INDIAN MEDICAL ASSOCIATION
ACADEMY OF MEDICAL SPECIALITIES
Head Quarters, Hyderabad, Telangana

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AMSCON 2025
29th & 30th NOVEMBER 2025
CHANDIGARH

ANNUAL JOURNAL OF NATIONAL IMA AMS CONFERENCE
THEME : ADULT VACCINATION - FOCUS ON HPV VACCINATION

INDIAN MEDICAL ASSOCIATION



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AMSCON-2025

Theme : Adult Vaccination - Focus on HPV Vaccination

29th & 30th November 2025
Chandigarh

Dr. Ramneek Bedi
Chairman
IMA AMS

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IMA PRAYER

May everybody be happy
May everybody be healthy
May everybody be free from pain
May everybody be free from sorrow
May we be the healing cure
Beyond every greed & lure

FLAG SALUTATION

We, the members of Indian Medical Association
Stand here to salute our National Flag.
Its honour and glory shall be our light and strength
And its course shall be our course.
We pledge our allegiance to it and realizing our responsibilities
As the accredited members of this National organization,
We swear we will dedicate everything in our power
To see it fly high in the comity of Nations.
Jai Hind!



From the Editor's Desk

Dr. R.K Nema
Consultant Anaesthesiologist
Sarthak Hospital Satna (M.P)
Editor, IMA, AMS

Dr. Sandeep B Naik
General Surgeon
Exucutive Editor, IMA, AMS



Accoding to Indian Council of Medical Research – National Cancer Registry Programme (ICMR – NCRP) total number of cancer cases in india is increase to 1.57million (15.7 Lac) by 2025 rising from 13.9 million (13.9 Lac) in 2000 Out of this approximately 75000 new case in 2020 that is 5.4 % of total cases of cervical cancers

Human Papillomavirus (HPV) for adults veries from country to country world wide. Vaccination Is recommendend up to age of 26 for individuals vaccination is higly effective in this age group the goal is to protect against – HPV types WHO recommends in adults (26-45yr group) two dose with a 6 month interval.

HPV remains a critical adult healths issue that is ignored and misunderstand HPV is the most common sexually transmitted infection (STI) word wide most of the infections clear spontaneous within1-2 years, persistent infection with high - risk HPV types (especially 16 to 18) is the precursur to cancer.

HPV is not just about cervical cancer in both men and women including cervical vaginal and valvur cancers

Anal cancer and oropharyngeal (mouth / throat) cancers where incidence in adult, specially men is rising

It is truth that nearly all sexually active adult about 80% with contact Human Papillomavirus (HPV) at some point in their lives.

The HPV Vaccination is highly effective and primarily recommended for adolescents (age 9- 12)

The vaccination is prophlactic prevents new infection from the targeted strains one have not yet been exposed. vaccination is about future protection .

In India, Indian Academy of Paediatrician (IAP) and other Authorties generally recommended routine HPV Vaccication for girls and boys starting age 9-14 vaccination is recommended for individuals who missed the routine vaccination this is particularty to age of 26.

Similar to international guideline both sexes (male and female) ages 27-45 who were not Vaccination earlier to get the vaccine is based on shared climical decision with health provider the effectiveness of the vaccine in this age group may be limited if they have already been exposed to HPV strains covered by the vaccine but it can still offer protection against types they have not yet Contracted

In india gender – neutral HPV Vaccination which includes Vaccinating boys and men this not only protects against HPV- related cancers like anal, Penile and oral cancers in men but also contribute to reduce the over all HPV in Community.

HPV vaccine is most effective when given to adolescents and young adults before they become sexually active and are exposed to the virus.

Routine vaccination is recommended for preteens, typically at ages 11 or 12, but can be started as early as age 9.

For those who were not vaccinated as children, catch-up vaccination is recommended for everyone through age 26.

For adults ages 27 through 45, HPV vaccination is not routinely recommended for everyone.

Instead, the decision to get vaccinated is based on a discussion with a healthcare provider, a concept known as "shared clinical decision-making."

Vaccination in this age group may provide less benefit because many people have already been exposed to HPV. However, it can still be beneficial for those who are likely to have new sexual partners and have not been exposed to all the HPV types covered by the vaccine.

The vaccine can protect against strains of the virus a person has not yet been exposed to. even if they have been infected with one or more strains previously.

The number of doses required for the HPV vaccine depends on the age at which the series is started:

Age 15 and up: A three-dose series is typically recommended. The doses are usually administered at months 0, 1-2, and 6.

Immunocompromised individuals (at any age): A three-dose series is recommended to ensure a robust immune response.

The HPV vaccine is highly effective at preventing new infections and related diseases, such as certain cancers and genital warts, in people who have not been exposed to the virus types covered by the vaccine.

Studies have shown high efficacy (close to 100%) in preventing persistent infection and high-grade cervical lesions in clinical trials.

The effectiveness of the vaccine is generally highest in younger age groups and decreases with age, primarily because older individuals are more likely to have already been exposed to some HPV types.

The vaccine is prophylactic, meaning it prevents new infections but does not treat existing ones.

The HPV vaccine does not eliminate the need for regular screenings for cancers, such as cervical cancer, as recommended by a healthcare provider

The vaccine is not recommended for people over age 45

Pregnant women should not get the vaccine, although it appears to be safe. It can be safely administered to breastfeeding women.

While many countries have national HPV vaccination programs, the concept of a compulsory adult HPV vaccination is not widespread. The key distinction is between a vaccine being recommended and a vaccine being mandatory by law.

Based on current information, no country has a national law that makes HPV vaccination for all adults compulsory. Instead, vaccination is almost always a recommendation, with a focus on specific age groups and populations.

The vast majority of national immunization programs for HPV focus on preteens and adolescents (ages 9-26). This is because the vaccine is most effective before a person becomes sexually active and is exposed to the virus.

For adults over the age of 26 (typically up to age 45), many countries, like the United States, use a "shared clinical decision-making approach. This means the decision to vaccinate is made between the patient and their doctor, based on individual risk factors, like the likelihood of new sexual partners

Some countries offer free or government-subsidized "catch-up" vaccination programs for young adults who missed the vaccine in their preteen years. For example, Austria has offered free catch-up vaccination for young adults up to age 30 for a limited time. This is a form of strong recommendation and encouragement, not a mandate.

Vaccination may be specifically recommended for certain at-risk adult groups, such as men who have sex with men (MSM) or immunocompromised individuals. This is a targeted recommendation, not a blanket mandate for all adults.

In conclusion, while the HPV vaccine is a significant part of public health strategy in many countries, and is highly recommended for young people, there are no known countries where it is a legally required, compulsory vaccination for the entire adult population.

For years, the public health message on the HPV vaccine has been clear and effective: vaccinate preteens. It is a message that has rightly focused on preventing cancer by immunizing our children before they are exposed to the human papillomavirus. But in our success, we may have inadvertently left a critical group behind: adults. It's time to expand the conversation and recognize that for millions of adults, an "ounce of prevention" is still worth a pound of cure.

While it is true that many older adults have already been exposed to some strains of HPV, the virus is not a single entity. The vaccine-specifically the 9-valent Gardasil 9-protects against nine different types of HPV, including the ones responsible for the vast majority of cervical, anal, and other cancers, as well as genital warts. The fact that a person has been exposed to one type of HPV does not mean they are immune to the other eight. An adult entering a new sexual relationship, or even one who has had only a handful of partners, can still benefit from protection against strains they have not yet encountered.

The "too late" argument also ignores the dynamic nature of a person's life and relationships. As people age, they may change partners, and their immune systems may be compromised by other health issues. For a person in their 30s or early 40s, getting the vaccine is not just a personal health decision; it is a public health action that reduces the viral load in the community and helps protect their partners.

The hesitance to promote adult vaccination also seems to be rooted in a miscalculation of cost versus benefit. Yes, the vaccine is more effective in younger, pre-exposed populations. But preventing even one case of cervical cancer, one instance of head and neck cancer, or one recurring case of genital warts in an adult saves not only a life but also hundreds of thousands of Rupees in treatment, hospital stays, and lost productivity. The cost of a few doses of a vaccine pales in comparison to the immense human and financial toll of these diseases.

So, what should we do?

First, we need to change the public health narrative. Instead of viewing adult vaccination as a fringe concern, we must integrate it into routine conversations about preventative care. Doctors and nurses should be encouraged to proactively discuss the HPV vaccine with their adult patients up to age 45, especially during annual check-ups. The goal should be to shift from a passive, patient-initiated inquiry to an active, provider-led recommendation.

Second, we must work to make the vaccine more accessible and affordable for adults and public health campaigns should specifically target this age group with clear, compelling messaging. We need to normalize adult vaccination, just as we have normalized the flu shot and other adult immunizations.

The HPV vaccine is a triumph of modern medicine. It is a rare tool that can directly prevent multiple forms of cancer. We have used it to great effect in our children, and now it is time to unlock its full potential. The message must be heard loud and clear. For adults, a second chance at prevention is a chance we can't afford to miss.

Summary is that HPV is a preventable cancer risk in adults that is often ignored concluding by affirming that the revision of a world free from HPV related cancers is possible as with started in childhood by priority to adult vaccination and regular screening .

With Regards

Dr. R.K Nema



Dr. KETAN DESAI

Chief Patron IMA
Past President World Medical Association,
MCI and IMA

Message

Dear IMA Members,

I am very happy to know that the IMA AMS Chandigarh State Branch is organizing National Annual Conference of Indian Medical Association Academy of Medical Specialities (IMA AMSCON-2025), on 29th & 30th November 2025, at IMA Complex, Sector-35-B, Chandigarh State. IMA Academy of Medical Specialties is releasing Annals on the topic of "Adult Vaccination - Focus on HPV Vaccination" during the National AMSCON-2025 at Chandigarh.

I hope that this Conference will bring together research workers and practicing young doctors to a common platform so as to exchange ideas and stimulate discussion on current problems and develop strategies in the field of monitoring the performance of medical system. The deliberations at the conference will enhance the knowledge and expertise of the participants on latest advancements in medicine and medical technology.

I would like to congratulate your editorial team for bringing out the Annals and the entire organizing team of IMA AMSCON-2025 for their efforts and hard work to make this an extraordinary event.

Long Live IMA

With warm regards,

Dr. Ketan Desai

Chief Patron IMA

Past President World Medical Association, MCI and IMA



Dr. DILIP BHANUSHALI
National President
Indian Medical Association

Message

Greetings from Indian Medical Association!

It gives me immense pleasure to know that the Indian Medical Association - Academy of Medical Specialities (IMA AMS) is bringing out the Annals on the very important subject of "Adult Vaccination - Focus on HPV Vaccination", to be released during AMSCON-2025 at Chandigarh.

Vaccination is one of the greatest achievements of modern medicine, yet adult vaccination often remains underemphasized. With the growing burden of non-communicable diseases, increasing life expectancy, and the continuing threat of infectious diseases, the role of vaccines in adults has become more critical than ever.

The focus on HPV vaccination is both timely and relevant. HPV vaccination has proven to be a highly effective preventive tool against cervical cancer and other HPV-related diseases, and its wider acceptance in India can save countless lives. It is vital for the medical community to advocate and educate society on the benefits of adult vaccination, dispelling myths and misconceptions.

I congratulate IMA AMS for this initiative of compiling scientific knowledge and expert opinions into the Annals. I am confident that this publication will serve as a valuable resource for medical professionals, policy makers, and the wider public health community.

I extend my best wishes to the organizers of AMSCON-2025 for a successful and impactful conference.

Long Live IMA

With warm regards,
Dr. Dilip Bhanushali
National President, IMA



Dr R V ASOKAN
Imm. Past National President
Indian Medical Association

Message

Dear Dr Ramneek Bedi, Dr C Sairam, Dr R K Nema and Dr Sandeep Bhaskar Naik,

The Annals of IMA AMS have retained their Referral status for long. These Annals have been a pride of IMA and IMA AMS. Focused on a vertical subject, exhaustive information and knowledge is captured and presented in a precise and concise manner.

The present IMA AMS team under the leadership of Dr Ramneek Beedi and Dr C Sairam has not only maintained the premium status of IMA AMS but has taken the institution forward in difficult times. New opportunities have been identified and expansion is a constant agenda. IMA AMS is one of the better run wings of Indian Medical Association.

I take this opportunity to congratulate Dr R K Nema, Hony Editor Annals and Dr Sandeep Bhaskar Naik, Executive Editor Annals for their dedicated hard work in bringing out the current Annals on the topic of "ADULT VACCINATION- FOCUS ON HPV VACCINATION". The chosen topic is of immense value to IMA members and will ensure safe public good. I record my appreciation to the editors.

