

FGAI4H-P-033-A01

Helsinki, 20-22 September 2022

Source: Ministry of Ayush (India)

Title: Role of Artificial Intelligence and Digital Initiatives of the Ministry of Ayush – Att.1: Presentation

Purpose: Discussion

Contact: Rajesh Kotecha E-mail: drji@ayu.in
Ministry of Ayush, India

Abstract: This PPT summarizes the content of P-033 describing the role of AI and Digital Initiatives of the Ministry of Ayush, for presentation and discussion during the meeting.



Artificial Intelligence in Traditional Medicine & Digital Initiatives of Ayush

Vaidya Rajesh Kotecha
Secretary, Ministry of Ayush, Government of India

The Indian national flag is shown in the top-left corner of the slide, featuring the saffron, white, and green horizontal stripes, and the Ashoka Chakra in the center of the white band.

Background

- Ayush encompasses the cluster of Indian Health systems viz; Ayurveda, Yoga, Naturopathy Unani, Siddha & Sowa-rigpa; and Homoeopathy which come under the ambit of the Ministry of Ayush
- These systems evolved over the centuries and are blessed with a wide array of practices, therapeutics and medicines
- The Government of India officially recognizes all these systems through its acts and regulations.



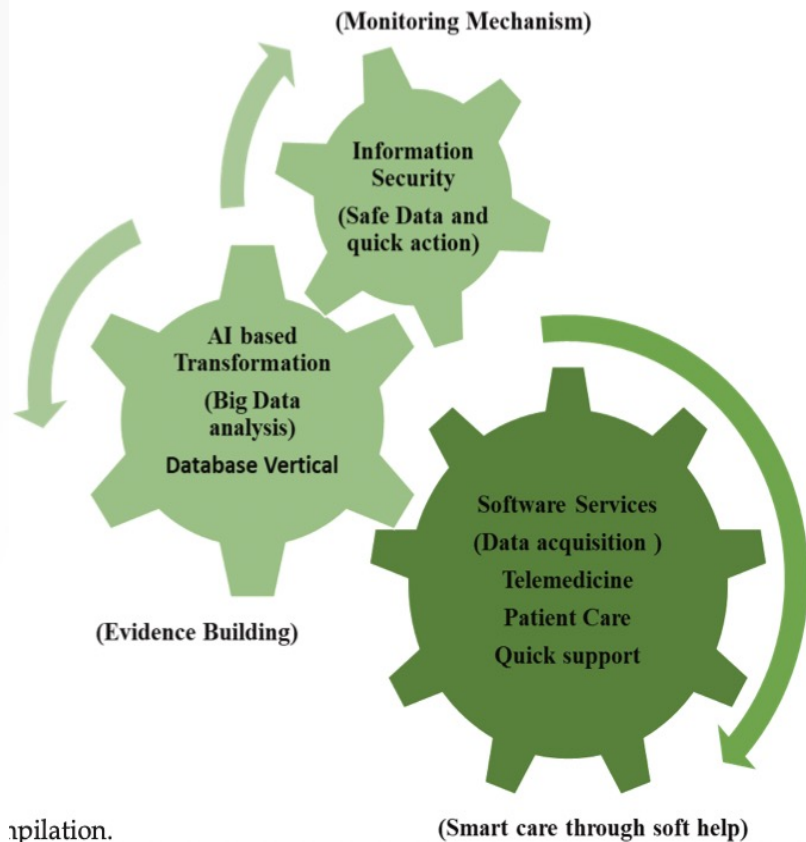
Ayush network in India

- Registered Practitioners- More than 7 lakh
- Government Dispensaries- More than 30,000
- Hospitals- More than 3,800
- Beds- More than 200,000
- Colleges(UG&PG)- More than 780
- Annual student intake capacity- More than 63,000
- Drug manufacturing units - More than 9,000

Leveraging Digital Technologies in Indian Traditional Medicine

- **Growth in Ayush Sector** 
- **National Health Policy 2017** (to develop an IT backbone for Ayush Sector)
- **Aligned with 'Digital India' initiative**

System Approach for Digitization of AYUSH Vertical



Compilation.

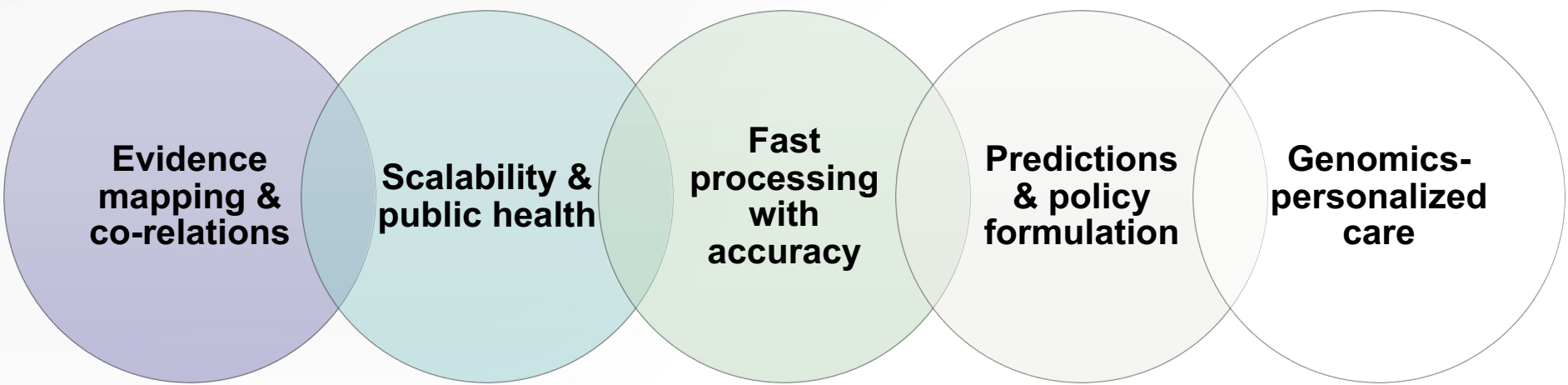
(Smart care through soft help)

Ref-Enablers for Leveraging Digital Technologies in Indian Traditional Medicine: Health Data Policy interventions ; Traditional Medicine review| vol. 1, no. 2| April 2022



