-rheumatic drugs in the treatment of rheumatoid arthritis. **J Ayurveda Integr Med** (2017), http:// dx.doi.org/10.1016/j.jaim.2017.07.009
9. Ghodke-Puranik Y, Puranik A, Shintre P, Joshi K, Patwardhan B, Lamba

J, Niewold TB, Chopra A. Folate metabolic pathway single nucleotide polymorphisms: a predictive pharmacogenetic marker of methotrexate response in Indian (Asian) patients with rheumatoid arthritis. Pharmacogenomics 2016;16(18):2019-2034.

10. Chopra A. Disease burden of rheumatic diseases in India: COPCORD perspective. **Indian J Rheumatol** 2015:, http ://dx.doi.org/10.1016/j.injr.2015.04.002
11. Chopra Arvind et al. Itolizumab in combination with methotrexate modulates active rheumatoid arthritis: safety and efficacy from a phase 2, randomized, open-label, parallel-group, dose-ranging study. **Clinical Rheumatol** 2015; DOI 10.1007/s10067-015-2988-9
12. Kainifard T, Kianyfard T, Chopra A. Validation and Relevance of Rheumaoti Arthritis Pain Scale (RAPS) in Indian (Asian) patients suffering from rheumatoid arthritis. **Clin Rheumatol** 2015; 34 (9). DOI 10.1007/s10067-015-3071-2
13. Tillu G, Chopra A, Sarmukaddam S, Tharyan P. Ayurveda interventions for rheumatoid arthritis (Protocol). **Cochrane Database of Systematic Reviews** 2015, Issue 3. Art. No.: CD011569. DOI: 10.1002/14651858.CD011569.
14. Chopra A. Rheumatic and other musculoskeletal manifestations and autoantibodies in childhood and adolescent leprosy: significance and relevance [editorial]. **J Pediatr (Rio J)** 2014;90(5):431-436.
15. Venugopalan A, Ghorpade RP, Chopra A. (2014) Cytokines in Acute Chikungunya. **PLoS ONE** 9(10): e111305. doi:10.1371/journal.pone.0111305
16. Yousefi H, Chopra A, Farrokhseresht R, Sarmukaddam S. Clinincal assessment and health status in standard care in Indian and Iranian patients suffering from rheumatoid arthritis (RA). **Indian J Rheumatol** 2014;9:57-61.
17. Chopra A, Saluja M, Venugopalan A. Chloroquine effectiveness and inflammatory cytokine response in early persistent post chikungunya musculoskeletal pain and arthritis. **Arthritis Rheum** 2014;66(2):319-326.
18. Raut A, Bichile L, Chopra A, Patwardhan B, Vaidya A. Comparative study of *amrutbhallatak* and glucosamine sulphate in osteoarthritis: six months open label randomized controlled clinical trial. **J Ayurveda Integr Med** 2013;4(4):229-236.
19. Chopra A. The COPCORD world of musculoskeletal pain and arthritis [editorial]. **Rheumatol** 2013; 52(11):1925-8.
20. Salvi S, Chopra A. Leprosy in a rheumatology setting: a challenging mimic to expose. **Clin Rheumatol** 2013;32(10):1557-63.
21. Chopra A, Saluja M, Tillu G, Sarmukkaddam S, Venugopalan A, Narsimulu G, Handa R, Sumantran V, Raut A, Bichile L, Joshi K, Patwardhan B. Ayurvedic medicine offers a good alternative to glucosamine and celecoxib in the treatment of symptomatic knee osteoarthritis: a randomized, double-blind, controlled equivalence drug trial. **Rheumatol** 2013;52(8):1408-17.