I congratulate Dr Ramneek Beedi for exemplary leadership of IMA AMS.

With all the best wishes for a very successful AMSCON 2025 in Chandigarh.

With warm regards

Dr R V ASOKAN
Imm. Past National President, IMA



Dr ANILKUMAR J. NAYAK
National President (Elect)
Indian Medical Association

Message

Greetings from Indian Medical Association (HQs.)!

It gives me great pleasure to extend my warm greetings to the IMA Academy of Medical Specialities for bringing out the important edition of the Annals dedicated to the theme "Adult Vaccination - Focus on HPV Vaccination" and the same will be released during the AMSCON-2025 on 29th-30th November 2025 at Chandigarh.

Vaccination has long been recognized as one of the most effective and impactful public health interventions. While childhood immunization programs have achieved tremendous success globally, adult vaccination remains an area that requires greater awareness and advocacy.

With the increasing understanding that prevention is truly better than cure, promoting HPV vaccination among adults is not only a medical necessity but also a social responsibility. The need of the hour is to bridge gaps in knowledge, dispel myths, and motivate healthcare professionals and communities to prioritize adult immunization as part of routine preventive health care.

IMAAMS's effort in dedicating this Annals issue to the topic reflects a commendable commitment to fostering awareness, advancing research, and inspiring collective action in this crucial area of public health. I applaud the organizers, contributors, and editorial team for their dedication and vision.

May this publication serve as a valuable resource for healthcare professionals, policymakers, and the community at large, guiding them toward a healthier, better-protected future.

Long Live IMA !!

Dr Anilkumar J. Nayak
National President (Elect), IMA



Dr SARBARI DUTTA
Hony. Secretary General
Indian Medical Association

Message

Greetings from Indian Medical Association (HQs.)!

It is a great pleasure to know that IMA Academy of Medical Specialties is releasing Annals on the topic of "Adult Vaccination - Focus on HPV Vaccination" during the IMA AMS National Conference (AMSCON-2025), on 29th & 30th November, 2025 at Chandigarh.

Adult vaccination is vital for preventing serious diseases and protecting long-term health. The HPV vaccine is especially important, as it helps prevent cancers like cervical, throat and anal cancer caused by the Human Papillomavirus. Adults who missed this vaccine earlier can still benefit from it. Doctors play a key role by informing patients, reviewing medical history, and ensuring vaccines are given at the right time. Their guidance builds trust and increases vaccination rates, improving overall public health. Getting vaccinated is a safe and effective step toward a healthier future.

Such publications, besides giving an insight into activities of this important wing, also spreads awareness and information about the latest trends and standards of advanced treatments in different fields of specialized medicine.

I express my heartiest appreciation and congratulations to the whole Editorial Team of Annals.

Long Live IMA!!

Dr Sarbari Dutta
Hony. Secretary General, IMA



Dr. PIYUSH JAIN
Hony. Finance Secretary
Indian Medical Association

Message

I am delighted to know that the IMA Academy of Medical Specialties is releasing Annals on the theme "Adult Vaccination - Focus on HPV Vaccination" during the IMA AMS National Conference (AMSCON-2025), being held on 29th & 30th November, 2025 at Chandigarh.

Adult vaccination is a crucial step in safeguarding health and preventing serious diseases. One of the most significant examples is the HPV (Human Papillomavirus) vaccine. HPV is known to cause several cancers, including cervical, anal, and oropharyngeal cancers. While it is often perceived as a vaccine only for adolescents, adults up to the age of 45 years can also benefit from it. As trusted advocates of preventive healthcare, doctors play a pivotal role in educating and motivating patients to adopt HPV vaccination, thereby reducing the burden of HPV-related cancers in society.

I sincerely appreciate the efforts of IMA AMS in bringing out this edition of Annals on such an important and timely subject. This initiative will undoubtedly enrich the knowledge of our members and strengthen their proficiency in keeping pace with advancements in medicine and preventive strategies.

I extend my best wishes to the Editorial and Advisory Board of Annals and hope that this publication will serve as a valuable resource for all members.

Dr. Piyush Jain
Hony. Finance Secretary, IMA



Dr. RAMNEEK BEDI
Chairman
IMA AMS -2024-2025

Message

Greetings from IMAAMS Head Quarters!

It gives me great pride and immense pleasure that the Annual National Conference of IMA AMSCON will be held on 29th & 30th November 2025 at Chandigarh. I am very happy that we are releasing the Annals with focus on "Adult Vaccination - Focus on HPV Vaccination" during National IMA AMSCON-2025 at Chandigarh.

IMA AMS the specialist academic wing of IMA is doing yeoman service to the multifarious specialities. The Annals will include articles from renowned experts, providing valuable insights on adult vaccination. The annals to be published as an E-version will benefit our members and delegates. I am confident the articles by renowned teachers on various topics will be useful to one and all.

I welcome all the members to attend IMA AMS National conference (AMSCON-2025) at Chandigarh. I thank all the members who have cooperated with me and thanks to all the members who have contributed for the Annals. Also, I thank and wish the organizing committee success for this conference, the AMSCON.

Wishing AMSCON 20225 is a grand success

With regards,

Dr. Ramneek Bedi
Chairman IMA AMS -2024-2025



Dr. M. VENKATCHALAPATHY
Chairman Elect, IMA AMS

Message

Greetings from IMA Academy of Medical Specialities!

It gives me immense pleasure to announce that the IMA Academy of Medical Specialties will be releasing IMA AMS Annals during the IMA AMS National Conference (AMSCON-2025), being held on 29th & 30th November, 2025 at Chandigarh. The Annals have always been a prestigious academic publication that reflects the vision, dedication, and scholarly spirit of the IMA AMS.

This year's edition, focused on "Adult Vaccination - Focus on HPV Vaccination", highlights the continuing commitment of our Academy to promote evidence-based medical practice and continuous professional development among specialists across the nation. The contributors, with their vast clinical experience and expertise, have enriched this issue with valuable insights that will benefit practitioners and enhance patient care.

I take this opportunity to congratulate and thank all the authors, editors, and contributors who have worked tirelessly to bring this publication to fruition. I also extend my appreciation to the organizing committee of AMSCON-2025, Chandigarh, for their exemplary efforts in hosting this scientific event.

Let this Annals inspire us all to continue advancing knowledge, fostering innovation, and strengthening the academic foundation of the medical fraternity.

Long Live IMA! Long Live IMA AMS!!

Dr. M. Venkatchalapathy
Chairman Elect, IMA AMS



Prof. Dr. V. AMUTHAN
Vice Chairman, IMA AMS

Message

Annals of IMA AMS - Special Edition on HPV Vaccination

It gives me great pleasure to extend my warm greetings on the publication of this special edition of the Annals of IMA AMS, dedicated to Human Papillomavirus (HPV) vaccination.

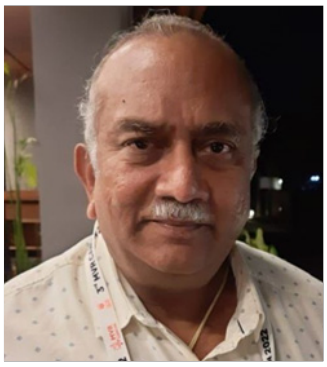
This edition focuses on one of the most impactful preventive health measures of our time - the HPV vaccine, which holds the promise of significantly reducing the burden of cervical and other HPV-related cancers. By bringing together expert insights, research updates, and clinical perspectives, this issue underscores the crucial role of medical professionals in promoting awareness, prevention, and vaccination coverage across our communities.

The Indian Medical Association and its Academy of Medical Specialities continue to uphold their commitment to advancing scientific knowledge and strengthening preventive healthcare. I sincerely appreciate the editors, contributors, and the entire editorial team for their dedicated efforts in making this edition both informative and inspiring.

May this special issue serve as a valuable reference and catalyst for continued dialogue and action toward a cancer-free future.

Warm regards,

Prof. Dr. V. Amuthan MD DM FACC
Vice Chairman, IMA AMS



Dr. C. SAIRAM
National Secretary IMA AMS

Message

Greetings from IMAAMS Head Quarters!

It gives me immense pleasure and satisfaction to note that Academy of Medical Specialities under the aegis of Indian Medical Association, National Headquarters, the Annual National Conference of IMA AMS (AMSCON-2025) to be held on 29th & 30th November, 2025 at Chandigarh with a wide spectrum of academic activities pertaining to various specialities spread therein under its umbrella. I thank our Dynamic Chairman Dr. Ramneek Bedi for selecting a wonderful topic and is need of the hour.

Such publications, besides giving an insight into activities of this important wing, also spreads awareness and information about the latest trends and standards of advanced treatments in different fields of specialized medicine.

Such Conferences provide an opportunity for the members of the Indian Medical Association Academy of Medical Specialities to have a democratic, healthy and meaningful interaction on issues pertaining to the medical profession and the health-related problems of the people of our country.

I would like to thank all the office bearers of IMA and IMA AMS, Past Chairmen and Secretaries of IMA AMS, the Chairmen and Secretaries of IMA AMS State chapters for their guidance, active participation and support.

My special thanks to the editorial team of Dr. R. K. Nema and Dr. Sandeep B Naik for their dedication and hard work in ensuring a beautiful issue of Annals.

I would like to express my gratitude to IMA AMS Chandigarh State for hosting this important event and the entire organizing team of IMA AMSCON-2025 for their efforts and hard work to make this an extraordinary event.

I am enclosing my recommendations to Governor of Telangana to submit to Prime Minister in Governor Conference to include HPV Vaccination in Telangana, because of which parliament has passed universal immunization budget which got approval and President of India symbolically launched H.P. V. Vaccination. The copy is enclosure.

HPV Vaccination for Prevention of Cervical Cancer in Telangana

Cervical Cancer: Cancer of the cervix is the second most common cancer in women worldwide, with about 527,624 new cases and 265,672deaths each year[1]. India contributes to almost 1/4th of this disease burden with 96,922 new cases and 60,078 deaths each year. Cervical Cancer is the 2nd most common cancer cause of women mortality in India. Eight women are dying every hour in India due to Cervical Cancer[2].

Cause of Cervical cancer: The human papillomavirus (HPV) is the main cause of cervical cancer. Almost all cervical cancer cases (99%) are linked to genital infection with HPV. HPV is a common virus that is transmitted sexually. Most sexually active people will have HPV at some point in their lives, but few women will get cervical cancer[3]. There are 40 different types of HPV that can infect the genital area of men and women. In addition to cervical cancer, HPV can cause cancers of the cervix, vulva, vagina, anus, penis and genital warts[4].

HPV Genotype Prevalence in Hyderabad: HPV genotyping was done in cervical cancer specimens (n = 41) obtained from women attending a regional cancer hospital in **Hyderabad**. HPV-DNA testing was also done in cervicovaginal samples (n = 185) collected from women enrolled in the cervical cancer screening pilot study conducted in the rural community, of Medchal Mandal, twenty kilometers away from Hyderabad. High-risk HPV types were found in 87.8% (n = 36/41) of the squamous cell carcinomas using a PCR-based line blot assay. Among the HPV positive cancers, the overall type distribution of the major high-risk HPV types was as follows: HPV 16 (66.7%), HPV 18 (19.4%), HPV 33 (5.6%), HPV 35 (5.6%), HPV 45 (5.6%), HPV 52 (2.8%), HPV 58(2.8%), HPV 59(2.8%) and HPV 73 (2.8%). The prevalence of high risk HPV infection in this community-based screening population was 10.3% (19/185) using the clinician-collected and 7.0% (13/185) using the self-collected samples. [5]

Prevention of cervical cancer: Cervical cancer can be prevented by two methods:

1. Periodic screening & follow-up 2. Vaccination.

Screening: Cervical cancer is the easiest gynecologic cancer to prevent, with regular screening tests and follow-up. But unfortunately, the rate of cervical cancer screening is very low in India, a mere 3.1%[2]. Screening tests can help prevent cervical cancer or find it early so that treatment can be initiated before it is not too late. Screening should be periodically done in all women 30 years and above, who is sexually active.[6]

Vaccination: Cervical cancer can be prevented through vaccination. World Health Organization (WHO) recognizes the importance of cervical cancer and other HPV related diseases as global public health problems and recommends that routine HPV vaccination should be included in national immunization programmes wherever feasible.[7] Indian Association of Pediatrics (IAP) recommends the HPV vaccine to be given to all the girls between 10-12 years of age[8].