AI in Ayush

FOCUS AREAS



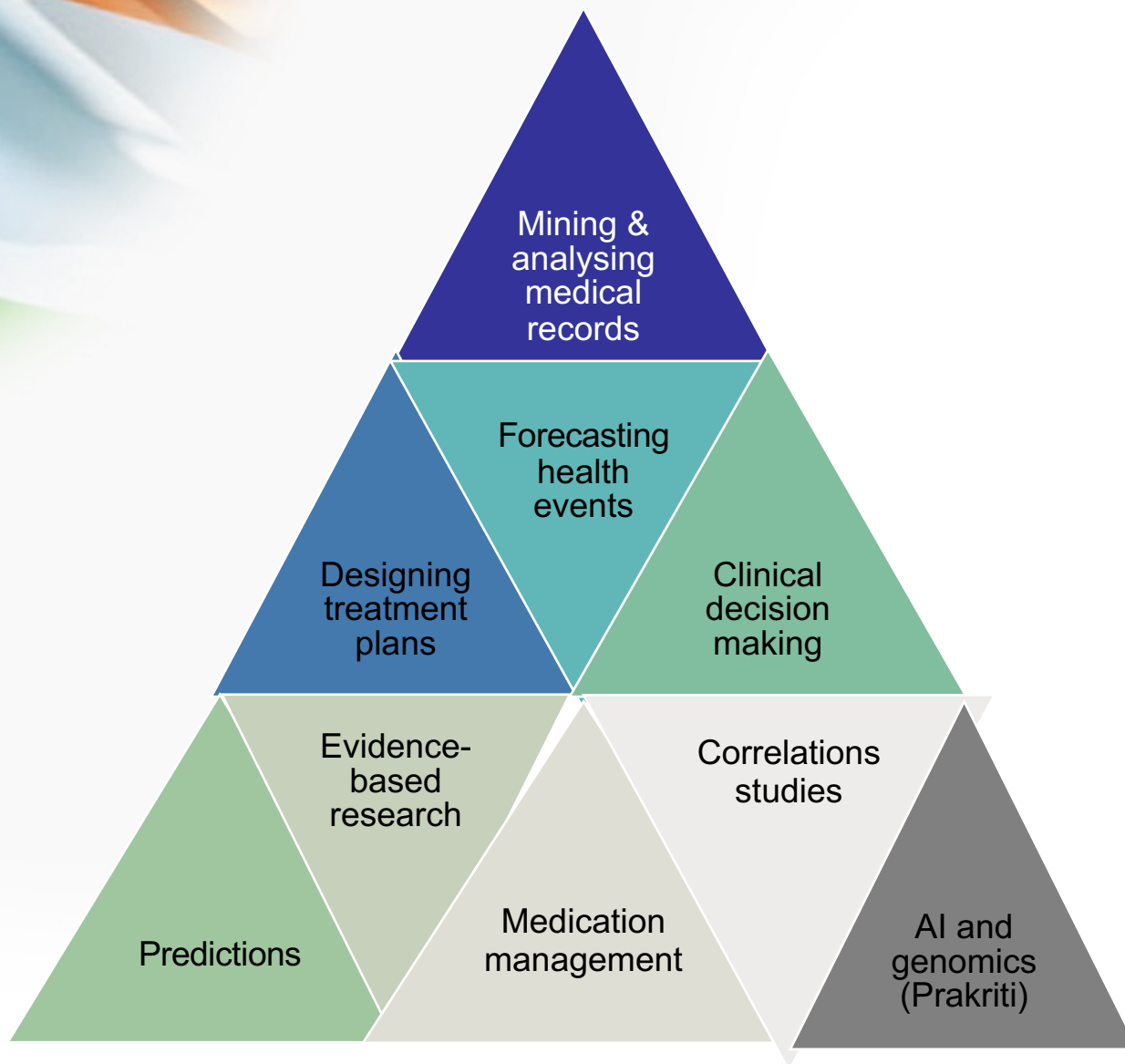
**Evidence
mapping &
co-relations**

**Scalability &
public health**

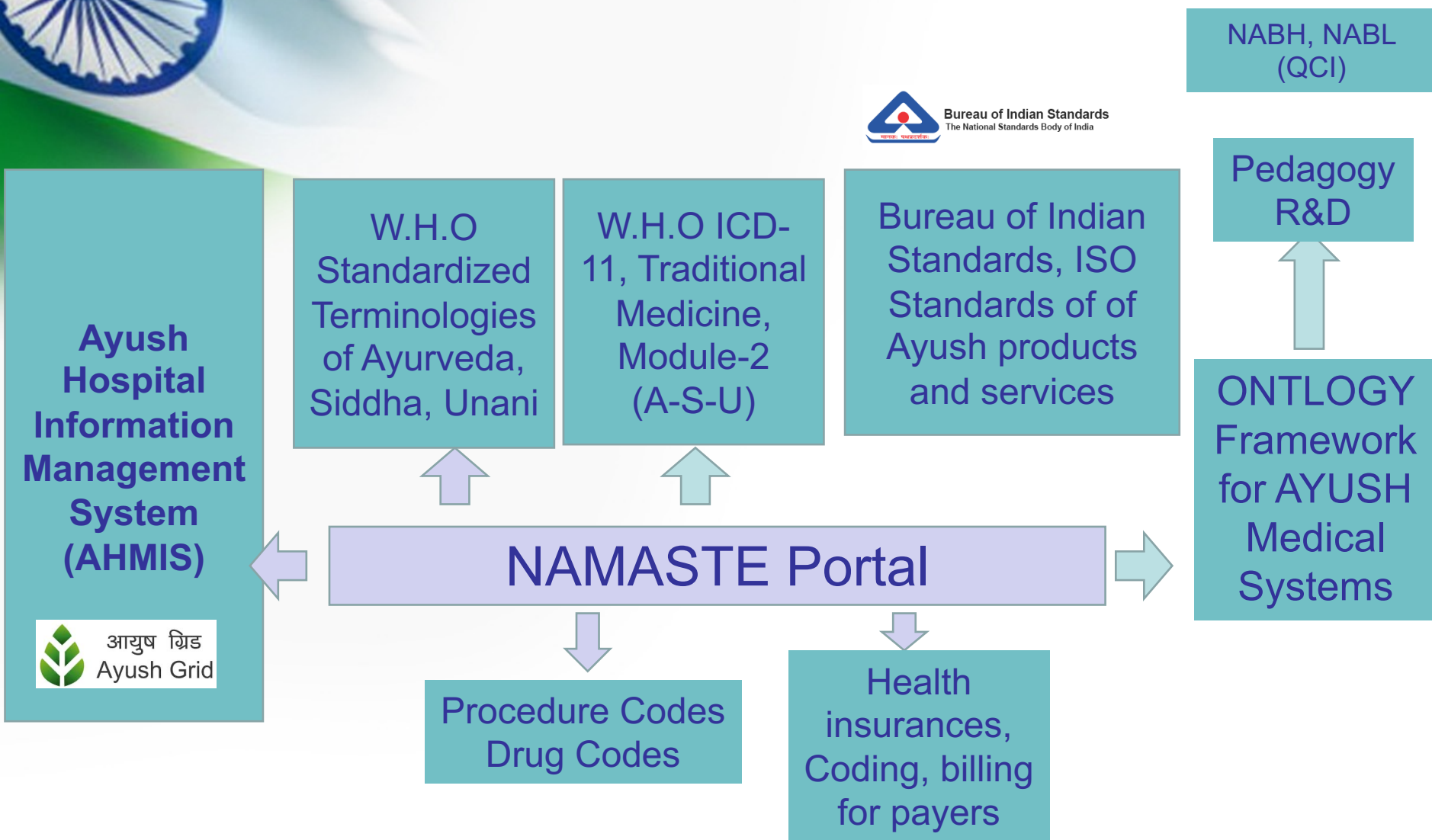
**Fast
processing
with
accuracy**

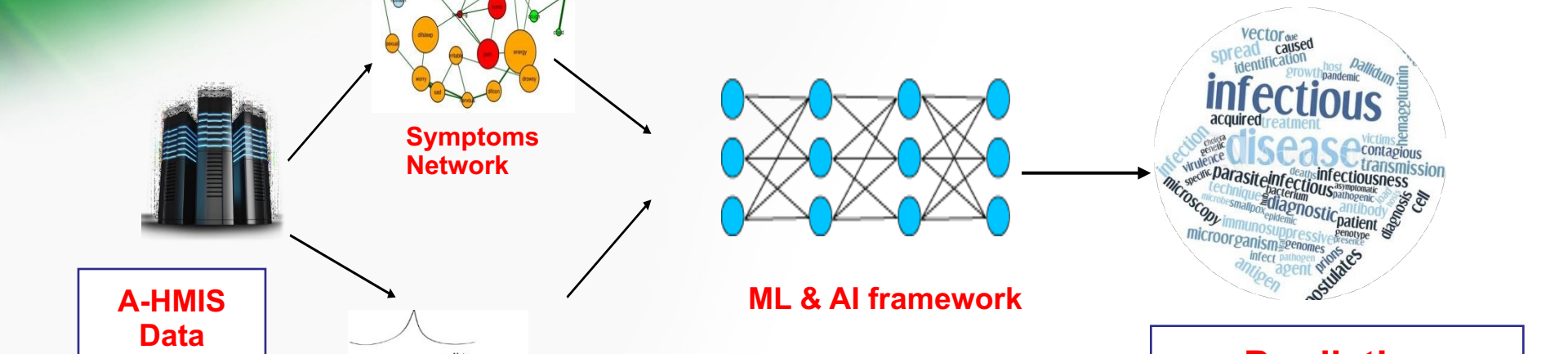
**Predictions
& policy
formulation**

**Genomics-
personalized
care**



National Ayush Morbidity and Standardized Terminologies Electronic (NAMASTE) Portal