22. Nikam TD, Ghorpade RP, Nitnaware KM, Ahire ML, Lokhande VH, Chopra A. Micropropagation and non-steroidal anti-inflammatory and anti-arthritic agent boswellic acid production in callus cultures of *Boswellia serrata* Roxb. **Physiol Mol Biol Plants** 2013;19(1):105-116.
23. Nipanikar SU, Saluja M, Kuber VV, Kadbhane KP, Chopra A, Khade NR. An open label, prospective, clinical study on a polyherbal formulation in osteoarthritis of Knee. **J Ayurveda Integr Med** 2013;4(1):33-9.
24. Chopra A. Epidemiology of Rheumatoid Arthritis. In Ed Mukhurjee, Ghosh A, **Monograph on Rheumatoid Arthritis** Indian College of Physicians (Assoc Physicians India), Kolkatta: Marksman Media Services, 2012, pp 1-9.
25. Chopra A, Saluja M, Tillu G, Venugopalan A, Narsimulu G, Sarmukaddam S, Patwardhan B. Evaluating higher doses of *shunthi - guduchi* formulations for safety in treatment of osteoarthritis knees: A government of India NMITLI arthritis project. **J Ayurveda Integr Med** 2012;3:38-44.
26. Chopra A, Subramanian S. Biosimilar DMARD in rheumatology: a general perspective with focus on India [Review]. **Indian J Rheumatol** 2012;7:89-96.
27. Chopra A. The WHO ILAR COPCORD Latin America. Consistent with the world and setting a new perspective [editorial]. **J Clin Rheumatol** 2012;18(4):167-169.
28. Mathew AJ, Rahim A, Bina T, Paul BJ, Chopra A. A call to integrate musculoskeletal disorders into the national programme for non-communicable diseases (NCD) [correspondence]. **Indian J Med Res** 2012;136:499-501.
29. Ghorpade R, Chopra, A, Nikam T. Influence of organic supplements on accumulation of β-Boswellic Acid, Acetyl-β-Boswellic Acid, 11-Keto-β-Boswellic Acid and Acetyl-11-Keto-β-Boswellic acid in callus culture of *Boswellia serrata* Roxb. **Acta Physiol Plant** 2012;34(6):2275-2283.
30. Chopra A, Saluja M. Validation and usefullness of Indian version (CRD Pune) health assessment questionnaire: drug trials, community practice and COPCORD Bhigwan population study (1994-2012). **Indian J Rheumatol** 2012;7(2):74-82.
31. Chopra A, Anuradha V, Ghorpade R, Saluja M. Acute chikungunya and persistent musculoskeletal pain following the 2006 Indian epidemic: a 2-year prospective rural community study. **Epidemiol Infect** 2012;140(5):842-50.
32. Chopra M, Jadhav S, Venugopalan A, Hegde V, Chopra A. Salivary immunoglobulin A in rheumatoid arthritis (RA) with focus on dental caries: a cross-sectional study. **Clin Rheumatol** 2012;31(2):247-50.
33. Chopra A, Saluja M, Tillu G, Venugopalan A, Narsimulu G, Handa R, Bichile L, Raut A, Sarmukaddam S, Patwardhan B. Comparable efficacy of standardized Ayurveda formulation and hydroxychloroquine sulphate (HCQS) in treatment of rheumatoid arthritis (RA): a randomized investigator-blind controlled study. **Clin Rheumatol** 2012;31(2):259-69.