Quadrivalent HPV vaccine (QHPV): One of the vaccines available in India to prevent cervical cancer is QHPV. QHPV is imported and marketed in India by MSD Pharmaceuticals Private Limited. QHPV, the quadrivalent human papilloma virus contains four HPV serotypes, HPV 6, 11, 16 &18[9]. HPV types 6 and 11 are responsible for over 90% of all anogenital warts and types 16 and 18 are responsible for about 70% of all cervical cancer cases worldwide[1]. In India, serotypes 16 and 18 account for more than 83% of all invasive cervical cancers[2]. QHPV is shown to be very effective in preventing multiple diseases caused by these four serotypes[11]. For girls 9 to 14 years of age, QHPV can be administered according to a 2-

dose schedule (0.5 ml at 0, 6 months). If the second vaccine dose is administered earlier than 6 months after the first dose, a third dose should always be administered. [9]

QHPV: Robust real world experience

Since its launch in 2006, over 265 million doses of the quadrivalent HPV vaccine have been distributed worldwide. The quadrivalent HPV vaccine was the first cervical cancer vaccine to receive WHO pre-qualification, which guarantees that the vaccine meets WHO standards for quality, safety and efficacy. QHPV receives public funding in 58 out of the 84 countries worldwide with HPV vaccine programs, demonstrating strong global acceptance[10].

Neighboring countries of India like Sri Lanka have also considered QHPV inclusion in their national programs. Even for India, the state of Punjab launched India's first government funded HPV vaccination program for Class VI girls with 9853 doses vaccinated in two of its districts in Phase 1 and have also initiated Phase 2 vaccination in November 2017[10]

Sikkim is the second state to include HPV vaccination after Punjab. The target age group for the vaccination is 9 years to less than 14 years and the campaign will start from 1st week of June 2018. The initial one week vaccination will cover all schools and educational institutes and the 2nd week will be focused on drop out children or children who do not go to schools along with the HPV vaccination certificate/card.[10]

Approach to HPV Vaccination in Telangana:

A. Decision Making to Introduce HPV Vaccination Program in Telangana

B. Vaccination approach:

A vaccination approach may be adopted with Class 6 girls (aged 11 years) in schools from ... districts OR ..... a full state immunization.

	Total 9-14 years Girls Cohort	Total 11 years Girls Cohort (Class 6)	Total girls 15yr and above	HPV Doses Required @ 2 doses per girl	HPV Doses Required @ 3 doses per girl	Vaccine Cost
Full State Immunization						
Pilot Immunization						

(a. 11 Years age represents the age of Class 6 girls. Class 6 girls is a proposed cohort based on current state HPV vaccine experience in India)

C. Procurement of QHPV : Procurement of QHPV vaccine can be done through various routes-via UNICEF, state govt procurement or funding by a donar agency.

D. Program Planning and Implementation : This includes a comprehensive approach and can comprise of the following components

1. **Strategic program planning** : Detailed HPV vaccination strategic plan is critical for program success and must include important consideration like vaccination approaches (e.g., school, clinic) drawing experience with other HPV vaccination programs in developing countries

2. **Information, Education and Communication (IEC) :**

a) Guidance on communication strategies for different program phases (Pre-implementation, launch and post-launch)

b) Guidance on effective communication channels during different program phases and also creatives for the IEC Campaign.

3. Training for vaccinators – "Train the Trainer"

While the trainers can be trained at central level, it can be cascaded down to the District and Block level by the master trainers. Training content can be broadly focused on QHPV vaccine, Vaccine administration, Safe injection practices, AEFI (Adverse event following immunization).

4. Program monitoring and evaluation (M&E) : Assess & document the baseline HPV disease burden prior to state HPV vaccination program and setup surveillance systems to assess the impact of HPV vaccination programs at periodic intervals.

5. Issues Management : Constitute a nodal technical body to evaluate AEFI and address the issues proactively. Equip the government and other relevant stakeholders to address any concerns arising post HPV vaccination program launch and develop and support the execution of a robust risk mitigation plan. Conduct Media training to support the government to effectively address media queries.

E. Role of Stakeholders:

A. Potential Role of Partners -.

Donar agency/UNICEF??	MNJIO & RCC	MSD Pharmaceuticals Pvt. Ltd.
	Technical Guidance on planning and Implementation	Responsible for supply of QHPV
	Support Preparation of Operational Guidelines	
	Train the trainer	
	Implementation support M&E, AEFI reporting	
	Issues Management Support	

I request same type of letter preparation to be done by different State Branches to get it included in National universal immunization scheduled.

Wishing you all a successful IMA AMSCON 2025.

With regards,

Dr. C. SAIRAM
National Secretary IMA AMS

INDIAN MEDICAL ASSOCIATION
ACADEMY OF MEDICAL SPECIALITIES
HEADQUARTERS

IMA AMS NATIONAL OFFICE BEARERS-2024-2026



Dr. Desai Ketan Dhirajlal
Chief Patron IMA
Past President World Medical Association, MCI and IMA



Dr. Dilip Bhanushali
National President
IMA



Dr. R. V. Asokan
Imm. Past National President , IMA



Dr. Anilkumar J Nayak
National President Elect
IMA



Dr. Sarbari Dutta
Hony. Sec. General,
IMA



Dr. Piyush Jain
Hony. Finance Secretary
IMA



Dr. Ramneek Bedi
Chairman, AMS



Dr. M. Venkatchalapathy
Chairman Elect, AMS



Dr. V. Amuthan
Vice Chairman, AMS



Dr. C. Sairam
Hony. Secretary, AMS



Dr. Ranveer Singh
Joint Secretary, AMS



Dr. Santhosh Kadam
Joint Secretary, AMS



Dr. R. K. Nema
Hony. Editor, AMS



Dr. Sandeep B. Naik
Executive Editor, AMS

NATIONAL CHAIRPERSONS



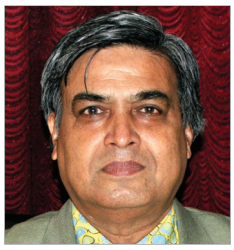
Dr. M. Bhaskaran
Kerala 2008-2009



Dr. O.P. Tewari
Uttar Pradesh 2009-2010



Dr. A. Zameer Pasha
Tamil Nadu 2010-2011



Dr. Surendra Daga
West Bengal 2011-2012



Dr.Satish Kumar Raj
Uttar Pradesh 2013-2014



Dr. Ajoy Kumar Singh
Jharkhand 2014-2015



Dr. Kiranshankar Wasudeo Deoras
Chhattisgarh 2015-2016



Dr. Joseph Mani
Kerala 2016-2017



Dr Ravi Wankhedkar
Maharashtra 2012-2013



Dr. Madhuchanda Kar
West Bengal 2017-2018



Dr. Natwar Sharda
Madhya Pradesh 2018-2019



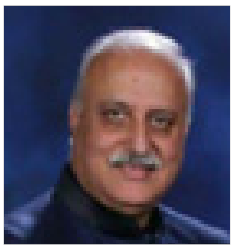
Dr. M. S. Ashraf
Tamil Nadu 2019-2020



Dr. D. Sreehari Rao
Andhra Pradesh 2020-2021



Dr. G.N. Prabhakara
Karnataka 2021-2022



Dr. Pankaj Mutneja
Haryana 2022-2023



Dr. Nomeeta Shiv Gupta
Delhi 2023-2024

NATIONAL SECRETARIES



Dr. G. Suresh
(2008)



Dr. B. N. Reddy
(2009-2010)



Dr. M.S. Haribabu
(2011-2012)



Dr. E. Prabhavathi
(2013-2014)



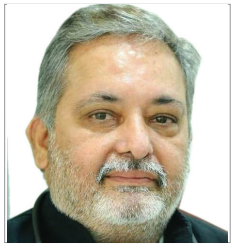
Dr. P. Pulla Rao
(2015-2016)



Dr. V. S. Rao
(2017-2018)



Dr. Mohan Gupta
(2019-2020)



Dr. Sanjeev Singh Yadav
(2021-2022)



Dr. Srirang Abkari
(2022-2024)

STATE CHAIRMEN & SECRETARIES OF IMA AMS



Dr. J. Sreenath
Chairman,
IMA AMS AP State



Dr. Malladi S Sharma
Secretary,
IMA AMS AP State



Dr. Atul Chandra Saikia
Chairman
IMA AMS Assam State



Dr. Pradip Kumar Sarma
Secretary,
IMA AMS Assam State



Dr. D. P. Singh
Chairman,
IMA AMS Bihar State



Dr. Rajiva Ranjan
Secretary,
IMA AMS Bihar State



Dr. Sibabrata Banerjee
Chairman,
IMA AMS Bengal State



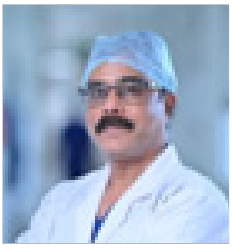
Dr. Sekhar Chakraborty
Secretary,
IMA AMS Bengal State



Prof. (Dr.) Jeet Ram Kashyap
Chairman,
IMA AMS Chandigarh State



Dr Gurvinder Singh
Secretary,
IMA AMS Chandigarh State



Dr. Rajesh Kumar Sinha
Chairman,
IMA AMS Chhattisgarh State



Dr. Rajiv Chandrakar
Secretary,
IMA AMS Chhattisgarh State



Dr. Anil Sharma
Chairman,
IMA AMS Delhi State



Dr. Sameer Rana
Secretary,
IMA AMS Delhi State



Dr. Vidyut J. Desai
Chairman,
IMA AMS Gujarat State



Dr. Dilip B. Gadhvi
Vice Chairman,
IMA AMS Gujarat State



Dr. Kavita Yadav
Chairman,
IMA AMS Haryana State



Dr. Sangeeta Jain
Secretary,
IMA AMS Haryana State



Dr. Abir Kumar Chakraverty
Chairman
IMA AMS Jharkhand State



Dr. V. K. Pandey
Secretary,
IMA AMS Jharkhand State

STATE CHAIRMEN & SECRETARIES OF IMA AMS



Dr. S. Y. Mulkipatil
Chairman,
IMA AMS Karnataka State



Dr. Manjunath S Nehar
Secretary,
IMA AMS Karnataka State



Dr. Ajit Bhaskar
Chairman,
IMA AMS Kerala State



Dr. K. Sandhya Kurup
Secretary,
IMA AMS Kerala State



Dr Rajendra M Tiwari
Chairman,
IMA AMS Maharashtra State



Dr. Ujjwala Dahifale
Secretary,
IMA AMS Maharashtra State



Dr. Mrs. Alpana Shukla
Chairman,
IMA AMS MP State



Dr. Brajesh Chandra Chaudhary
Secretary,
IMA AMS MP State



Dr. Abhay Kumar Sahoo
Chairman,
IMA AMS Orissa State



Dr. Ritanjali Mishra
Secretary,
IMA AMS Orissa State



Dr. Ashok Uppal
Chairman,
IMA AMS Punjab State



Dr. Harvinder Singh Heer
Secretary,
IMA AMS Punjab State



Dr. V. Rajesh Babu
Chairman,
IMA AMS Tamil Nadu State



Dr. S. Jayaraman
Secretary,
IMA AMS Tamil Nadu State



Dr. Sanjeev Singh Yadav
Chairman
IMA AMS Telangana State



Dr. K. S. Giftson
Secretary,
IMA AMS Telangana State



Dr. Mandeep Singh
Chairman,
IMA AMS UP State



Dr. D. K. Singh
Secretary,
IMA AMS UP State



Dr. Satanshu Mathur
Chairman,
IMA AMS UA State



Dr. Pradeep Kumar Pandey
Secretary,
IMA AMS UA State

Activity Report of IMA AMS from 24th Nov. 2024 to 15th Nov. 2025

MEMBERSHIP AS ON DATE 15TH NOV 2025:

20 State Chapters 226 Branch Chapters

18867 Life Members 2680 Fellows as on the date

LIFE MEMBERSHIPS & FELLOWSHIPS RECEIVED AS ON 15TH NOV 2025

Life Memberships- 594 Fellowships Applications (for 2025) - 20

TOTAL as on 15-11-2025

S.No	State Name	Life Members & Associate LM	Fellows of IMA AMS
1	ANDHRA PRAEDESH	569	58
2	ASSAM	269	41
3	BENGAL	834	239
4	BIHAR	657	259
5	CHANDIGARH	153	34
6	CHATTISGARH	205	25
7	DELHI	722	239
8	GUJARAT	372	51
9	GOA	4	3
10	HARYANA	1432	228
11	HIMACHAL PRADESH	2	1
12	JAMMU & KASHMIR	12	3
13	JHARKHAND	183	55
14	KARNATAKA	1150	168
15	KERALA	3182	147
16	MADHYA PRADESH	276	53
17	MANIPUR	11	5
18	MAHARASHTRA	2772	110
19	ORISSA	334	79
20	OVERSEAS	59	54
21	PUNJAB	246	69
22	PONDICHERRY	13	3
23	RAJASTHAN	103	28
24	TAMILNADU	1420	329
25	TELAGANA	1593	161
26	TRIPURA	6	4
27	UTTAR PRADESH	1907	229
28	UTTARANCHAL	381	5
	Total	**18867**	**2680**

New Branches of IMA AMS (2025):

Karnataka State Chapter has opened **"Hubballi"** new Local Branch Chapter. The Branch Chapter is inaugurated on 3rd May 2025.