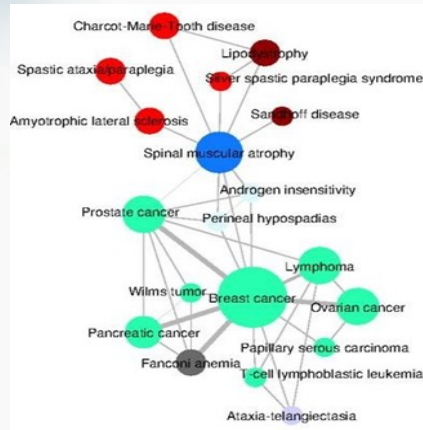




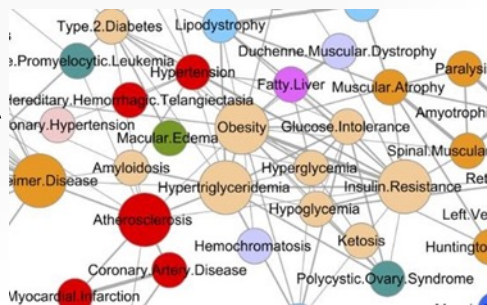
Predictive framework for diseases & complications



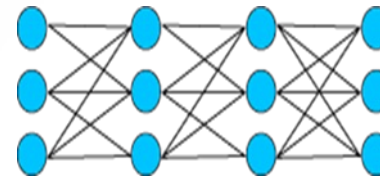
A-HMIS
Data



Diseases co-
occurrence



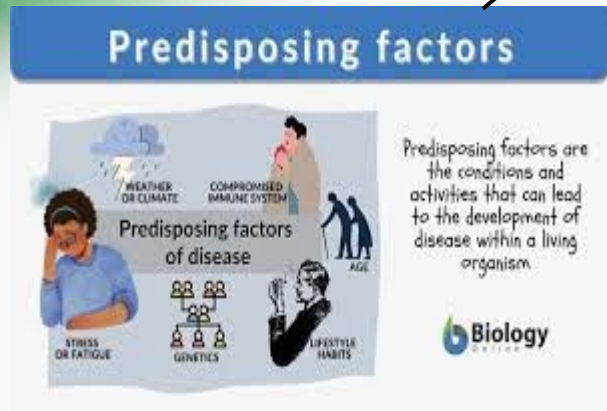
Complications



ML & AI
framework

Predictive
framework for
disease co
occurrence
and
complications

Correlations between various predisposing factors & personality traits in the occurrence of various disorders



Personality



Environment



Occurrence of diseases

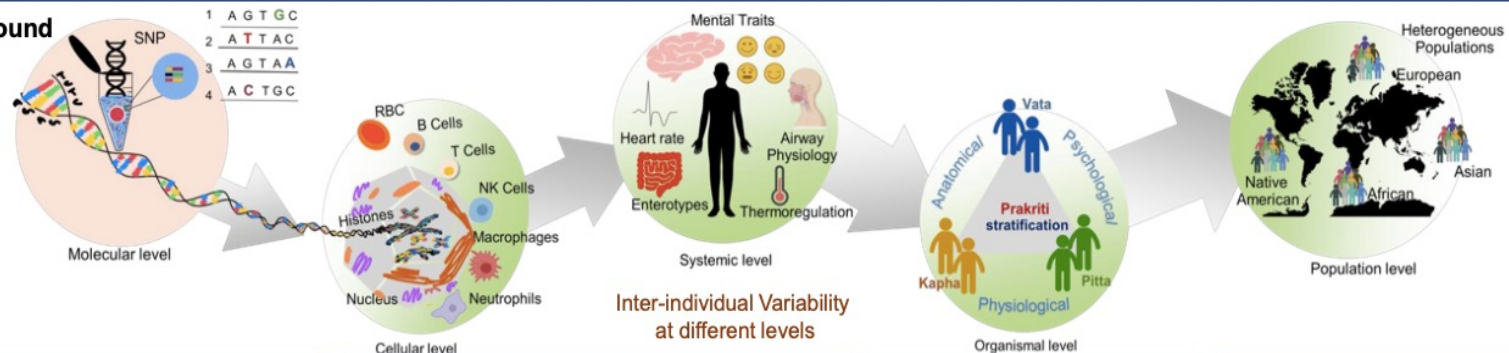
Ayurgenomics



Ayurgenomics approach to understand cellular variability using *Prakriti* stratified cellular models



Background

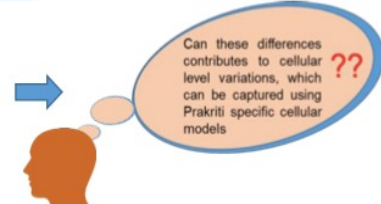
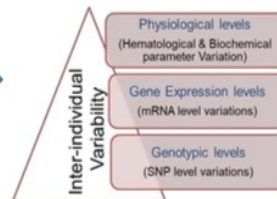
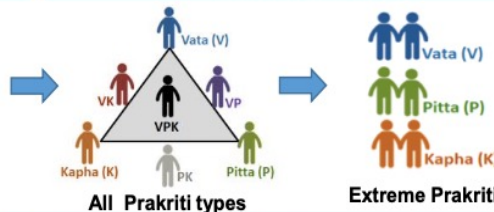


Heterogeneous Populations

Prakriti Stratification

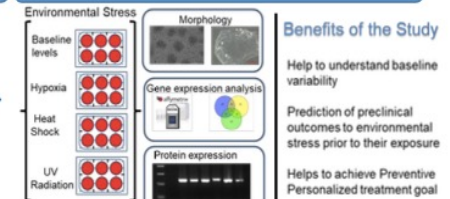
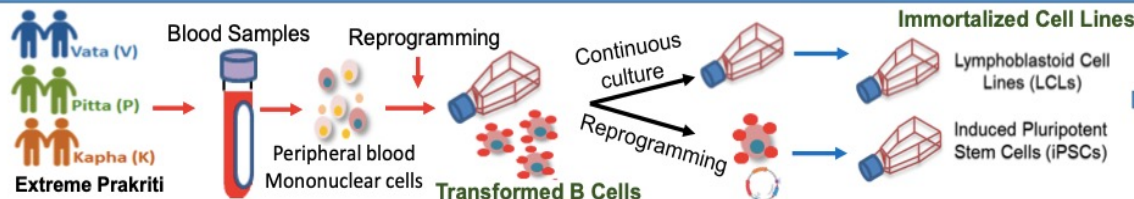
Observations