34. Chopra A, Saluja M, Tillu G, Venugopalan A, Sarmukaddam S, Raut AK, Bichile L, Narsimulu G, Handa R, Patwardhan B. A randomized controlled exploratory evaluation of standardized ayurvedic formulations in symptomatic osteoarthritis knees: a government of India NMITLI project. **Evidence-Based Complementary and Alternative Medicine (eCam)** 2011;Doi:10.1155/2011/724291.
35. Chopra A. A perspective from India on the 2010 rheumatoid arthritis classification criteria: comment on the article by Aletaha et al [Letter to editor]. **Arthritis Rheum** 2011;63(2):570.
36. Sumantran VN, Joshi AK, Boddul S, Koppikar SJ, Warude D, Patwardhan B, Chopra A, Chandwaskar R, Wagh UV. Antiarthritic activity of a standardized, multiherbal, ayurvedic formulation containing *Boswellia serrata*: *in vitro* studies on knee cartilage from osteoarthritis patients. **Phytother Res** 2011;25(9):1375-1380.
37. Ghodke Y, Chopra A, Shintre P, Puranik A, Joshi A, Patwardhan B. Profiling single nucleotide polymorphisms (SNP_S) across intracellular folate metabolic pathway in healthy Indians. **Indian J Med Res** 2011;133:274-279.
38. Chopra A. Bugs and we: who is chasing whom? [Editorial]. **Indian J Rheumatol** 2011;6:1-4.
39. Chopra A, Venugopalan V. Persistent rheumatic musculoskeletal pain and disorders at one year post- chikungunya epidemic in south Maharashtra- a rural community based observational study with special focus on naïve persistent rheumatic musculoskeletal cases and selected cytokine expression. **Indian J Rheumatol** 2011;6:5-11.
40. Chopra A, Joshi VL, Joshi V, Rane R, Anuradha V. Old enemy on a difficult terrain: pattern of tuberculosis in rheumatology practice with focus on uncommon extrapulmonary affection. **Indian J Rheumatol** 2011;6: 44-54.
41. Chopra A. Rage of the Bugs [Pictorial case]. **Indian J Rheumatol** 2011;6:61.
42. Mathew AJ, Chopra A, Thekkemuriyil DV, George E, Goyal V, Nair JB. Impact of musculoskeletal pain on physical function and health-related quality of life in a rural community in south India: A WHO-ILAR-COPCORD-BJD India Study. **Clin Rheumatol** 2011;30(11):1491-7.
43. Mathew AJ, Goyal V, George E, Thekkemuriyil DV, Jayakumar B, Chopra A. Rheumatic-musculoskeletal pain and disorders in a naïve group of individuals 15 months following a Chikungunya viral epidemic in south India: A population based observational study. **Int J Clin Pract** 2011;65(12):1306-1312.
44. Chopra A. Efficacy and toxicity of leflunomide [Letter to the editor]. **Indian J Rheumatol** 2011;6:213-4.
45. Ghorpade RP, Chopra A, Nikam TD. Influence of biotic and abiotic elicitors on four major isomers of boswellic acid in callus culture of *Boswellia serrata* Roxb**. Plant Omnics** 2011;4(4):169-176.
46. Arthur S, Chopra A. Familial hypophosphatemia: an unusual presentation with low back ache, heel pain, and a limp in a young

man, and literature review. **Clin Rheumatol** 2011;30(4):585-9.

47. Chopra A, Saluja M, Tillu G. Diet, Ayurveda and interface with biomedicine [Letter to the editor]. **J Ayurveda Integr Med** 2010;1(4):243-244.
48. Kunjir V, Venugopalan A, Chopra A. Profile of Indian patients with juvenile onset chronic inflammatory joint disease using the ILAR classification criteria for JIA: a community based cohort study. **J Rheumatol** 2010;37(8):1756-1762.
49. Chopra A, Saluja M, Tillu G. Ayurveda-modern medicine interface: A critical appraisal of studies of Ayurvedic medicines to treat osteoarthritis and rheumatoid arthritis. **J Ayurveda Integr Med** 2010;1(3):190-198.
50. Haq SA, Davatchi F, Dahaghin S, Islam N, Ghose A, Darmawan J, Chopra A, Yu ZQ, Dans LF, Rasker JJ. Development of a questionnaire for identification of the risk factors for osteoarthritis of the knees in developing countries. A pilot study in Iran and Bangladesh. An ILAR-COPCORD phase III Study. **Int J Rheum Dis** 2010;13(3):203-14.
51. Sanjeev S, Arvind C, Girish T. Efficacy and safety of ayurvedic medicines: aecommending equivalence trial design and proposing safety index. **Int J Ayurveda Res (IJAR)** 2010;1(3):175-180.
52. Ghorpade RP, Chopra A, Nikam TD. *In vitro* zygotic embryo germination and propagation of an endangered *Boswellia serrata* Roxb., a source of boswellic acid. **Physiol Mol Biol Plants** 2010;16(2):159-165.
53. Chopra A. Community rheumatology in India. A COPCORD driven perspective. **Indian J Rheumatol** 2009;4(3):119 -126.
54. Joshi VL, Chopra A. Is there an urban-rural divide? Population surveys of rheumatic musculoskeletal disorders in the Pune region of India using the COPCORD Bhigwan model. **J Rheumatol** 2009;36:614-22.
55. Salvi S, Chopra A. Lest we forget Hansen's disease (leprosy): an unusual presentation with an acute onset of inflammatory polyarthritis and the rheumatology experience. **Int J Rheum Dis** 2009;12:64-69.
56. Wigley R, Chopra A, Wigley S, Akkoyunlu-Wigley A. Does control of rheumatic disease raise the standard of living in developing countries? [editorial]. **Clin Rheumatol** 2009;28:621-622.
57. Ghodke Y, Chopra A, Joshi K, Patwardhan B. Are thymidylate synthase and *Methylene tetrahydrofolate reductase* genes linked with methotrexate response (efficacy, toxicity) in Indian (Asian) rheumatoid arthritis patients? **Clin Rheumatol** 2008;27:787-89.
58. Chopra A, Saluja M, Lagu-Joshi V, Sarmukadam S. Leflunomide (Arava ™) is a useful DMARD in Indian (Asian) patients: a clinic based observational study of 1-year treatment. **Clin Rheumatol** 2008;27:1039-44.
59. Sumantran VN, Chandwaskar R, Joshi AK, Boddul S, Patwardhan B, Chopra A, Wagh UV. The relationship between chondroprotective and anti-inflammatory effects of *Withania somnifera* root and