Tamil Nadu State Chapter has opened **"Pollachi"** new Local branch chapter. The Branch Chapter is inaugurated on 10th July 2025.

IMA AMS Accounts:

- All accounts of IMA AMS Hqrs are maintained in centralized Tally, accounts updated monthly and submitted to IMA Hqrs. Bank Statements of IMA AMS and Audit Balance Sheet for the period 1st April 2024 to 31st March 2025, Budget for the year 2025-2026 have submitted to IMA Hqrs. And also provisional Balance sheet from1st April 2025 to 31st August 2025 have submitted to IMA Hqrs.
- All original Fixed Deposits of IMA AMS have been submitted to IMA Head Quarters, New Delhi.
- We have made 2 New Fixed Deposits in the month of March 2025 of Rs.20,00,000/- and another Fixed Deposit in the month of August 2025 of Rs. 25,00,000/-, original FDRs sent to IMA Hqrs.
- We have received an amount of Rs. 3,00,000/- from Dr. R.M. Saboo, towards IMA AMS Dr. R. M. Saboo Oration. The amount which we received, deposited in a Fixed deposit. The Original FDR sent to IMA Head Quarters.

GST: IMA AMS Hqrs have GST Registration Certificate, GSTIN No. 36AAATI0290G1ZW. GST filed for the period from 1st Oct 2024 to October 2025, copy of Challan receipts have been submitted to IMA Hqrs. We are filing GST on a monthly basis.

New Website: The website is now live, where members can access various features and services. Kindly visit our New Website: https://ima-ams.com

Online Membership Application: Members can now apply for membership online, making it easier to join their membership.

Digital Certificates: One of the most convenient features is the ability to download IMA AMS Life Membership Certificates directly from the website.

IMA AMS ANNALS: A suggested topic for Annals is **"Adult vaccination- focus on HPV vaccination"** decided in the GC Meeting and it will be inaugurated in AMSCON-2025.

A. The Academy shall have the following categories of membership:

1. Life Members 2. Overseas Members 3. Honorary Members

B. The Academy shall have the following categories of Fellows:

1. Founder Fellows 2. Fellows: 3. Honorary Fellows:

C. Honorary Professorship: IMA Professorships are now awarded only on approval by IMA Accreditation Council, New Delhi, given during Teacher's Day on 5th Sept of every year.

IMA AMS Fees details and Mode of Payment details are given below:

1. Life Membership Fee: Rs 1000/- + 180 (18% GST) Total Rs. 1180/- (Effective from 1st April 2024) (Hqrs Share: Rs 400 + 18% GST, State Share: Rs 300 + 18% GST, Branch Share: Rs 300 + 18% GST)
2. Overseas members (effective from 1-10-1988): U.S. Dollars 100 + 18% GST (No Share)
3. Fellowship Fee: Rs. 7500/- + 1350 (18% GST) Total Rs. 8850/-
4. Fellowship fee of Overseas Members U.S. Dollars 400 + 18% GST (No Share)

Required Documents:

1. IMA Life Membership Certificate
2. MBBS / PG Diploma Certificates,
3. MCI Registration Certificate
4. Passport size colour photo.

Eligibility Criteria for IMA AMS Fellowship:

Nomination for Fellowship of the Academy shall be of Life Members who comply with the following minimum requirements:

- Life Membership of IMA
- Life Membership of the Academy Medical Specialities (IMA AMS)
- Practice in the speciality of at least 10 years.
- Academic achievement, professional distinction, publication of Scientific Papers, research and teaching experience etc.
- Uninterrupted continuance of Membership/Life Membership of IMA after election/selection as Fellow, failing which, the Fellowship shall be liable to be withdrawn.
- All other requirements which may be prescribed by the Governing Council from time to time for the guidance of the Credential Committee.

IMA AMS Courses

IMA AMS conducts courses in medical specialties with sole intention of improving knowledge and skills of medical professionals in their respective fields. The duration of course in general is one year. These courses, however, are not recognized by NMC/MCI and doctors undertaking these courses are not permitted to claim themselves as specialist or to display these certificates as additional qualification.

While conducting the courses the following pattern of revenue sharing has been adopted.

1. 30% share to IMA AMS Headquarters
2. 40% share to academic centre (Institute/Hospital) conducting the course
3. 30% share IMA AMS State for its maintenance

Following is the provisional list of courses being offered by IMA Academy of Medical Specialities

1. Infertility
2. Fluorescein Angiography
3. Laser Photocoagulation in Retinal problems
4. Excimer, Laser & Lasik Surgery
5. Phacoemulsification
6. Training in Non-invasive Cardiology, Echocardiography and TMT
7. Critical Care in Cardiology
8. Advanced Micro-Surgery of Ear
9. Functional Sinus Endoscopy
10. Laser in ENT
23. Gynae Oncology Surgery
24. Oncology Pathology
25. Oncology Anaesthesiology
26. Medical Oncology
27. Uro-Oncology Surgery
28. Paediatric Hemato-Oncology
29. Bone Marrow Transplantation
30. Oncology Radiology
31. Cancer Re-Constructive Surgery
32. Interventional Pulmonology & Thoracic
33. Oncology

11. Rhinoplasty
12. Joint Replacement
13. Arthroscopy
14. Spine Surgery
15. Upper GI Endoscopy Colonoscopy
16. Upper GI Endoscopy - a. Basic b. Advanced
17. Laparoscopy - a. Basic b. Advanced
18. Rheumatology
19. Preventive Cardiology
20. Breast Oncology Surgery
21. G.I. Oncology Surgery
22. Head & Neck Oncology Surgery
34. Oncology Orthopaedics
35. Interventional Radiology
36. Pathology
37. Neuro Critical Care
38. Molecular Diagnostics
39. Bronchoscopy
40. Diabetic Retinopathy Management
41. Bariatric Surgery
42. Regenerative Medicine
43. Sleep Medicine
44. Hematology and Bone Marrow Transplantation

IMA shall develop courses accredited by IMA Accreditation & Academic Council.

In the first phase following subjects shall be included,

1. Primary Cardiology
2. Diabetology
3. Hypertension
4. Coronary Heart Disease
5. Emergency Practice
6. BCLS
7. ACLS
8. Blindness Control
9. Infectious Diseases
10. Vaccination
11. Occupational health
12. Asthma and COPD
13. Cancer
14. Emergency Medicine
15. Child Sexual Abuse
16. Vector Borne Diseases
17. Antenatal Care
18. AMR
19. Infection Control Strategy
20. Basic Surgical skills etc

IMA AMS Course Centre's as follows:

State	Name of the Centre	Course
Andhra Pradesh	Ferty 9, Infertility Centre, Vijayawada (In association with IMA AMS Hqrs)	Infertility
Andhra Pradesh	Komali Fertility Centre, Guntur (In association with IMA AMS Hqrs)	Infertility
Chandigarh	Bedi Hospital, Chandigarh	Infertility, Laparoscopy, Endoscopy
Chhattisgarh	Revival Medical Centre, Bhilai,	Laparoscopy
Chhattisgarh	The Srijan Bhilai Test Tube Baby Centre	Infertility
Delhi	Rajiv Gandhi Cancer Institute, New Delhi (In association with IMA AMS Hqrs)	1. G.I. Oncology Surgery 2. Oncology Pathology 3. Oncology Anaesthesiology 4. Oncology Radiology 5. Cancer Re-Constructive Surgery

		6. Interventional Pulmonology & Thoracic 7. Oncology Orthopedics 8. Interventional Radiology 9. Breast Onco Surgery
Haryana State	Saxena Hospital Institute of Minimally Invasive Surgery Training LLP (SHIMIST), Sonepat, Haryana State	Fellowship Courses in Laparoscopy and Minimal Access Surgeries
Haryana State	Prem Hospital, Haryana State	Fellowship Course in Bronchoscopy **(Centre approved, Course not yet started)**
Karnataka	Garbhagnan IVF Centre, Bangalore	Infertility
Telangana	1. Ferty 9 Infertility & Research Centre 2. Kamineni Fertility Centre 3. Southern Gem Hospital 4. Genesis Fertility Centre 5. MOM IVF & Research Centre 6. ZIVA Hospital 7. ESHA IVF Centre 8. Mamata Fertility Hospital 9. KIMS Fertility Centre 10. Laxmi Narasimha Hospital 11. Hegde Fertility Unit of Hegde Hospital 12. Rekhasagar IVF & Research Centre 13. Avira Infertility Centre 14. Wish Fertility 15. Sree Nandaka IVF & Fertility Centre 16. Fertilica IVF & Women Care Centre 17. Hira Fertility Centre 18. 9M Fertility by Ankura Hospital 19. Surya Fertility Centre 20. Revive Fertility Centre 21. Medcy Fertility Hospital	Infertility
Telangana	Genesis Fertility & Laparoscopy Centre	Hysteroscopy-Laparoscopy
Telangana	Sree Nandaka Fertility Laparoscopy Laser Centre	Laparoscopy
Telangana	TVR Laparoscopy Centre (In association with IMA AMS Hqrs)	Basic Laparoscopic Surgery
Telangana	Laxmi Narasimha Hospital,Hanamkonda (In association with IMA AMS Hqrs)	Laparoscopy
Telangana	Kamineni Hospitals Pvt. Ltd. Hyderabad	Emergency Medicine Non-invasive Cardiology Critical Care in Cardiology Hematology and Bone Marrow transplantation **(Centre approved, Course not yet started)**
Telangana	Kiran Hospital Karmanghat, Hyderabad	Laparoscopy
Telangana	Koorapati Laparoscopic&Fertility Centre,	Basic Laparoscopic Surgery

	Hanamkonda (In association with IMA AMS Hqrs)	**(Centre approved, Course not yet started)**
Telangana	Koorapati Laparoscopic&Fertility Centre, Hanamkonda(In association with IMA AMS Hqrs)	Basic Gynaec Laparoscopy **(Centre approved, Course not yet started)**
Telangana	Sindhu Hospitals, Hyderabad	Endoscopy & Colonoscopy Course **(Centre approved, Course not yet started)**
Telangana	HK Hospitals, Gachibowli, Hyderabad	Cosmetology Course **(Centre approved, Course not yet started)**
Tamil Nadu	1.Gateway Clinics, Coimbatore, TN 2. Billroth Hospitals Pvt Ltd, Chennai	Basic & Advanced Laparoscopy Course (LAPIMA)
Tamil Nadu	Ponnammal Duraisamy Eye Hospital Retina Centre, Coimbatore	Diabetic Retinopathy Management (DIARIMA)
Tamil Nadu	Rao Hospital, Coimbatore	Infertility (INFERIMA)
Tamil Nadu	Rex Ortho Hospital, Coimbatore	Arthroplasty (ARTHIMA)
Tamil Nadu	Maruti Hospital, Trichy	Regenerative Medicine (REGIMA)
Tamil Nadu	MGM Healthcare, Chennai	Sleep Medicine (SLEEPMEDIMA)
Karnataka State	NIMHANS, Bangalore	Online Fellowship Course in Dementia **(Centre approved, Course not yet started)**
Karnataka State	Ankur Health Care Pvt Ltd, Bangalore MasterHealthPro India Pvt Ltd	Fellowship Course in Andrology & Sexual Medicine

This year, we have inspected a total of 10 centres. Total course centre's as on 15th Nov 2025: 46

Course modules have been prepared for new courses like Bronchoscopy, Rheumatology, Infectious diseases, Non-invasive cardiology, Arthroscopy, Joint replacement, Bariatric Surgery, Emergency Medicine, Hematology & BMT, Critical Care Cardiology, Upper GI Endoscopy and Colonoscopy, Diabetic Retinopathy Management, Regenerative Medicine and Sleep Medicine.

How to conduct Fellowship Courses in Respective States

- All Long-term fellowships Courses duration: 1 year
- All Short-term Fellowships Courses duration: 4-6 Months

Eligibility criteria:

Must be IMA Life Member and IMA AMS Life Member**,** Post-Graduation completed in their respective field.