Questions



Prakriti specific cell lines (LCLs & iPSCs) development and Characterization

Environmental stress responses



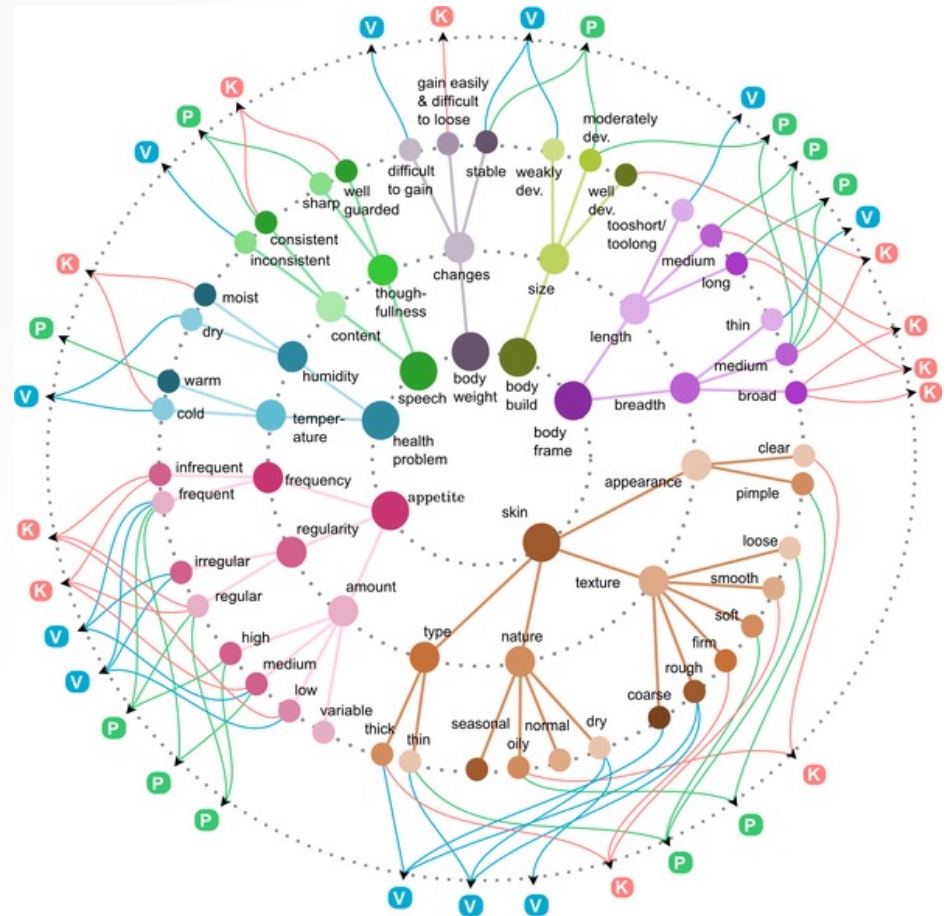
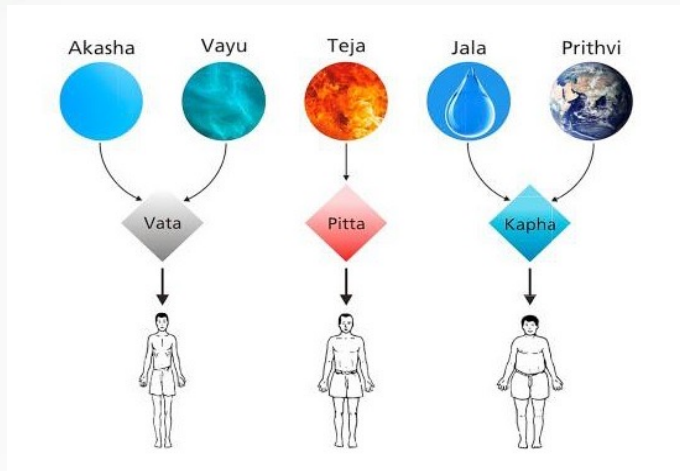
Poster credits : Dayanidhi Singh, Sunanda Singhmar, Sumita Chakraborty
AYUSH COE, CSIR -TRISUTRA unit, IGIB, Delhi

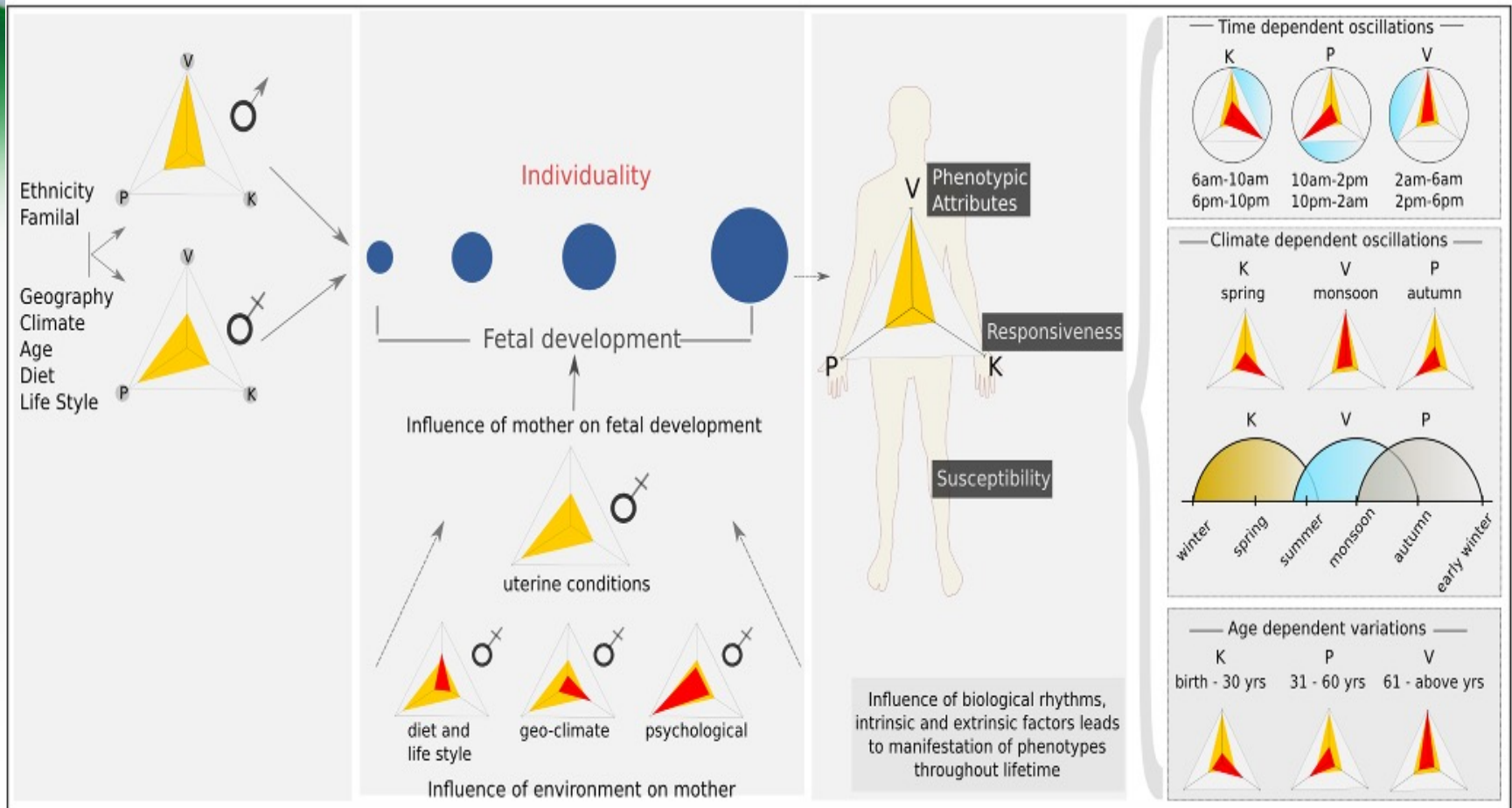


Publications : Chakraborty S., et al., 2020, *Cell Cycle* Prasher B., et al., 2008, *JTM*
Aggarwal S., et al., 2010, *PNAS* Aggarwal S., et al., 2015, *JTM*



Visual representation of Prakriti interpretation process based on original textual references





No two humans are same, they differ....



variability-can give rise to patterns- and clusters with variable health trajectories. These baseline health variabilities could be:

- reflective of underlying cellular and physiological variability.
- It can influence differential outcomes of environmental exposures and lifestyle.
- Hence, the level of perturbations in response to same environment could be different for different people.
- The healthcare interventions to reverse those perturbations also have to be different.

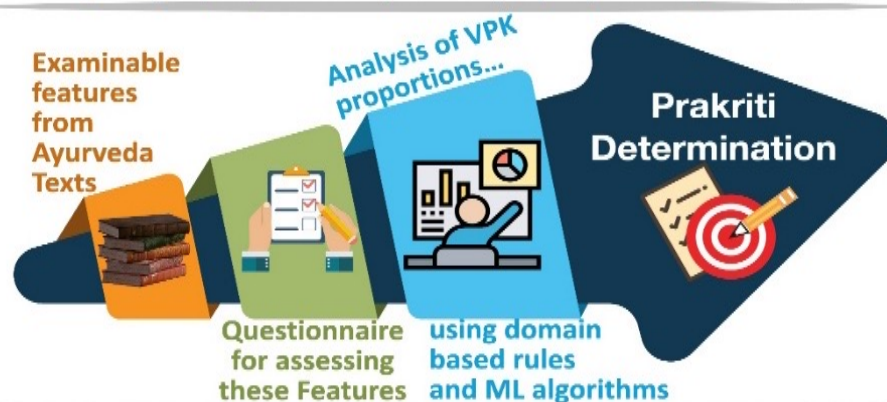
This makes it necessary to stratify and study variability!!