glucosamine sulphate on human osteoarthritic cartilage *in vitro.* **Phytother Res** 2008;22(10):1342-8.

60. Chopra A, Anuradha V, Lagoo-Joshi V, Kunjir V, Salvi S, Saluja M. Chikungunya virus aches and pains: an emerging challenge. **Arthritis Rheum** 2008;58(9):2921-22.
61. Chopra A, Abdel-Nasser A. Epidemiology of rheumatic musculoskeletal disorders in the developing world [Review]. **Best Pract Res Clin Rheumatol** 2008;22(4):583-604.
62. Keramat A, Patwardhan B, Larijani B, Chopra A, Mithal A, Chakravarty D, Adibi H, Khosravi A. The assessment of osteoporosis risk factors in Iranian women compared with Indian women. **BMC Musculoskeletal Disorders** 2008;9:28.
63. Sumantran VN, Kulkarni A, Chandwaskar R, Harsulkar A, Patwardhan B, Chopra A, Wagh UV. Chondroprotective potential of fruit extracts of *Phyllanthus emblica* in osteoarthritis. **Evid Based Complement Alternat Med (eCAM)** 2008;5(3):329-335.
64. Haq SA, Rasker JJ, Daremawan J, Chopra A. WHO-ILAR-COPCORD in the Asia-Pacific: the past, present and future. **Int J Rheum Dis** 2008;11(1):4-10.
65. Chopra A. Systemic sclerosis (chapter) In: **API Textbook of Medicine** 2008, 8th edition, Editor: SN Shah. Publisher: Association of Physicians of India, Mumbai; pp:315-319.
66. Saluja M, Lago-Joshi V, Chopra A. I love my hair but i don't want rheumatoid arthritis. **APLAR J Rheumatol** 2007;10(1):54-56.
67. Patil VS, Chopra A. Watch out for 'pins and needles' in hands- it may be a case of gout. **Clin Rheumatol** 2007;26(12):2185-7.
68. Sumantran VN, Kulkarni A, Boddul S, Chinchwade T, Koppikar SJ, Harsulkar A, Patwardhan B, Chopra A, Wagh UV. Chondroprotective potential of root extracts of *Withania somnifera* in osteoarthritis. **J Biosci** 2007;32(2):299-307.
69. Chopra A. The WHO-ILAR COPCORD Bhigwan (India) model: foundation for a future COPCORD design and data repository [Review] **Clin Rheumatol** 2006;25:443-447.
70. Chopra A. Ankylosing spondylitis [Review]. **Physician's Digest** 2005;13:29-35
71. Chopra A. Epidemiology of musculoskeletal disorders in Indian population (Chapter). In: **Recent Trends In Connective Tissue Disorders**, 2005, Editor: S Mukherjee, Publisher, Indian College of Physicians (API), Mumbai, pp:5-17.
72. Bhushan P, Kalpana J, Arvind C. Classification of human population based on HLA gene polymorphism and the concept of Prakriti in Ayurveda. **J Altern Complement Med** 2005;11(2):349-53.
73. Chopra A. Pharmaceutics and doctors- for patients the choice is between the devil and the deep sea [Letter to the editor]. **BMJ**. 2005;330:44a-45a.
74. Anuradha V, Chopra A. In the era of nephlometry, latex agglutination is still good enough to detect rheumatoid factor. **J Rheumatol**