Course Fee: Fee structure depends on respective State, Course fee Share as 30% towards Headquarters share, 40% towards Hospitals or training Centre's share and 30% IMA AMS Respective State Share.

- About 20 students can be admitted as per the facilities and infra-structure available in the Centre conducting the course. (More students may be permitted, subject to the facilities and infra-structure available).
- IMA AMS State Branch shall assess the facilities and infra-structure available in the Centre.
- Two Theory & two Practical Classes have to be conducted every month i.e. one class a week by the respective Centre. Due importance shall be given for clinical sessions.

- A minimum of 80% attendance shall be maintained by students.
- Monthly attendance and updates about classes shall be sent to IMA AMS of respective State.
- One assignment quarterly i.e. one every 3 months may be arranged for students.
- **"Theory examination"** shall be conducted by IMA AMS of respective State on day One. Theory paper will be corrected by the concerned faculty, who had conducted the courses.
- **"Practical examination"** i.e. Clinicals, log book discussions and general viva shall be conducted by respective Centre on day Two.
- Examination results shall be announced within one week of the exam and shall be informed to the Hqrs.
- A convocation fee has to be collected from the students by IMA AMS Chapter of respective State.
- State shall conduct graduation ceremony and invite AMS National Chairman & National Secretary for this function. IMA AMS Hqrs will be responsible for arranging the certificates for distribution to the students.

The pattern of question paper is as follows:

THEORY EXAMINATION (TOTAL 100 Marks) consisting of

Two long Questions each carrying 20 MARKS

Six short Questions each carrying 5 Marks

Thirty MCQ's each carrying 1 Mark (30 MCQ'S)

PRACTICAL EXAMINATION (TOTAL 250) consisting of

One long case carrying 5O MARKS

Two short cases each case carrying 25 Marks

10 Spotters each Spotter Carrying 5 marks

Log Book, 10 different Cases, each case carrying 5 Marks

General Viva carrying 50 marks

The pattern of passing the examination (Theory & Practical):

The candidates will appear for theory and practical examination on consecutive days. They need to secure minimum 50% marks in both theory and practical examination to be declared passed. Inability to clear either theory or practical will be deemed a failure. If they fail, they will have to reappear for both theory and practical examination with the next batch.

If any State is willing to conduct Fellowship Courses, kindly provide the following details:

1. Modules of the Training
2. The time of the training period
3. The Name of Hospital/Center and Hospital History
4. Faculty Details

Kindly send your consent letter & above details to IMA AMS Hqrs. After the provision of the above information, a team will inspect the facilities to grant permission as per the Constitutional Guidelines of IMA AMS Hqrs.

IMA AMS HQRS ACTIVITIES
from 26th Nov 2024 to 15th Nov 2025

Annual National Conference (AMSCON-2024) of Indian Medical Association-Academy of Medical Specialities

On 30th November & 1st December 2024:IMA AMS National Conference (AMSCON-2024) held on 30th November & 1st December 2024 at Bhubaneswar, Odisha. With the blessings and guidance of our Chief Patron, Dr. Ketan Desai, AMSCON 2024 was a huge success. We had an excellent academic program which included scientific Programmes,Paper presentations, lectures by eminent faculty from various specialties and Award Orations by distinguished clinicians. The excellent arrangements at the venue, the warm hospitality, meticulous planning of the entire event and huge participation by the delegates ensured that the Annual National Conference of IMA AMS on30th November & 1st December 2024 at Bhubaneswar, Odisha was a memorable one.

SCIENTIFIC SESSIONS-DAY-1













IMA AMS DR. SATYA PAL AGGARWAL MEMORIAL ANNUAL AWARD: DR. PANKAJ MUTNEJA, IMM. PAST NATIONAL CHAIRMAN IMA AMS





IMA MEDICAL EDUCATION AND RESEARCH AWARD:
DR. SANJEEV SINGH YADAV, IMM. PAST SECRETARY IMA AMS





2nd GOVERNING COUNCIL MEETING OF IMA AMS FOR THE YEAR 2024









INAUGURAL CEREMONY
CHIEF GUEST: DR. R.V. ASOKAN, NATIONAL PRESIDENT IMA







RELEASE OF ANNUAL ANNALS OF IMA AMS
THEME: DIET IN HEALTH AND DISEASE



NATIONAL IMA AMS AWARDS













CONVOCATION CEREMONY -
CHIEF GUEST: DR. R.V. ASOKAN, NATIONAL PRESIDENT IMA







FELLOWSHIP OF IMA AMS









SCIENTIFIC SESSIONS-DAY-2







IMA DR. R. K. MENDA MEMORIAL ORATION AWARD: DR. ABHAY KUMAR SAHOO, CHAIRMAN IMA AMS ORISSA STATE





On 28th Dec 2024: IMA AMS Hqrs launched new software for IMA AMS on 28th Dec 2024 by Dr. Dilip Bhanushali, National President IMA Hqrs during NATCON-2024.





On 8th January 2025: Charge was taken by Dr. Ramneek Bedi, Chairman IMA AMS (Virtual) and Dr. C. Sairam, Hony. Secretary IMA AMS Hqrs, on 8th January 2025 at IMA AMS Hqrs Office given by Dr. Nomeeta Shiv Gupta, Imm Past Chairman AMS Hqs (Virtual) and Dr. Srirang Abkari, Imm. Past Secretary IMA AMS Hqrs.





On 31st January 2025: Dr. C. Sairam, National Secretary IMA AMS inspected Fertilica IVF & Women Care Centre in Hyderabad on 31st January 2025 for permission to Conduct Fellowship Course in Infertility. Satisfied with their requirements for conducting Infertility Course. All documents pertaining to Faculty, Staff and Technical scrutinized.





On 5th February 2025: Dr. C. Sairam, National Secretary IMA AMS inspected Hira Fertility Centre in Hyderabad on 5th February 2025 for permission to Conduct Fellowship Course in Infertility. Satisfied with their requirements for conducting Infertility Course. All documents pertaining to Faculty, Staff and Technical scrutinized.



On 15th February 2025: Dr. C. Sairam, National Secretary IMA AMS inspected 9M Fertility by Ankura Hospital in Hyderabad on 15th February 2025 for permission to Conduct Fellowship Course in Infertility. Satisfied with their requirements for conducting Infertility Course. All documents pertaining to Faculty, Staff and Technical scrutinized.





On 19th February 2025: Dr. C. Sairam, National Secretary IMA AMS inspected Surya Fertility Centre in Hanamkonda on 19th February 2025 for permission to Conduct Fellowship Course in Infertility. Satisfied with their requirements for conducting Infertility Course. All documents pertaining to Faculty, Staff and Technical scrutinized.



On 28th February 2025: Dr. C. Sairam, National Secretary IMA AMS inspected Revive Fertility Centre in Hyderabad on 28th February 2025 for permission to Conduct Fellowship Course in Infertility. Satisfied with their requirements for conducting Infertility Course. All documents pertaining to Faculty, Staff and Technical scrutinized.



On 15th April 2025: Dr. S. Y. Mulkipatil, Chairman IMA AMS Karnataka State & Dr. Manjunath Nekar, Secretary IMA AMS Karnataka State inspected Ankur Health Care Pvt Ltd in Bangalore on 15th April 2025 for permission to Conduct Fellowship Course in Andrology & Sexual Medicine. Satisfied with their requirements for conducting Andrology & Sexual Medicine. All documents pertaining to Faculty, Staff and Technical scrutinized by IMA AMS Karnataka State.

On 19th April 2025: Dr. C. Sairam, Hony. Secretary AMS Hqrs gave lecture on "Ovarian Cancer" at Maternity Hospital, Koti, Hyderabad.





On 20th April 2025: Dr. C. Sairam, National Secretary IMA AMS inspected Kiran Hospital in Hyderabad on 20th April 2025 for permission to Conduct Fellowship Course in Laparoscopy. Satisfied with their requirements for conducting Laparoscopy Course. All documents pertaining to Faculty, Staff and Technical scrutinized.



On 20th April 2025: It was an honor to host Dr. Ramneek Bedi, National Chairman of IMA AMS, in Hyderabad. During his visit, he engaged in fruitful discussions on future plans and activities with the AMS office bearers, attended by esteemed dignitaries, including Dr. C. Sairam, Secretary IMA AMS Hqrs; Dr. P. Kishan, President Elect IMA TS; Dr. V. Ashok, Secretary IMA TS; and Dr. M. S. Hari Babu, Past Secretary IMA AMS Hqrs.

Additionally, Dr. Ramneek Bedi participated in the Fellowship Certificate in Infertility Examination conducted by IMA AMS Telangana on April 20, 2025. He released the question paper alongside Dr. K.S. Giftson, Honorary Secretary IMA AMS TS, in the presence of Dr. Sekhar Reddy, Chairman IMA AMS TS; Dr. G. Sampath, Vice Chairman IMA AMS TS; and Dr. Pentachary, Treasurer IMA AMS TS.







On 10th May 2025: Dr. C. Sairam, National Secretary IMA AMS inspected Medcy Fertility Hospital in Hyderabad on 10th May 2025 for permission to Conduct Fellowship Course in Infertility. Satisfied with their requirements for conducting Infertility Course. All documents pertaining to Faculty, Staff and Technical scrutinized.



On 11th May 2025: IMA - AMS Headquarters in collaboration with Telangana Hospitals & Nursing Homes Association (THANA) conducted an "online CPD, Topic-1: Medico Legal Pitfalls When Transferring a patient by Dr. Shreekanth Sheety, MBBS, LLB, Topic-2: Lung Cancer-Advances by Dr. C. Sairam, MBBS, DMRT, Secretary AMS Hqrs, Topic-3 Management of Severe Asthma by Dr. Param Jyothi, Respiratory Medicine, Topic-4 Recent Guidelines for COPD Management by Prof. Dr. Pradyut Waghray, MD.



On 25th May 2025: The Free Health Check-up Camp was conducted by Vibda Charitable Medical Centre in association with IMA AMS Hqrs on May 25, 2025, at Vijaya Diagnostic Centre in Gudimalkapur, Hyderabad. The camp was held from 8 am to 1 pm.





On 31st May 2025: Dr. C. Sairam, National Secretary IMA AMS inspected Komali Fertility Centre in Guntur on 31st May 2025 for permission to Conduct Fellowship Course in Infertility. Satisfied with their requirements for conducting Infertility Course. All documents pertaining to Faculty, Staff and Technical scrutinized.





On 8th June 2025: IMA - AMS Headquarters in collaboration with IMA Telangana Metpally Branch conducted an "online CPD, Topic-1: Ovarian Cancer by Dr. C. Sairam, MBBS, DMRT, Secretary AMS Hqrs, Topic-2: Colon Cancer A to Z by Dr. Bharat Patodiya, MD (Internal Medicine), DNB (Medical Oncology) Topic-3 Postpartum Hemorrhage by Prof. Dr. Anuradha Jalem, MS, OBG, Topic-4 Interventional Pulmonology in Lung Cancer by Prof. Dr. B. Viswesvaran, MD, DNB (Pulmonary Medicine),DM (Critical Care).



On 14th June 2025: Dr. C. Sairam, National Secretary IMA AMS inspected Sindhu Hospitals, in Hyderabad on 14th June 2025 for permission to Conduct Fellowship Course in Endoscopy and Colonoscopy. Satisfied with their requirements for conducting Endoscopy and Colonoscopy Course. All documents pertaining to Faculty, Staff and Technical scrutinized.



On 29th June 2025: Annual Conference of IMA AMS TNSB (TAMSCON-2025) organized by IMA AMS Tamil Nadu State at Cuddalore inaugurated by Dr. V. Amuthan, National Vice Chairman IMA AMS, Dr. C. Sairam, Secretary IMA AMS Hqrs along with Leaders of IMA Tamil Nadu State. CMES Starts with 23rd June, topics covered on Urology, Nephrology, Orthopaedics, Sleep Medicine, Sleep Surgery, Medical Legal Issues and Oncology.





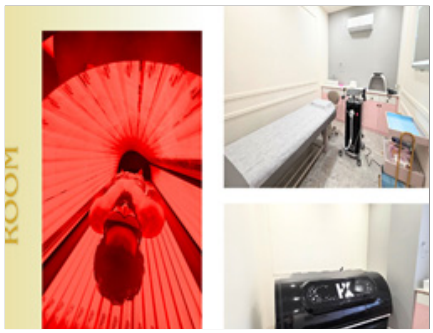
On 12th July 2025: Hands on Workshop on MIS HYSTEROSCOPIC LASER on 12th July 2025 at Ozone Hospitals, Kothapet, Alwal organized by Ozone Hospitals in associated with National IMA AMS.