Ayurveda is a personalised and preventive medicine and stratifies variability using the concept of Prakriti

What is **PRAKRITI** ?

- Trisodha, Three physiological entities, Vata, Pitta and Kapha perform different functions with various physico-chemical attributes.
- Their differential proportions and dominance is responsible for the variability of features seen amongst people.
- This can be classified into 7 different types of Prakriti based on the predominance of either one or two or all three Doshas.
- Prakriti could enable health and wellness recommendations considering age, environment, occupation, etc.

Vata, Pitta, Kapha, Vata-Pitta, Pitta-Kapha, Kapha-Vata, Mixed (VPK)



Can these features be analysed using objective methods?



Aadhar Enabled Geo Location Based Attendance System (AGBAS)

- Aadhar based biometric authentication



- Geo location tagging



- Face recognition





Ayush Grid

- IT initiative of Ministry of Ayush as a part of the Digital India program
- To leverages 'Information and Technology' to transform operational efficiency, improve service delivery and enhance quality of services
- Digitalization of service delivery across the six functional areas — **Health Services, Education, Research, Drug Administration, Medicinal Plants & MoA Oversight** along with capacity building and media outreach



Ayush Grid

- **Vision-** To transform the Ayush sector to provide efficient, holistic, affordable, and quality services to all, through a secure and interoperable digital ecosystem
- **Mission-** To create an *organic and dynamic information and communication technology (ICT)* powered network interconnecting all streams of AYUSH in their key functional areas viz. *health care delivery, capacity building, research & development, AYUSH drug regulation and education*
- Strategies for development will be in sync with the national and international policies and health care needs



Goals

Functional

Knowledge based interactive network for all stakeholders

Technical

Multipoint Dashboard

Systems Integration Approach

API and API Guidelines

Alignment with guidelines and standards

Operational

Create standards for collection of Ayush related data and best practices

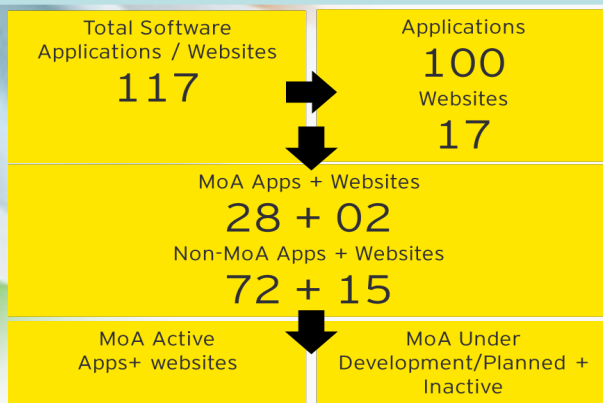
Design comprehensive Ayush health Informatics

To allocate required resources

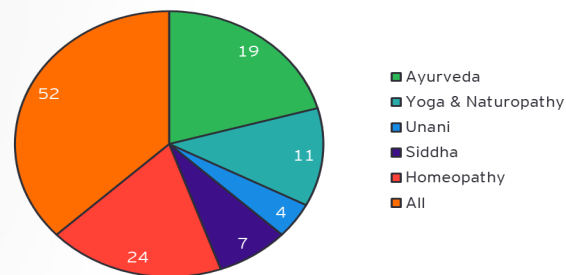
Components



Glimpse of Current Digitalization



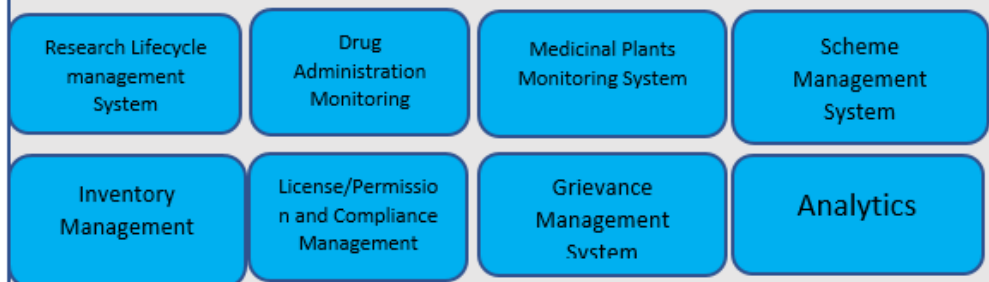
No. of applications per stream



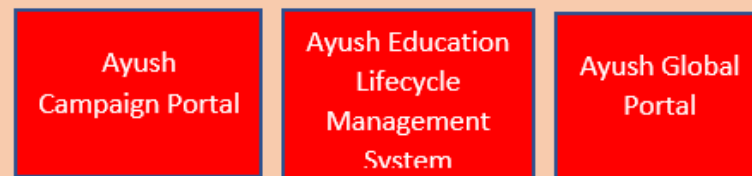
Active: 25



Proposed Applications



Planned/underdevelopment: 3





Ayush-Hospital Management Information System

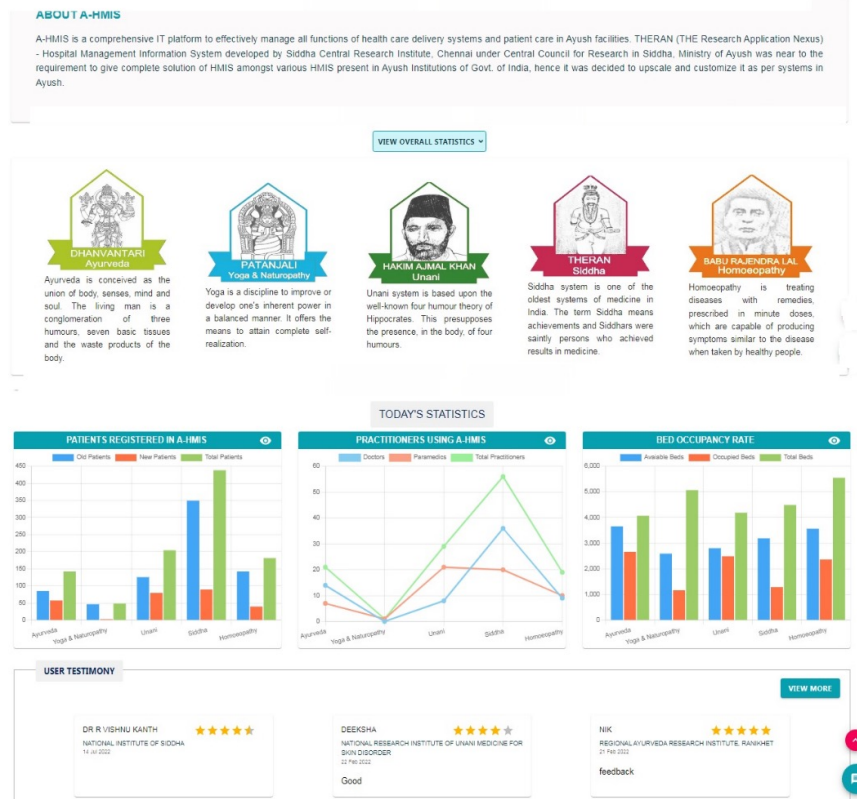
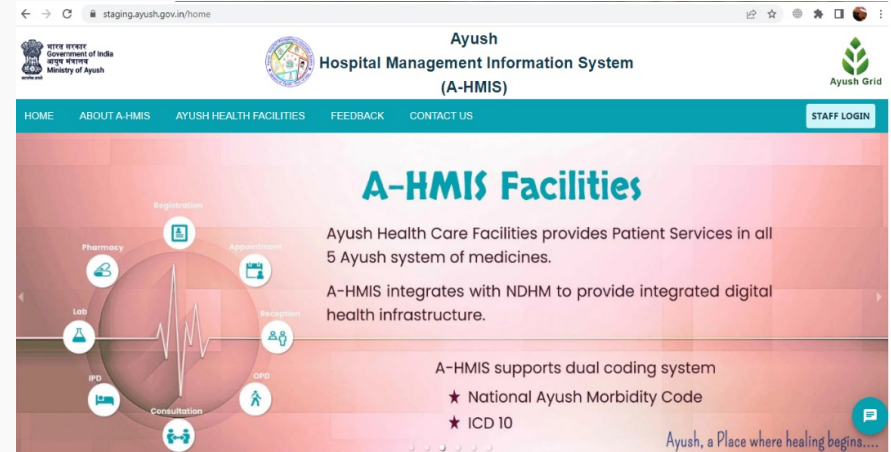
Single cloud based Application for multiple systems