2005;32:2343-4.
75. Ghodke Y, Joshi K, Chopra A, Patwardhan B. HLA and disease [Review]. **Eur J Epidemiol** 2005;20:475-488.
76. Chopra A, Bichile L, Rajadhyaksha A, Gadgil D, Maroli S, Goregaonkar AB, Dhaon BK. Randomized double blind clinical drug trials of meloxicam in rheumatoid arthritis and osteoarthritis knees: an Indian experience. **APLAR J Rheumatol** 2004;7:108-116.
77. Anuradha V, Chopra A, Sturgress A, Edmonds J. Cost-effective screening method for antinuclear antibody detection. **APLAR J Rheumatol** 2004;7:13-18.
78. Chopra A. Rheumatology: Made in India (Camps, COPCORD, HLA, Ayurveda, HAQ, WOMAC and drug trials) [Oration]. **J Indian Rheum Assoc** 2004;12:43-53.
79. Chopra A, Lavin P, Patwardhan B, Chitre D. A 32-week randomized, placebo-controlled clinical evaluation of RA-11, an ayurvedic drug on osteoarthritis of the knees. **J Clin Rheumatol** 2004;10:236-245.
80. Keramat A, Larijani B, Adibi H, Chopra A, Kunjir VR, Patwardhan B. Association between demographic factors and osteoporosis in urban Iranian post menopausal women**. Iranian J Publ Health** 2004 (Suppl):34-42.
81. Chopra A. COPCORD- An unrecognized fountainhead of community rheumatology in developing countries [editorial]. **J Rheumatol** 2004;2320-2323.
82. Chopra A. Basic considerations and approach to rheumatological disease. (Chapter) In: **API Textbook of Medicine** 2003, 7th edition, Editor: SN Shah. Publisher: Association of Physicians of India, Mumbai; pp: 1137-1141.
83. Patwardhan B, Chopra A, Vaidya ADB. Herbal remedies and the bias against Ayurveda [Letter to the editor]. **Current Science** 2003;84:1165-1166.
84. Chopra A, Doiphode V. Ayurvedic medicine: core concept, therapeutic principles, and current relevance. (Review) **Med Clin North Am** 2002;86:75-89.
85. Chopra A, Goregaonkar A, Maroli S, Ghai H, Vartak M, Pawar D. A randomized, double blind study to document efficacy and safety of rofecoxib + betacyclodextrin complex in comparison with rofecoxib in patients suffering from osteoarthritis. **Indian Med Gazette** 2002;180-196.
86. Shirotriya S, Chopra A. Non pharmacologic management of rheumatic diseases: physiotherapy and other methods. (Chapter) In: **Manual of Rheumatology** 2002, Publisher: Indian Rheumatol Assoc
87. Chopra A, Patil J. An Ayurvedic approach to management of pain and inflammation in trauma (Chapter). In: **Conquering chronic pain after injury**, 2002, Publisher: Avery (Penguin Putnam Inc.), New York
88. Chopra A, Saluja M, Patil J, Tandale H. Pain and disability, perceptions and beliefs of a rural Indian population: A WHO-ILAR COPCORD Study. **J Rheumatol** 2002;29(3):614-621.