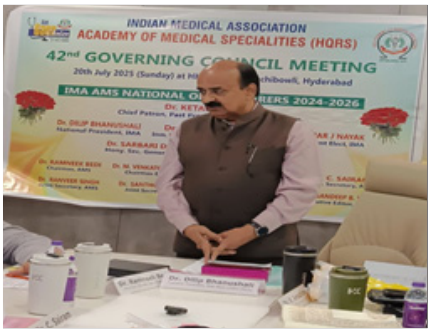


On 13th July 2025: Dr. C. Sairam, National Secretary IMA AMS inspected HK Hospital, Gachibowli in Hyderabad on 13th July 2025 for permission to Conduct Fellowship Course in Cosmetology. Satisfied with their requirements for conducting Cosmetology Course. All documents pertaining to Faculty, Staff and Technical scrutinized.

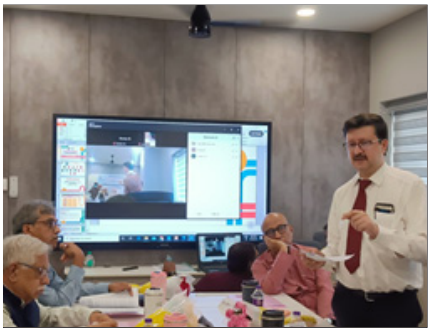


On 20th July 2025: The 42nd Governing Council Meeting of IMA AMS Hqrs for the year 2025 was successfully held on 20th July 2025, from 3:00 PM to 5:00 PM at HK Hospitals, Gachibowli, Hyderabad, under the guidance of IMA Hqrs. The meeting's agenda included discussions on AMSCON-2025, Zonal Conferences, IMA AMS Courses, Membership Drive, State IMA AMS Activities, Office requirements, and Annals of IMA AMS. We extend our special thanks to National President Dr. Dilip Bhanushali for his valuable guidance and advice on various issues. We also appreciate the active participation and contributions of all GC Members, making the meeting engaging and productive.






NATIONAL CENTRAL ZONE IMA AMS CONFERENCE

On 31st August 2025: The Central Zone IMA AMS Conference was successfully hosted by IMA AMS Chhattisgarh State on 31st August 2025 at Bhilai. Dr. Ramneek Bedi, National Chairman, IMA AMS, graced the occasion as the Star Guest at the Inaugural Ceremony.

The one-day conference featured a series of informative academic sessions, meticulously organized to cover topics on recent medical advances, greatly enhancing the participants' knowledge base. A key highlight of the event was the Paper and Poster Presentation Session, where postgraduate students actively participated and showcased their academic and research work.






NATIONAL SOUTH ZONE IMA AMS CONFERENCE

On 6th Sept 2025: The South Zone IMA AMS Conference was hosted by IMA AMS Karnataka State along with IMA AMS State Annual Conference on 6th September 2025 at Chitradurga. On behalf IMA AMS Hqrs Dr. M. Venkatachalapathy, National Chairman Elect IMA AMS was attended and gave presentation about IMA AMS Brief Report. Thanks to all the faculty, delegates both from other states and Karnataka for the active participation and good interactions in making it a successful conference. Thank the entire Organising Team for the warm hospitality and meticulous planning. Honoured to be part of this prestigious academic event.



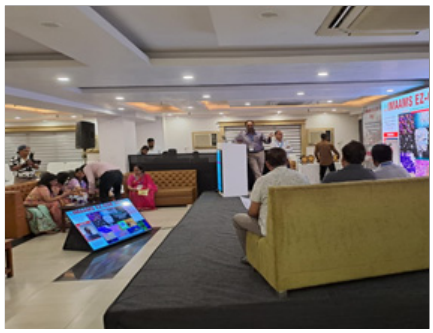


NATIONAL EAST ZONE IMA AMS CONFERENCE

On 21st Sept 2025: The East Zone IMA AMS Conference was hosted by IMA AMS Bhagalpur Branch, Bihar State along with IMA AMS State Annual Conference on 21st September 2025 at Bhagalpur, Bihar State. Dr. Dilip Bhanushali, National President IMA was Chief Guest at the Inaugural Ceremony, Guest of Honours Dr. Sarbari Dutta, Hony. Secretary General, IMA Hqrs, Dr. Sahajanand PD Singh, Past National President IMA Hqrs, Dr. C. Sairam, National Secretary IMA AMS Hqrs. The event was meticulously planned and executed, featuring a diverse and engaging program that catered to various interests and expertise. The distinguished faculty delivered wonderful talks and it was a great learning experience. The conference has not only contributed to the academic discourse but also highlighted Bhagalpur as a hub for intellectual inquiry and exchange. Our heartfelt thanks to the entire team of IMA and IMA AMS Bhagalpur Branch and IMA AMS Bihar State and including Dr. Nirala, Dr. Roma, and Dr. Manish, special thanks to Chairman IMA AMS Prof. Dr. DP Singh and also to the all-inclusive personality Dr Hemshankar Sharma for the overall success and hospitality.





On 28th Sept 2025: The Certificate Distribution Ceremony, organized by IMA AMS Telangana State on 28th September 2025. Dr. D. Dwarakanatha Reddy, President of IMA Telangana State, graced the event as the Chief Guest and Dr. C. Sairam, Hony. Secretary IMA AMS Hqrs graced the event as the Guest of Honour. Read Oath by Dr. C. Sairam and awarding certificates to fellows in Infertility and Laparoscopy courses.






On 2nd Nov 2025: IMA AMS UP State in association with IMA Gorakhpur Branch is organized IMA AMS UP State Conference -2025 on 2nd Nov 2025 at Hotel Raddison Blu, Gorakhpur, Chief Guest by Dr. Manglesh Srivastava, Honourable Mayor, Gorakhpur, Guest of Honour Dr. C. Sairam, National Secretary IMA AMS.







On 7th Nov 2025: Bandaru Vaishnav Memorial Foundation in association with IMA AMS conducted Cancer Awareness Programme on the occasion of National Cancer Awareness Day on 7th Nov 2025 at IMA Building, Koti, Hyderabad. Welcome address by Dr. Sairam, National Secretary IMA AMS, Sri. Bandaru Dattatreya, Sri Etala Rajender, Dr. Dilip Bhanushali, National President IMA Hqrs, Dr. Sanjeev Singh Yadav, Past Secretary IMA AMS Hqrs, Dr. V. Ashok, State Secretary IMA TS, Dr. Illaih, President IMA City Branch are participated this event.






IMA AMS Hqrs released the following posters for the members to create awareness:

1. COVID Martyrs Day on 30th January 2025
2. Anti-Leprosy Day on 30th January 2025
3. World Cancer Day on 4th February 2025
4. National Cleft Day on 8th February 2025
5. National Deworming Day on 10th February 2025
6. Sexual & Reproduction Health Awareness Day on 12th February 2025
7. World Anemia Awareness Day on 13th February 2025
8. International Child Wood Cancer Day on 15th February 2025
9. World Hearing Day on 3rd March 2025
10. World Obesity Day & National Safety Day on 4th March 2025
11. International Women's Day on 8th March 2025
12. No Smoking Day on 12th March 2025
13. World Kidney Day on 13th March 2025
14. World Consumer Right Day on 15th March 2025
15. World Tuberculosis Day on 24th March 2025
16. World Health Day on 7th April 2025
17. National Safe Motherhood Day on 11th April 2025
18. World Hemophilia Day on 17th April 2025
19. World Asthma Day on 1st Tuesday in May 2025
20. National Dengue Day on 16th May 2025
21. World Hypertension Day on 17th May 2025
22. International Day of Action for Women's Health on 28th May 2025
23. World Environment Day on 5th June 2025
24. World Eye Donation Day on 10th June 2025
25. World Blood Donor Day on 14th June 2025
26. World Sickle Cell Day on 19th June 2025
27. International Yoga Day on 21st June 2025
28. World Vitiligo Day on 25th June 2025
29. International Day Against Drug Abuse and Illicit Trafficking Day on 26th June 2025
30. International Doctor's Day on 1st July 2025
31. World Hepatitis Day on 28th July 2025
32. World Lung Cancer Day on 1st August 2025
33. National Bone & Joint Day on 4th August 2025
34. World Organ Donation Day on 13th August 2025
35. World Breast Cancer Research Day on 18th August 2025
36. National Nutrition Week day on 1st – 7th Sept 2025
37. World Diabetic Day on 14th November 2025

IMA AMS Andhra Pradesh, Bihar, Chandigarh, Chattisgarh, Haryana, Kerala, Karnataka, Madhya Pradesh, Maharashtra, Tamil Nadu, Uttar Pradesh and Telangana states have conducted a total of **184 Academic Programmes** (CMEs, Video Clippings, Workshops and State Conferences) of Various Specialities, State Conferences and Zonal Conference under the IMA AMS Hqrs. Dr. Ramneek Bedi, Chairman and Dr. C. Sairam, Hony. Secretary IMA AMS Hqrs and various State Chairman & Secretaries and IMA senior leaders participated in these.

IMA AMS State Wise Activities as on 15th Nov 2025

IMA AMS Andhra Pradesh State

S.No	Date & Time	Topics/ Speakers	State/Branch
1	26th Jan 2025	CME has been conducted at auditorium in care & cure hospital Anantapur on 26th Jan 2025. The topics were wound management by Dr. Pradeep plastic surgeon and aesthetic surgery by Bhargavi plastic surgeon. Nearly 60 delegated from Anantapur and sathyasai dt attended the CME. Very informative. Good interaction with members by both plastic surgeons .	Ananthapur Branch, IMA AMS AP State
2	16th Feb 2025	CME on **"An update on Paediatric Bronchoscopy"** conducted by IMA AMS AP State Branch in associated with Otolaryngologists of India and IMA AP State	Ananthapur Branch, IMA AMS AP State
3	24th March 2025	CME on Sensitisation on TB Policy by who representative by Dr. Jayanth	Ananthapur Branch, IMA AMS AP State







IMA AMS Chandigarh State

S.No	Date & Time	Topics/ Speakers	State/Branch
1	2nd August 2025	CME on Is Silent Ischemia a killer in diabetics? by Dr. Jeet Ram Kashyap Prof. & Head, Cardiology	IMA AMS Chandigarh State Branch
2	13th Sept 2025	Topics for discussion 1. Overview of advances in management of Heart Failure: Prof. Jeet Ram Kashyap2. ' Innovator ARNI: Evolving Evidence in Broad range of Heat Failure: Dr. Anurag Sharma & Dr. Amit Soni3. ' Revisit of Digitoxin in HF : Dr. Amitoj Singh	IMA AMS Chandigarh State Branch
3	25th Oct 2025	CME on Lipid Management focusing on newer non statin drugs like Ezitimibe, PCSK-9 Inhibitors and Inclisiran particularlyThe leading Cardiologist from tricity Dr. H.K. Bali, Dr. Puneet Verma and Dr. Rajat Sharma dwelled upon various topics in Lipid management	IMA AMS Chandigarh State Branch







IMA AMS Haryana State

S.No	Date & Time	Topics/ Speakers	State/Branch
1	19th Jan 2025	A Panel Discussion on "Anemia And Lifestyle Disorders In Adolescents"	Haryana State
2	30th Jan 2025	World Leprosy Day & National Martyrs Day observed on 30th Jan 2025	Haryana State
3	4th Feb 2025	Presenting our first social educational series on Cervical Cancer Awareness on World Cancer Day 4th Feb 2025	Haryana State
4	6th Feb 2025	Academic Wing of IMA Haryana along with IMA AMS and IMA CGP conducted Academic Fiesta. The topics are as follows: 1. Antimicrobial Resistance & Antimicrobial Stewardship by Dr. Pawan Kumar Goyal 2. Recognition of Stroke: Does it really matter by Dr. Sumit Singh 3. Fatty Liver Disease: A Volcano ready to erupt by Dr. Pawan Rawal	Haryana State
5	13th Feb 2025	CME on Early Recognition of Stroke - Does it Really Matter by Dr. Sumit Singh	Haryana State
6	20th Feb 2025	CME on Fatty Liver Disease - A Volcano Ready to Erupt by Dr. Pawan Rawal	Haryana State
7	27th Feb 2025	CME on How to Avoid Litigation in Medical Practice by Dr. A. Ashish Jain	Haryana State
8	6th March 2025	CME on Obesity: Mother of All Evils by Dr. Dheeraj Kapoor, Head Endocrinology Gurugram State	Department of IMA AMS Haryana
9	20th March 2025	CME on Heart Attacks and SCD In young: The preventable Devastation by Dr. Sanjeev Chaudhary, Senior Cardiologist Gurugram	Haryana State
10	27th March 2025	CME on COPD and Bronchial Asthma: Do we need to manage them differently by Dr. Manoj Goel, Senior consultant Respiratory Medicine Gurugram	Haryana State
11	3rd April 2025	CME on Importance and protocols of Adult Vaccination by Prof. Dr. Narinder Taneja, Past Chairman IMA AMS HS	Haryana State
12	10th April 2025	CME on Technology, Smart Phones and Laptops!! Are Our Eyes made for them; Top Pearls for the Eyes by Dr. Ashish Iall, Ophthalmologist	Haryana State
13	17th April 2025	CME on Early Detection and Management of Risk Factors of Cancer by Dr. Indu Bansal, Radiation Oncologist	Haryana State
14	24th April 2025	CME on Rising Infertility and Treatment Approach by Dr. Ritu Jain, Infertility Specialist.	Haryana State
15	1st May 2025	CME on " ABC of CBC" by Dr. Rahul Bhargava, Director & Senior Hemato Onchologist Fortis, Gurugram.	Haryana State
16	8th May 2025	CME on "Dementia - Presenile, Senile & Vascular - Can it be prevented?" by Dr. Manish Mahajan Neurologist, Gurugram.	Haryana State