Dual coding- ICD 11 & Ayush morbidity codes

3- Outcome parameters

Around 100 health facilities are using since more than 3 years

24 lakh patients have been registered and more than 62 lakh records have been created





Ayush Information Hub (Portal)

To document and
disseminate all the
information having
archival value

The screenshot displays the Ayush Information Hub (AIH) website. The header includes the Government of India logo, the Ministry of Ayush name in Hindi and English, the 'Ayush Information Hub' title, a search bar, and a 'Login' button. Below the header is an 'About' section with an illustration of people interacting with digital devices and a text block explaining the hub's purpose. A row of seven circular icons represents different Ayush systems: Ayurveda, Yoga, Naturopathy, Unani, Siddha, Sowa - Rigpa, and Homeopathy. The main content area is titled 'Categories' and features a grid of 24 icons representing various information categories: Technical Data, Education Policy, Drug Policy, NMPB, Schemes, Admin, Legal, Finance, Events, Notifications, New Developments, Buzz in Ayush, Digital Ayush, Important Presentations & Speeches, Annual Reports, Statistical Publications, Lab & Pharmacopoeia, IMPCL, Official Language, and Coordination. At the bottom, there is a section for 'Browse Autonomous Body Information' with a dropdown menu. The footer contains contact information (Call Centre, Complaint Cell, and email), the address (Ministry of Ayush, Ayush Bhawan, B Block, GPO Complex, INA, New Delhi- 110023), copyright notice (© 2022, Ministry of Ayush, Design & Develop by Digital India Corporation), and visitor statistics (Count: 002242).

infohub.ayush.gov.in

भारत सरकार | Government of India
आयुष मंत्रालय
Ministry of Ayush

Ayush Information Hub

English

Menu Search Login

About

Ayush Information Hub (AIH) has been set up to disseminate all authentic and verified information related to Ayush with the Ministry of Ayush and organisations under the Ministry. This information shall be useful for all stakeholders in Ayush including public. Ayush Information Hub facilitates public to access the information without login. Internal users (officials of the Ministry and organisations under the Ministry) will require to login through credentials for accessing information related to internal users.

Categories

Technical Data Education Policy Drug Policy NMPB Schemes Admin

Legal Finance Events Notifications New Developments Buzz in Ayush

Digital Ayush Important Presentations & Speeches Annual Reports Statistical Publications Lab & Pharmacopoeia IMPCL

Official Language Coordination

Browse Autonomous Body Information

Autonomous Body Select

Contact Info

Call Centre - 1800-11-0180,1964
Complaint Cell - 011-24600216
webmanager-ayush@gov.in

Address

Ministry of Ayush, Ayush Bhawan, B Block,
GPO Complex, INA, New Delhi- 110023

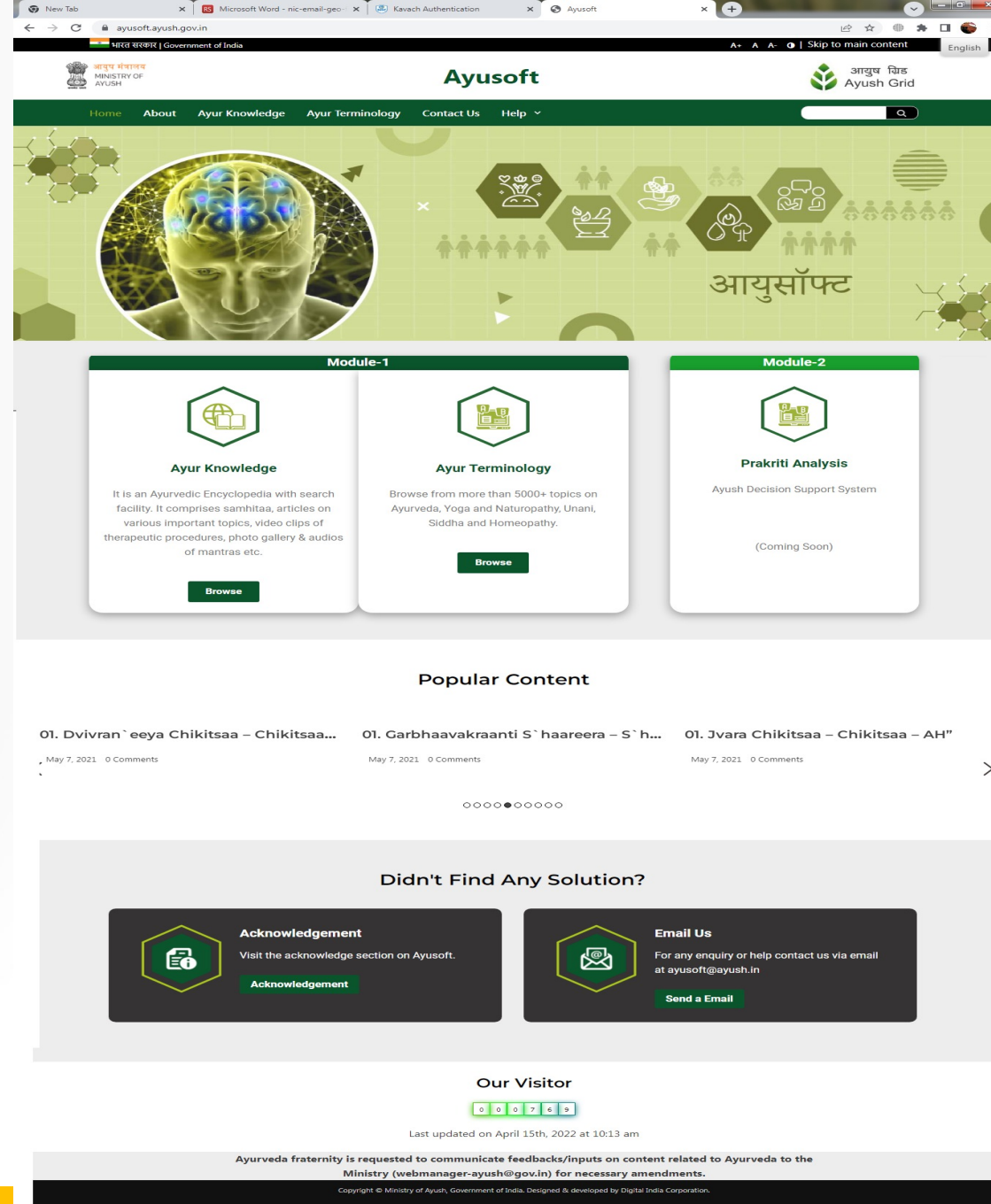
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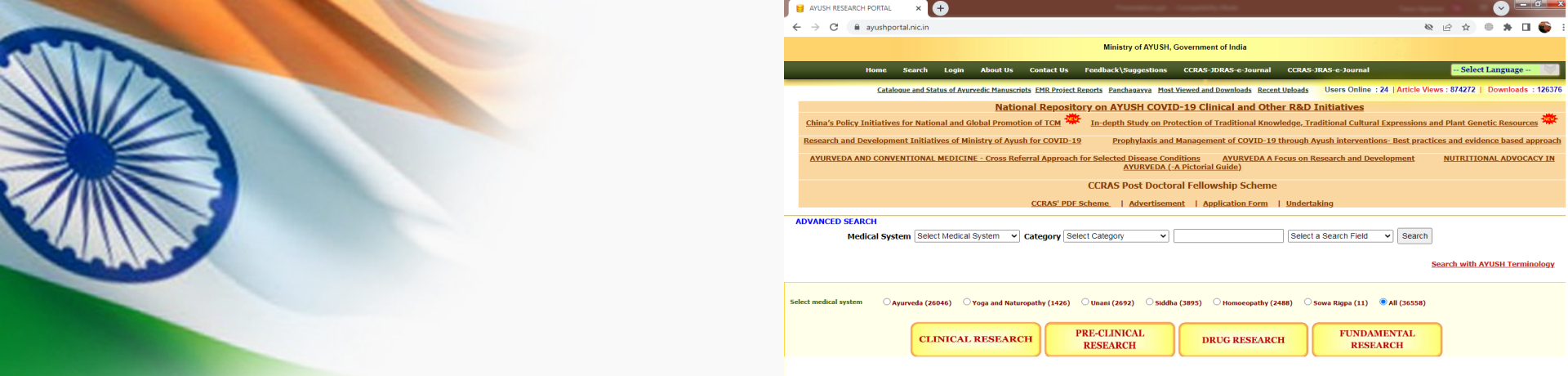
Visitor Statistics
Count: 002242