89. Chopra A, Patil J, Billampelly V, Relwani J, Tandale HS. Prevalence of rheumatic diseases in a rural population in western India: A WHO ILAR COPCORD Study. **J Assoc Phys India**. 2001;49(2):240-246.
90. Chopra A, Patil J, Doiphode V, Patwardhan B. Exploring ancient ayurveda for rheumatology: traditional therapy, modern relevance and challenges [Review]. **APLAR J Rheumatol** 2001;4:190-199.
91. Chopra A. Ayurvedic medicine and arthritis [Review]. **Rheum Dis Clin North Am** 2000;26:133-144.
92. Chopra A. WHO 'Bone and Joint Decade' (BJD) Launch 13-15 Jan 2000: a report. **J Indian Rheumatol Assoc** 2000;1:49-51.
93. Chopra A, Anuradha V, Edmonds J. Detection of anti-nuclear antibodies from filter paper blood clots using indirect immunoenzyme technique: preliminary experience and results. **J Assoc Phys India** 2000;5:493-496.
94. Chopra A, Lavin P, Patwardhan B, Chitre D. Randomized double blind trial of an ayurvedic plant derived formulation for treatment of rheumatoid arthritis. **J Rheumatol** 2000;27:1365-1372.
95. Chopra A, Patil J, Billampelly V, Relwani J, Tandale HS. The Bhigwan (India) COPCORD: methodology and first information report. **APLAR J Rheumatol** 1997;1:145-154.
96. Chopra A. Rheumatic diseases in India: epidemiology and psycho social aspects (Chapter). **Practical Rheumatology, Editors GN Menon, URK Rao**. Interline Publishing, Bangalore, India. 1994, pp:37-44.
97. Chopra A, Anuradha V, Neeta P, Patwardhan B, Damle AN. Community concepts and psycho social beliefs of arthritis and rheumatism patients: basis for health education. **Bulletin Of The Asia Pacific League Against Rheumatism (APLAR) Bulletin** 1994;12:11-14
98. Chopra A. Lysine acetylsalicylate: clinical view point [Letter to the editor]. **J Assoc Phys India** 1991;39:729.
99. Chopra A, Pispati P, Sancheti KH, et al. Medical camps in arthritis and rheumatism: a community oriented prospective study with emphasis on diagnosis and health education. **Bull Indian Rheumatism Assoc** 1991;5:31-37.
100. Chopra A, Bhattacharyya K, Banerjee AK. Nephrotic syndrome: a paraneoplastic manifestation. **Ind J Pathol Microbiol** 1990;33:54–58.
101. Chopra A, Raghunath D, Singh A. A spectrum of seronegative spondarthritis (SSA) with special reference to HLA profiles. **J Assoc Phys India** 1990;38:351-355.
102. Chopra A, Raghunath D, Singh A. Chronic inflammatory polyarthritides in a select population of young men: a prospective study. **J Assoc Phys India** 1989;37:748-751.
103. Kasthuri AS, Jagadhish TK, Gupta MM, Chopra A, Kakkar R. Sjogren's syndrome [A report on two cases]. **Med J Armed Forces India** 1989;45(3):207-9.
104. Chopra A, Subramaniam AR, Dham SK. Diagnostic approach to polyarthritides: a clinical study. **Med J Armed Forces India** 1988;44:21-26.

105. Chopra A, Bhala. Current status of autoimmunity in endocrinopathies [Review]. **J Assoc Phys India** 1988;36:329-332.
106. Jagadish TK, Kasthuri AS, Chopra A, et al. Clinical profile of connective tissue diseases in a referral service hospital**. J Assoc Phys India** 1988;36:602-605.
107. Chopra A, Radhunath D, Singh A, Subramanian AR. Pattern of rheumatoid arthritis in the Indian population- a prospective study. **Med J Armed Forces India** 1988;44:213-215.
108. Chopra A, Raghunath D, Singh A, Subramanian AR. The pattern of rheumatoid arthritis in the Indian population: a prospective study. **British J Rheumatol** 1988;27(6):454-456.
109. Chopra A. ARA (American Rheumatism Association) diagnostic criteria for rheumatoid arthritis: an obituary [Letter to the editor]. **J Assoc Phys India** 1987;35:667-668.
110. Chopra A. A study of rheumatoid arthritis with special reference to rheumatoid factor. **Med J Armed Forces India** 1987;43:5-12.
111. Chopra A, Rana PV, Narayanaswamy AS, Bajpai CP, Madan VS. Neurological complications following acute viral conjunctivitis: a new profile. **Trop Geogr Med** 1986;38:197-202.
112. Chopra A, Chib P. Arthritis robustus-an unusual form of rheumatoid arthritis masquerading as gout. **J Assoc Phys India 1986**;34:216-217.
113. Chopra A, Tutakne M. Syphilis and rheumatoid arthritis. **J Assoc Phys India** 1986;34:272-274.
114. Chopra A. Peripartum cardiomyopathy: betablockade and hydralazine combination therapy [Letter to the editor]. **J Assoc Phys India** 1986; 34:532.
115. Rana PVS, Chopra A, Narayanaswamy, Bajpai CP, Madan VS, Narula HS. Dysautonomia in acute hemorrhagic conjunctivitis [Letter to the editor]. **J Assoc Phys India** 1983; 31:813.