S.No	Date & Time	Topics/ Speakers	State/Branch
17	15th May 2025	CME on "Systemic Diseases & The Eyes to Overall Health" by Dr.Neeraj Sanduja Senior Ophthalmologist	Haryana State
18	22nd May 2025	CME on "Diagnostic Challenges in Pulmonary and Extra Pulmonary Tuberculosis" by Dr. Kritika Bansal, Who NTRP TSN Consultant.	Haryana State
19	28th May 2025	CME on "Safe Motherhood Strategies for Better Pregnancy Outcomes" by Dr. Mitra Saxena Senor Gynaecologist & Obstetrician.	Haryana State
20	5th June 2025	CME on Our Strategies for Covid in 2025: Is it Really a Threat by Dr. Sushila Kataria.	Haryana State
21	7th June 2025	Three Videos were released and posted on Social Media & Youtube Channel of IMA AMS Haryana State	Haryana State
22	10th June 2025	NATIONAL IMA ORGAN DONATION DRIVE	Rewari Branch,
23	12th June 2025	Syndromic Approach to Unravel the Mysteries of Tropical Fevers by Dr. Dhruva Chaudhary Senior Professor PGIMS, Rohtak	Haryana State
24	14th June 2025	Blood Donation Camp	Rewari Branch,
25	14th June 2025	Two videos were released on Youtube on occasion of World EYE Donation Camp	Haryana State
26	19th June 2025	How to Approach a Patient with Joint Pains? By Dr. Naval Mehndiratta, Senior Consultant Rheumatologist Fortis Hospital, Gurugram	Haryana State
27	26th June 2025	Diving Deep into Body Fluid Analysis by Dr. Gajender Yadav, Senior Pathologist, Rewari	Haryana State
28	3rd July 2025	CME On Headache Management Algorithm by Dr.Praveen Gupta	Haryana State
29	10th July 2025	CME on Solving the Mystery of Pancytopenia by Dr.Meet Kumar	Haryana State
30	17th July 2025	CME on " Constipation - Different settings, different approach	Haryana State
31	24th July 2025	CME on " Interpretation of Thyroid Function Tests by Dr. Rajesh Rajput	Haryana State
32	31st July 2025	CME on Chronic Stable Angina by Dr. Rahul Singla	Haryana State
33	7th August 2025	CME on Rabies Vaccination: what you must know by Dr. A.V.S. Ravi	Haryana State
34	14th August 2025	CME on Osteoarthritis: Prevention and Treatment Strategies by Dr. Subhash Jangid	Haryana State
35	21st August 2025	CME on The introduction to happiness prgramme by Rohit Ranjan	Haryana State
36	28th August 2025	CME on AI-A Doctor's Everyday Assistant by Dr. Sanjay Wazir	Haryana State

Activity Report of IMA AMS from 24th Nov. 2024 to 15th Nov. 2025













IMA AMS Kerala State

S.No	Date & Time	Topics/ Speakers	State/Branch
1.	28th Nov 2024	The topic was continuous glucose monitoring. In addition to lecture, there was a hands on workshop on CGM machine, Dr Jothi Dev and Dr Arun Shankar from Jothy Dev Diabetic research center were the faculty.	IMA AMS Nemom Branch, Kerala State
2.	19th Dec 2024	CME on "**Rehabilitation in stroke"** by Dr Aakhil Nabuhan, specialised in acute neuro-rahibilitation and interventional pain management, Aster mother hospital, Areekode	IMA AMS Kozhikode Branch, Kerala State
3.	21st& 22nd Dec 2024	**AMS Chapter ofIndian Medical Association (IMA) Nemom**, successfully hosted a two-day workshop titled "From AP to Automated Insulin Delivery" on December 21 and 22, 2024, at JDC, Trivandrum.	IMA AMS Nemom Branch, Kerala State
4.	15th January 2025	CME on Common Arguments In Consumer Litigation" by Dr. Jayakrishnan A V, M.S Ortho Mch Neuro Joint Secretary, IMAHQ, New Delhi, Chairman Professional Protection Scheme, Past State President IMA Kerala.	IMA AMS Desinganad, Kerala State
5.	17th January 2025	CME on Human Metapneumovirus- Do we need to worry? By Dr. Muhammed Niyas VK, Consultant in Infectious Diseases, KIMSHEALTH, Trivandrum	IMA AMS Kazhakoottam Branch, Kerala State
6.	22nd January 2025	CME of IMA AMS Kozhikode chapter on the topic "Simplifying complex CAD – New frontiers in interventional and medical therapy" by Dr Girish P, Senior interventional cardiologist and director heart failure clinic, MICC Calicut	IMA AMS Kozhikode Branch, Kerala State
7.	25th January 2025	CME on ManagementofStroke-ChangingParadigmSpeakerDr.Syamlal SMD DM Dr NB, MNAMS, FRCP Senior Consultant Neurologist Group Coordinator KIMSHEALTH, Trivandrum.	IMA AMS Trivandrum Branch, Kerala State
8.	26th January 2025	CME on Overview of Stoma by Dr. SUBHANKAR SAHA Senior Consultant Gastro Surgeon was the faculty.	IMA AMS Nemom Branch, Kerala State
9.	29th January 2025	1. Session on "Antibiotic Use in People with Diabetes: Clinical Directions" by Dr. Sumesh Raj	
		2. Session on "Practical Guidelines for Early Management of MASLD" presented by Dr. Ajith Kumar S, with Dr. Arun Shankar	IMA AMS Nemom Branch, Kerala State

S.No	Date & Time	Topics/ Speakers	State/Branch
		(Secretary, IMA, Nemom branch) Session on "Case-based discussion on the use of CGM and cloud-based data", which Dr Jothidev discussed, had Dr. Benny P V and Dr. Devin |Prabhakar chairing the discussion.	
10.	3rd February 2025	CME Conducted on Observation of world cancer day on 3rd Feb 2025, a panel discussion on Early Detection of Cancer Current consensus & guidelines, Moderator Dr. K. V. Sajeevan and Panelists Dr. Syam Vikram and Dr. Vishnu Rajan Nambiar.	IMA AMS Kozhikode Branch, Kerala State
11.	4th February 2025	As a part of cancer awareness, IMA AMS Kozhikode branch conducted a Walkathon in association with the organisation "pratheeksha" at Kozhikode beach on 4th February 2025, 6:45 am	IMA AMS Kozhikode Branch, Kerala State
12.	4th February 2025	Conducted World Cancer Day Poster Presentation & World Cancer Day Awareness programme	IMA AMS Kasaragad Branch, Kerala State
13.	7th February 2025	CME on Topic1Newer drugs in lipid and obesity management by Dr Dhanya V Unnikrishnan Consultant Physician SUT Hospital Topic 2 Updates in sepsis management Dr Raina T Pillai Senior Consultant in Medicine G G Hospital Topic: 3 Recent advances in Hemophilia by Dr Harikrishnan R Professor of Medicine and Clinical Haematology Govt medical College	IMA AMS Trivandrum, Kerala State
14.	12th February 2025	CME on Role of Home Maintenance Nebulizationin COPD" by Dr. Aneesh Kumar S, DTC, DNB, FIP, Consultant Interventional, Pulmonologist, Bishop Benziger Hospital & Travancore Medical College Hospital, Kollam	IMA AMS Desinganad Branch, Keala State.
15.	14th February 2025	CME on hematological malignancies and pediatric malignancies, the topics are as follows:1. An overview of malignancy in children by Dr Kesavan MR,, Senior consultant, department of pediatric hematology, Aster MIMS hospital, Kozhikode.2. CART cell therapy in hematological malignancies by Dr Sudeep V, Senior consultant, Department of hematology, Aster MIMS hospital, Kozhikode	IMA AMS Kozhikode Branch, Kerala State
16.	14th February 2025	In association with Indian academy of pediatrics, IMA AMS Kozhikodebranch conducted hepatitis A vaccination campaign at IMA Hall. More than 75 members received vaccination including senior members, family members of IMA and IAP. Vaccination was given at a special discounted price	IMA AMS Kozhikode Branch, Kerala State
17.	21st February 2025	CME on Financial Fundamentals for Medical Professional by Dr. K. V. Tejaswi, Consultant Radiologist and Healing your portfolio: A Doctor's prescription for stock market success by Dr. Abhayanaraya, Consultant nephrologist, Care well Hospital and Wealth medicine: How doctors can invest in mutual funds for financial health by Dr. Prajvoth Shett, Consultant radiologist, Pulse Scan Kasargad.	IMA AMS Kasargad, Kerala State
18.	27th February 2025	CME on Decoding the Intricacies of Breast Biopsy to design tailored personalised therapies by Dr. Chandramohan K Senior Surgical Oncologist and Mastering Oncoplastic and Sentinel Node Biopsy, essential Tips and Simplified Techniques by Dr. Ajai Sasidhar Surgical Oncologist.	IMA AMS Trivandrum, Kerala State
19.	28th Feb 2025	IMA AMS Nemom conducted an awareness session on prevention of cervical cancer for first year MBBS students of Azeezia Medical College, Kollam. Dr A Santhosh Kumar, Chairman of AMS Chapter of IMA Nemom was the speaker.	IMA AMS Nemom Branch, Kerala State

S.No	Date & Time	Topics/ Speakers	State/Branch
20.	3rd March 2025	In association with IMA AMS Kozhikode branch, Govt Medical College Kozhikode and AOIKozhikode, observation of world hearing day was done at Government medical CollegeKozhikode. It was followed by a walkathon at governmentmedical College Kozhikode. And also conducted CME on **HEARING AIDS – AN UPDATE** by Dr. Sankar Mahadevan, AOI State President & IMA Kozhikode President	IMA AMS Kozhikode Branch, Kerala State
21.	4th March 2025	CME on "Endovascular Interventions in Critical Limb Ischemia by Dr. Sreekala P., Senior Consultant Cardiology Aster PMF Hospital Sasthamcottah, Kollam.	IMA AMS Desinganad, Kerala State
22.	20th March 2025	Conducted CME on **Acute Kidney Injury** by Dr Sourabha R, Associate Professor of Nephrology, St John's Medical College, Bengaluru	IMA AMS Nemom Branch, Kerala State
23.	20th March 2025	CME on NTEP updates & Role of private practitioners in TB Control Programme	IMA AMS Kuthuparamba, Kerala State
24.	21st March 2025	Conducted CME on How to follow up Down syndrome from newborn to adolescence by Dr A Santhosh Kumar, president AMS, IMA Nemom	IMA AMS Nemom Branch, Kerala State
25.	23rd March 2025	Conducted CME on **TB care and drugs** by Dr A Santhosh Kumar, President AMS, IMA Nemom	IMA AMS Nemom Branch, Kerala State
26.	24th March 2025	Observation of world TB day in association with chest club Calicut was conducted in IMA Hall Kozhikode at 7:30 pm, March 24th. Session was was called to order by President Dr Sankar Mahadevan. Panel discussion based on World TB Day theme on "We can end TB Commit Invest Deliver".	IMA AMS Kozhikode Branch, Kerala State.
27.	28th March 2025	CME on Recent Advances -Ovarian malignancy by Dr. Sinto M S, Mintu Mathew Abraham and Dr. Jeevan	IMA AMS Kerala State
28.	2nd April 2025	CME on "Autism" by Dr Santhosh Kumar A, Professor in Pediatrics, Azeezia Medical College, Kollam	IMA AMS Nemom Branch, Kerala State
29.	4th April 2025	IAPIMAFirstaidandBLSClasstoKSEBworkersaspartoftheirSafety Conclave2025 conducted by IMA AMS Kasaragod, 200 members were participated and trained.	IMA AMS Kasaragod, Kerala State.
30.	5th April 2025	Topic on Advances in Oncology by Dr. Sherry S Abraham, Medical Oncology, Ananathapuri Hospitals Research and Institute, Trivandrum	IMA AMS Desinganand, Kerala State
31.	11th April 2025	Topic-1: Just a few mother wits: Tales from Dermatology by Dr. Anupa Mary Job, Asst. Professor Dept. of Dermatology, Topic-2: Emergency Ultrasound-Sample Survey by Dr. Ben K, Radiologist, Topic-3: Old Wine in a New bottle by Dr. Peethambaran, Surgical Gastroenterologist Avitis Hospital	IMA AMS Palakkad Branch, Kerala State.
32.	17th April 2025	CME on Introduction to the Mechanical Ventilation by Dr. S. Akhilan, Asst. Professor Anaesthesia & Critical Care	IMA AMS Palakkad Branch, Kerala State.
33.	23rd April 2025	CME on "Neuro Rehabilitation and Post Stroke Recovery by Dr. Sreejith Choorapra, Neuro Rehabilitation Specialist	IMA AMS Thalassery Branch, Kerala State
34.	24th April 2025	CME on Beyond the Ventilator: ARDS Insights & ECMO Essentials by Dr. Amith Sreedhran and Rinoy Chandran	IMA AMS Kasaragod Branch, Kerala State
35.	28th April 2025	Topic was Fatty Liver by Dr. Ajith Kumar PV, Prof. Department of Medicine, Sree Gokulam Medical College, Trivandrum.	IMA AMS Kazhakoottam Banch, Kerala State
36.	29th April 2025	CME on "When the eyes work, but vision fails" by Dr. Soumya Nambiar, Senior Consultant paediatric Ophthalmologist and squint specialist	IMA AMS Kozhikode Branch, Kerala State