Core knowledge of Ayurveda with DSS for diagnosis

Prakriti and DSS





Ayush Research Portal

Database of all published research work in Ayush

Ayush Clinical Case Repository (ACCR) Portal

For Ayush practitioners for showcasing their good practices and sharing it with other for further usages, as applicable

<http://ayush.gov.in>

AYUSH RESEARCH PORTAL

Ministry of AYUSH, Government of India

Home Search Login About Us Contact Us Feedback/Suggestions CCRAS-JDRAS e-Journal CCRAS-JRAS e-Journal

~Select Language~

Catalogue and Status of Ayurvedic Manuscripts EHR Project Reports Panchaangya Most Viewed and Downloads Recent Uploads Users Online : 24 | Article Views : 874272 | Downloads : 126376

National Repository on AYUSH COVID-19 Clinical and Other R&D Initiatives

China's Policy Initiatives for National and Global Promotion of TCM In-depth Study on Protection of Traditional Knowledge, Traditional Cultural Expressions and Plant Genetic Resources

Research and Development Initiatives of Ministry of Ayush for COVID-19 Prophylaxis and Management of COVID-19 through Ayush Interventions: Best practices and evidence based approach

AYURVEDA AND CONVENTIONAL MEDICINE - Cross Referral Approach for Selected Diseases/Conditions AYURVEDA A Focus on Research and Development NUTRITIONAL ADVOCACY IN AYURVEDA (A Pictorial Guide)

CCRAS Post Doctoral Fellowship Scheme

CCRAS' PDF Scheme | Advertisement | Application Form | Undertaking

ADVANCED SEARCH

Medical System Select Medical System Category Select Category Select a Search Field Search

Search with AYUSH Terminology

Select medical system ☐ Ayurveda (26046) ☐ Yoga and Naturopathy (1426) ☐ Unani (2692) ☐ Siddha (3895) ☐ Homoeopathy (2488) ☐ Sowa Rigpa (11) ☐ All (36558)

CLINICAL RESEARCH **PRE-CLINICAL RESEARCH** **DRUG RESEARCH** **FUNDAMENTAL RESEARCH**

Select body system -- Select Body System --

Select disease (English)

OTHER SUPPORTIVE INFORMATIONS

Ayurveda Yoga & Naturopathy Unani Siddha Homoeopathy Digital Helpline for Ayurveda Research Articles (DHARA)

Visitors : 853447

AYUSH **Notifiy** **Editorial Board** **Help** **User Manual** **RESEARCH ADOLEGATIONS IN AYURVEDIC SCIENCES**

DISCLAIMER-I :- AYUSH Research Portal is meant for disseminating the knowledge of AYUSH system and its related research purely meant for academic purpose. Ministry of AYUSH is in any way not responsible for the findings, claims or what is ever published and cited from various sources uploaded on to the portal. However the AYUSH research council will put in their best efforts to provide valid data to further the cause of isolating scientific temperament, quality of research, education and training in AYUSH domain. Any suggestions and inputs to improve the quality of portal are welcome.

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Last Updated: March 02, 2021.

Ayush Clinical Case Repository

Ministry of Ayush

Home About Us Published Cases Contact Us

About Ayush Clinical Case Repository

Ayush Clinical Case Repository (ACCR) portal is developed and developed by the Ministry of Ayush as a platform to support both Ayush practitioners and the public. The portal aims to portray the strengths of Ayush systems for treatment of various disease conditions. ACCR welcomes Ayush practitioners from all over the world to send and share information about cases for the benefit of all. Cases whose details are posted will be reviewed by experts, and will be visible for all to read. Clear subject to their review. Ayush practitioners are invited to contribute their own successful applications reported by them in treatment of various patients, can be shared with others for the benefit of all. This may help in giving a second chance to the public who suffer from the same disease. However, ACCR discourages self-medication in the strongest terms and advising getting a qualified practitioner for treating appropriate treatment.

'Sign up' and 'Sign in' for Ayush Practitioners

Ayush practitioners are required to sign up in the first instance by entering a few details as specified. Thereafter, they can sign in with credentials, every time when they want to add a new case. Cases accepted by the experts will be published and available for public view.

Ministry of Ayush opens facility for reporting and publishing Covid 19 cases treated through Ayush Systems.

Click for more information.

28 Total number of Cases available

12 Total number of Covid 19 cases available

16 Total number of non Covid 19 cases available

Frequently Asked Questions

What are the goals of the Ayush Clinical Case Repository (ACCR) Portal of the Ministry of Ayush?

The portal will facilitate posting of success stories/cases, treated cases by Ayush practitioners. These cases will help Ayush practitioners to know the strength of the various Ayush systems of health care, and to share their experiences and knowledge with others. The portal will also serve as a platform for the public to know the strength of various Ayush systems in treatment of various ailments/diseases and adopt informed choices for the treatment as and when required.

Which types of Ayush systems of medicine will be covered on this portal?

All Ayush systems of medicine will be covered on this portal.

Who will benefit from the portal?

Practitioners, Researchers, Public, etc.

How will it be useful for the public?

It will help the public to know the strength of various Ayush systems of medicine and adopt informed choices for the treatment as and when required.

As a practitioner, how many cases can I upload on the portal?

There is no limit on the number of cases that can be uploaded on the portal.

How can I upload my case?

Click on the 'Sign up' button and follow the instructions.

If I upload my success story, will it be published directly on the portal?

No, the cases will be reviewed by experts and then published on the portal.

About the Ministry of Ayush

The Ministry of Ayush was formed on 01st November 2019 to ensure the optimal development and propagation of Ayush Systems of health care. It is the successor of the erstwhile the Department of Indian Systems of Medicine and Homoeopathy (DISHM), created in March, 1995 and which was renamed as Education and Research in Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy. Further, it was renamed 'Ministry of Ayush' on 13th April 2019. It is one of the most recent health-related ministries established in the Government of India.

The objectives of the Ministry of Ayush include:

- Consolidation of policy and policy level for development and propagation of Ayush systems of health care.
- Conception and implementation of programmes for development and propagation of Ayush systems of health care.
- Coordination and promotion of research and development including clinical, pre-clinical, and basic research in Ayush systems of health care.
- Formulation and implementation of standards and setting standards relating to various aspects/verticals (like R&D, education, medicinal plants, pharmacopoeia etc.) of Ayush systems of health care.