Teaching & Training

Undergraduate teaching experience (MBBS): 13 years

Postgraduate teaching Experience (MD): 10 years

***Subject Title of PhD dissertation completed under my supervision (Guide/Co-guide) for award of PhD by University of Pune under the 'Health Science Stream'* (Name of PhD Student in parenthesis)**

1. The assessment of osteoporosis risk factors in Iranian women compared with Indian women (Afsaneh Keramat, 2006)
2. Pharmacogenomics of Methotrexate (MTX) response (efficacy, toxicity) In Indian patients suffering from Rheumatoid Arthritis (Yogita Ghodke, 2010)
3. Defining Immunogenetics markers in patients with inflammatory arthritis in rural population of western Maharashtra (Anuradha Venugopalan, 2010)
4. Tissue culture studies in Boswellia serrata Roxb. : In Vitro Production of Potent Anti-Inflammatory Metabolite, 'Boswellic Acid')Ravi Ghorpade, 2011)

5. A study of prevalence, common symptoms and risk factors of reproductive tract infections among women in reproductive ages suffering from Rheumatoid Arthritis (Jaleh Naderi 2017)
6. Evaluation of a Self-Management Program Based on Education, Counselling and Physical Therapy in patients of Early Rheumatoid Arthritis (Yousefi Haidi, 2015)
7. Effect of Potassium supplement on pain in Rheumatoid Arthritis (Toktam Kianifard 2016)

Rheumatology Fellowship : Students trained in CRD under my mentorship

Dr.Vaijayanti Lagu-Joshi (2005); Dr V Kunjir (2009); Dr P Ajmire (2011); Dr Nachiket Kulkarni (2014); Dr N Nahar (2015); Dr Abraham Mohan (2016); Dr Nagnath Khadke (2017); Dr Amit Jain (2018)

Medical Conferences (Recent and Mainstream Invited lectures)

National

*Invited by **Indian Rheumatology Association** (IRA) to deliver talks in the recent annual meetings(IRACON)*:

2012, Ahmedabad: Epidemiologic studies in rheumatic diseases from India-WHO ILAR COPCORD INDIA DATA

2013,Kolkatta: Challenges and opportunities in rheumatology practice: the societal need- The Eastern perspective

2014, Chandigarh: Avoiding TB: are co-stimulation inhibitors the first choice BRMs in RA?; Biosimilar Infliximab- Infimab Active – Comparator Phase -3 Clinical Trial

2015, Chennai: New treatment in Rheumatoid Arthritis – Targeting the signaling pathways

2016, Kochi: Viral Arthritis-Chikungunya and Beyond

2017, Lucknow: Spondyloarthropathy In Asia-Focus On India-A WHO COPCORD Perspective

International

<u>Recent meetings:</u>

Annual Meeting of the American College of Rheumatology (ACR)/ invited by ACR:-

2013, San Diego: Biosimilars in Rheumatology: Asian Scenario

2015, San Francisco: Coming to a Joint Near You: Chikungunya

2017, San Diego: Chikungunya Arthritis

Annual Meeting of the Australian Rheumatology Association/invited by ARA :-

2013, Perth: (1) Chikungunya Arthritis- A Looming Painful Threat (2) Ayurveda (Asian Indian medicine) promise in Rheumatology

Annual meeting of the Asian Pacific League Of Rheumatology Meeting (APLAR)/invited by APLAR:

2014, Cebu, Philippines: COPCORD world of musculoskeletal (MSK) pain and arthritis: An Overview