Ministry of Ayush
Ayush Bhawan, B Block,
3rd Floor, Connaught Place, New Delhi - 110028
Helpline Number : 1800-121-2345 (Toll Free) or 011-2610-4444 to 5:30 PM (IST)
Email: secretary@ayush.gov.in

For CVC related issues, call us on the given telephone numbers
Ministry of Ayush : 011-2610-4444
Consumer Care : 1800-121-2345

Ayush Clinical Case Repository

Dashboard FAQs Login Search Cases Covid 19 Cases Non Covid 19 Cases

Namaste Yoga and M-Yoga Mobile Application

Yoga application made for Yoga enthusiast, trainers and Centers

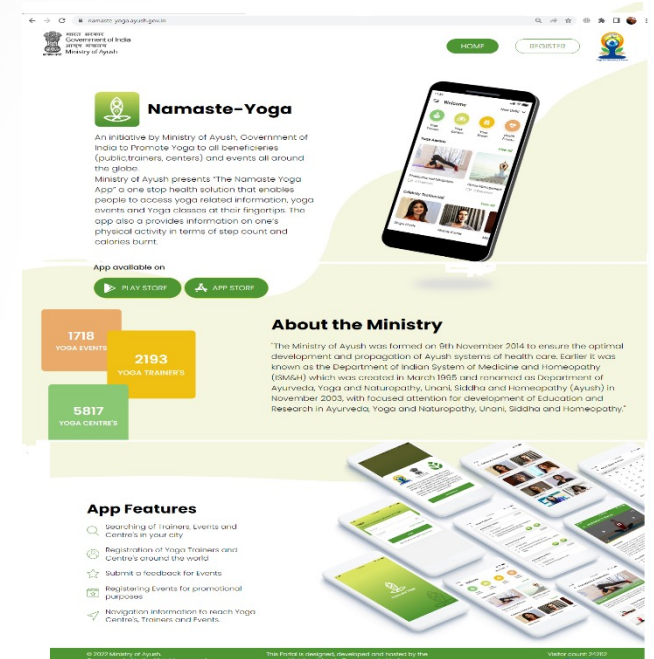
Based on location and navigation facility
Interactive, informative and effective

Y-Break Mobile Application

A mobile application for working professionals for having yoga during their working hours

De-stress, refresh and re-focus at workplace

<http://ayush.gov.in>





Ayush Sanjivni Mobile Application

A mobile application for data analytics on Covid-19 patients taking Ayush treatment and getting benefitted from Ayush Medicines.

Collected data sets from 1.4 Cr people; out of these, data from 7,23,459 individual respondents were analysed and found out that 89.8% strongly or moderately agreed to have benefitted from Ayush measures for maintaining their health during pandemic

Ayush GIS Portal and Mobile Application

The application and portal is developed to provide search and navigation for Ayush Health Facilities, Ayush Doctors, Ayush Colleges and Ayush Students.

<http://ayush.gov.in>





Ayush Admission Central Counseling Committee (AACCC) Portal

For admission of students to UG and PG courses offered by Ayush colleges

Ayush Next Portal and Mobile Application

An interactive platform offered by the Ministry basically for students

<http://ayush.gov.in>





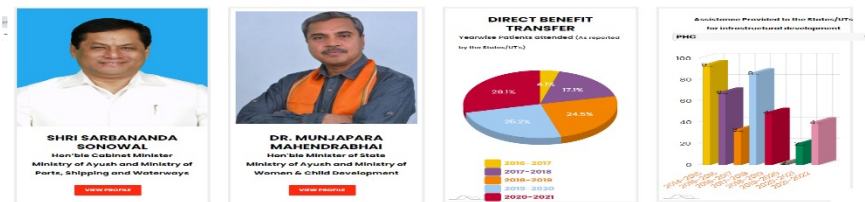
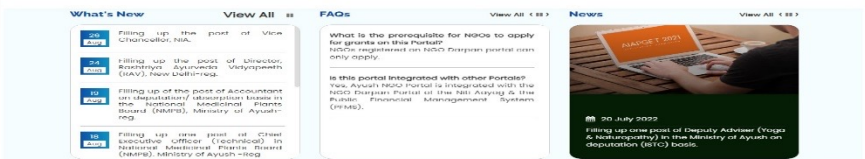
Ayush –NGO Portal

A dedicated portal for processing under various Government grant schemes of the Ministry integrated with various external portals

National Ayush Mission (NAM) Portal

Public Health Programs based on Ayush being implemented in partnership with States and Federal Government of India

<http://ayush.gov.in>



The Indian national flag is shown in the top-left corner of the slide, featuring the saffron, white, and green horizontal stripes, and the Ashoka Chakra in the center of the white band.

Challenge

- To leverage digital technologies in Traditional Medicine dealing with its socioeconomic impact, paying particular attention to digital inclusion, complexities due to several variables, patient empowerment, data privacy, and security, legal & ethical issues

The Indian national flag is shown in the top-left corner of the slide, featuring the saffron, white, and green horizontal stripes, and the Ashoka Chakra in the center of the white band.

Way forward

- Showcasing efforts of Ayush in the field of digitalization and adoption of latest technologies in Traditional medicine-based healthcare
- Inputs from all experts in the path of adoption of Artificial Intelligence & ML in Traditional Medicine
- Bringing out best potential based on evidences by using latest digital technology in Ayush sector

INDIA::AI framework



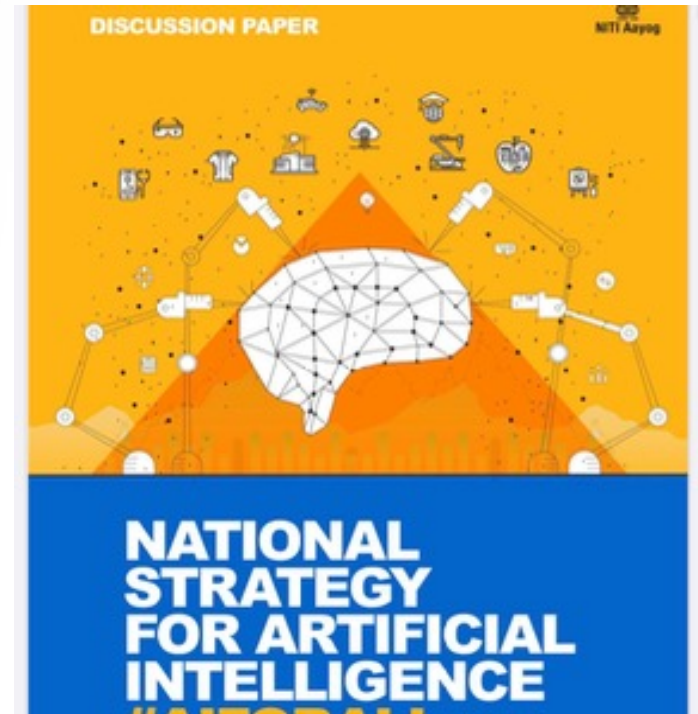
सत्यमेव जयते

NITI Aayog

RESPONSIBLE AI **#AIFORALL**

Approach Document for India
Part 1 – Principles for Responsible AI

FEBRUARY 2021



RESPONSIBLE AI **#AIForAll**

Approach Document for India:
Part 2 - Operationalizing Principles for Responsible AI

AUGUST 2021

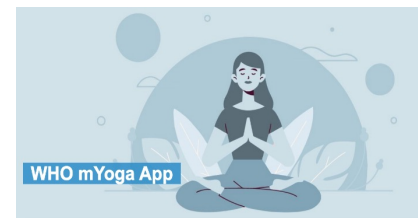
AI Road Map for Ayush, Government of India

**Standardization,
Benchmarking of
Terminology, Diagnosis,
Clinical Practice,
Medicine/Food
Preparation and adoption
of ICT**

**Traditional, Time Tested,
Codified texts and practices**

**Adoption of Responsible AI
through Collection of big
data, Ayush Based Deep
learning algorithms**

**ITU/WHO FG-AI4Health is
requested to create a
dedicated TG for Traditional
Medicine. MoA is willing to
take a lead**





Namaste