2015, Chennai: (1) New treatment in Rheumatoid Arthritis – Targeting the signaling pathways (2)Global COPCORD Data-Current Status
2017, Dubai: Osteoarthritis in Asia pacific- A COPCORD Perspective
EULAR (European League Associations Rheumatology) Congress/invited by EULAR
2014, Paris: Itolizumab, a Human anti-CD6 Monoclonal Antibody, for Treatment of Rheumatoid Arthritis: Results of a Randomized, Placebo Controlled, Phase 2 Study (Research presentation)
2016, London: Chikungunya Arthritis
Asia-Pacific Osteoporosis Congress (International Osteoporosis Foundation/IOF)/ invited by IOF:-
Hong Kong, 2013: Epidemiology of Osteoarthritis in the Asia-Pacific Region
Rheumatology Research Center (RRC), Tehran University of Medical Sciences & Iran Rheumatology Association (IRA)/invited by RRC and IRA **:-**
Tehran, 2014: Global WHO ILAR COPCORD with emphasis on multi-regional studies
Tehran, 2016 (Annual Meeting): Update management of Ankylosing Spondylitis
Annual Meeting of the Mexican College of Rheumatology/ invited by MCR:-
San Potosi, 2012: (1)COPCORD (Community Oriented Program for Control of Rheumatic Diseases)-Past, Present & Future,Strengths & Limitations (2) COPCORD- Community Intervention Experience

Organizational Skills (Major professional meetings)

1) National Conference of Association of Physicians of India 1984, Armed Forces Medical College, Pune.
   Scope: >10,000 physicians attend this popular prestigious 5 day meeting
   Post: Assistant Secretary
   Principal Role: fund raising, local hospitality, reception
2) National Continuing Medical Education in Rheumatology 1991, Sancheti Institute for Orthopaedics and Rehabilitation, Pune.
   Scope: !50+ rheumatologists and post graduates attended this one day program
   Post: Organizing Secretary
   Principal Role: arrange national faculty, scientific program
3) Annual Meeting of the Indian Rheumatology Association 2008. Pune.
   Scope: 600 + participants, mostly rheumatologists; 3 day meeting
   Post: Organizing Secretary
   Principal Role: conference plan, arrange national and international faculty, local organization, local hospitality, scientific program
4) Annual meeting of the "Bone and Joint decade International', Pune

Scope: 300 plus delegates from 32 countries and India; interdisciplinary meet of 3 days: 60+ patient representatives from all over the World; special one full day program in the COPCORD village Bhigwan (see below entrepreneurial skill); The 'Pune Bone and Joint Declaration' on improving bone and joint health in the third World was drafted and announced
Post: Organizing secretary
Principal Role: Congress plan, fund raising, scientific program, rural outreach program. Organised a 'Road Safety Public Rally' with free distribution of crash helmets

5) Annual Meeting of Society Osteoarthritis Research Initiative 2018, Pune
Scope: 160 + delegates from orthopaedics, rheumatology, physiotherapy and rehabilitation, basic science
Post: Chairman
Role: Organize International and national faculty , fund raising, scientific program
6) Annual meeting of the State Chapter of Maharashtra Rheumatology Association 2018, Pune.
Scope: 140+ delegates from West India
Post: President
Role: Conference plan, organize International and national faculty, fund raising

Community Service

- Community arthritis camps (Free of cost to patients): Over 20,000 patients examined in over 125 camps in Pune and neighbouring region from 1992-2015
- Comprehensive and continuous health education program in arthritis for the rural community as a critical component of WHO COPCORD Bhigwan program (see research projects) in Pune and Sholapur Districts
- Support and actively participate in the activities of **Mission Arthritis India**, a patient support group, including publications which were circulated all over state of Maharashtra and adjoining regions
- Addressed several public meetings on 'arthritis' in Pune and several districts in Maharashtra.
- Organized a free of cost distribution of 1000 crash helmets in Pune city to increase awareness of road accidents during the Bone and Joint Decade International Meeting in Pune 2008

Contact Details of Dr Arvind Chopra

Email	crdp@vsnl.net
Web	www.rheumatologyindia.org
Office	+91 20 26345624/26344099/26330706