S.No	Date & Time	Topics/ Speakers	State/Branch
37.	7th May 2025	CME On "Peripheral Artery Disease, Our Experience" by Dr M Unnikrishnan MS, MCH, FIACS, FVSI, Senior consultant and HOD vascular surgery and Dr Praveen A, MBBS DNB (Radio Diagnosis) DM,Senior consultant Neuro and Vascular Interventional Radiology, SUT Pattom Super Speciality Hospital	IMA AMS Kollam Branch, Kerala State.
38.	18th May 2025	CME on Highlighted the Rise of Antimicrobial Resistance and Measures to Prevent and Tackle it. Eminent Speakers included.	IMA AMS Kasaragod Branch, Kerala State
39.	18th May 2025	CME on Diabetes Update Thiruvananthapuram Branch.	IMAAMS
40.	21st May 2025	CME on "Acute stroke care - the role of neuro-intervention" by **Dr Ummer K,** Senior consultant neurologist	IMA AMS Kozhikode Branch, Kerala State
41.	22nd May 2025	Topic on Fad, Fact and Fiction: Decoding Modern Antiaging by Dr. Surya Mallya and Dr. Sonakshi Mago	IMA AMS Kozhikode Branch, Kerala State
42.	22nd May 2025	IMA AMS Kothamangalam organized an awareness class on "Exercises in Daily Life"	IMAAMS Kothamangalam Branch, Kerala State
43.	27th May 2025	CME on Asthma Management - Guidelines Based Approach". Dr. Ajo Jose K., Consultant Pulmonologist, BMH Thodupuzha and Endoscopic Management of Upper GI Bleed". Dr. Ramu Krishnan U., Consultant Gastroenterologist, BMH Thodupuzha	IMAAMS Kothamangalam Branch, Kerala State
44.	28th May 2025	CME on Trans Anal Minimally invasive Surgery for rectal Cancer by Dr. Nizamudheen M P and Laser in Fustula Surgery – A Double Edged Sword by Dr. Deavaraj T.V.	IMA AMS Thalassery Branch, Kerala State
45.	28th May 2025	IMA AMS and WIMA Kothamangalam organized an awareness class on Menstrual Hygiene and Menstrual Cup for the staff and students of Mar Basil Dental College, Kothamangalam. Dr. Liza Thomas, Consultant Paediatrician and Adolescent Physician led the session	IMAAMS Kothamangalam Branch, Kerala State
46.	29th May 2025	Topic was Pediatric Asthma by Dr Bindusha S, Professor, Department of Paediatrics, Medical College, Trivandrum	IMAAMS Kothamangalam Branch, Kerala
47.	29th May 2025	Topic on Current Concepts in the Management of Low back Pain by Dr. Anoop Thomas, Senior Consultant Neurospine Surgery	IMAAMS Muvattupuzha Branch, Kerala State
48.	29th May 2025	Topic on Medico-Legal Issues for Practitioners by Dr. Levis Waseem, Assistant Professor, Forensic Medicine	IMA AMS Tirurangadi Branch, Kerala State
49.	30th May 2025	**Talk on Tobacco and Substance Abuse** Dr. Reghuthaman C. K., General Physician and SWC Member IMA Kothamangalam delivered	IMAAMS Kothamangalam Branch, Kerala State
50.	31st May 2025	CME on "Healthy beginning and hopeful future: Accelerate action" by Dr Susy Alex, senior consultant gynaecologist of KIMS health	IMA AMS Nemom Branch, Kerala State
51.	31st May 2025	World NO Tobacco Day Awareness at Dia Life Hospital & GH Branch, Kerala State	IMA AMS Kasaragod
52.	6th June 2025	CME on Our environment tomorrow" by Dr. Sasi P, Senior Consultant Surgeon of Azzezia Medical College, Kollam	IMA AMS Nemom Branch, Kerala State
53.	8th June 2025	Topic: "Cardiorenal benefits of fineronone-MR antagonist in diabetes" by Speaker: Dr Arun Shankar	IMA AMS Nemom Branch, Kerala State
54.	11th June 2025	CME on Surgical Management of Upper and Lower Limb Infections – Plastic Surgeon's Perspective by Dr. Siby Punnoose, Senior Consultant Plastic Surgeon, Kozhikode	IMA AMS Kozhikode Branch, Kerala State.
55.	11th June 2025	CME on "RoleofInter ventional Radiology In Minimally Invasive Treatment"byDr Raghu S,DNB, FNVIR,PDCC,EBIR, Intervention radiologist and Dr. Hijas Mukthar, Intervention Radiologist, Travancore Medical Collage	IMA AMS Desinganad Branch, Kerala State.

S.No	Date & Time	Topics/ Speakers	State/Branch
56.	27th June 2025	CME on "Bones Meet to make a joint" Topic:1 Back in control- current concepts in evaluation and treatment of back pain by Dr. Alex Abraham, Topic:2 Common injuries of the Knee by Dr. Anoop S Pillai, Topic:3 " Knee Osteoarthritis: Navigating Treatment from Pills to Prosthesis" by Dr. Harish Chandran, Topic:4 Decoding Myths in Shoulder by Dr. Suresh S Pillai	IMA AMS Trivandrum Branch, Kerala State
57.	29th June 2025	IMA-AMS South Zone Annual Conference [KAZCON-2025] was organized by IMA Kazhakoottam at Al Saj International Convention Centre, Kazhakoottam, Trivandrum district, on 29th June 2025. The academic conference witnessed enthusiastic participation from the medical fraternity, with 308 registered delegates in attendance. The registration process was from 8.30AM to 9am	IMAAMS Kazhakoottam Branch, Kerala State
58.	8th July 2025	CME on "Screening for Gynacological Cancers" by Dr. Niranjana Jayakrishnan	IMA AMS Desinganad Branch, Kerala State.
59.	8th July 2025	IMA, IMA AMS and WIMA Kothamangalam organized a Lifestyle Diseases Screening Camp at Keerampara, Kothamangalam, in association with St.Joseph's Hospital Dharmagiri. IMA and WIMA Kothamangalam members participated.	IMA AMS Kothamangalam, Kerala State
60.	11th - 13th July 2025	The 13th Jothydev's Professional Education Forum (JPEF) Annual Global Diabetes Convention 2025 was held from July 11th to 13th at the Uday Samudra Hotel, Kovalam, Trivandrum, toal 116 sessions, including 8 keynote lectures, 6 symposiums, 3 prestigious orations, 2 hands-on workshops, and a Zumba session promoting physical activity and lifestyle wellness.	IMA AMS Nemom Branch, Kerala State
61.	15th July 2025	IMA AMS Kozhikode in association with Malabar plastic surgery club conducted world plastic surgery day celebration on 15th July 2025	IMA AMS Kozhikode
62.	23rd July 2025	CME on GERD, current concepts and management by Dr Adarsh Rajendran, Senior consultant Gastro-enterology, Kozhikode	IMA AMS Kozhikode Branch
63.	25th July 2025	CME on Endocrine updates, the topics are:1. Clinical Approach to a thyroid nodule by Dr. Athulya Sreekumar2. Clinical Approach to a post menopausal lady with fragility fracture by Dr. Tittu Oommen 3. New Generation Insulins: Unlocking the next frontier beyond Human Insulins by Dr. Mohan and Dr. Lekshmi	IMA AMS Thiruvananthapuram Branch, Kerala State
64.	31st July 2025	CME on Redefining the role of Vitamin D in Skeletal and extra Skeletal Conditions by Dr. Madhumathi T.	IMA AMS Muvattupuzha Branch, Kerala State
65.	1st Aug 2025	IMA AMS and WIMA Kothamangalam organized a talk on 1. "Healthy Mind and Lifestyle" by Dr. Liza Thomas, Consultant Paediatrician and Adolescent Physician 2. Stress Management by Dr. Bins George, Clinical Psychologist, SH Paynkulam 3. Legal Aspects of Drug Abuse by Adv. K. Radhakrishnan, Panel Lawyer, Taluq Legal Services Kothamangalam, 4. Safe Environment and Proper Waste Disposal by Prof.Bybin Paul, Associate Professor	
66.	5th& 6th Aug 2025	IMA, IMA AMS and WIMA Kothamangalam conducted Hearing Screening, Awareness on Make Listening, Awareness on Health Issues of Noise Exposure ,Safe Awareness on NISS, Panel Discussion on NISS and Awareness on Exercises in Daily Life	IMA AMS Kothamangalam,
67.	5th Aug &2025	CME-1 Topic: "Anti VEGF in Ophthalmology- 20 Years of the miracleDrug"byDr.RejinaMohan,MBBS,MS,DO,DNBFMRF Senior Consultant and Vitreo- rentinalSeurgeon, Chaithanya Eye Hospital	IMA AMS Desinganad Branch, Kerala State

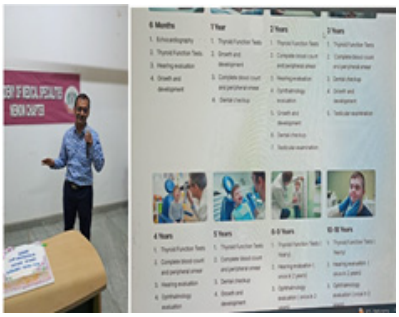
S.No	Date & Time	Topics/ Speakers	State/Branch
		and Research center Trivandrum.CME-2Topic:Brain Attack,by Dr Nimish Vijayakumar,MBBS, MD, DM, (Neurology) Senior Consultant Neurologist Rajagiri Hospital, Kochi.	
68.	7th Aug 2025	IMA and WIMA Kothamangalam, in association with IAP Malanadu Idukki Branch and Malanadu Obstetric and Gynaecological Society observed World Breastfeeding Week	IMA AMS Kothamangalam, Kerala State
69.	9th Aug 2025	IMA, IMA AMS and WIMA Kothamangalam organized an Anaemia Screening Camp for the girl students at Tribal Hostel Mathirappilly, in connection with International Day of World's Indigenous Peoples	IMA AMS Kothamangalam,
70.	10th Aug 2025	IMA, IMA AMS and WIMA Kothamangalam organized a Seminar and Medical Camp for 138 tribal children at Govt. VHSS Mathirappilly and adjacent ST Tribal Hostel Mathirappilly (under Social Welfare Dept. of Govt of Kerala)	IMA AMS Kothamangalam,
71.	11th Aug 2025	Topic was Suicidal Tendency and Depression. The session was comprehensive and incorporated all aspects of Depression and suicidal tendency by Dr Arun B Nair, Professor, Department of Psychiatry	IMA AMS Kazhakoottam Branch, Kerala State
72.	12th Aug 2025	IMA, IMA AMS and WIMA Kothamangalam organized CME on 1. Heart Transplantation - Success in Failure by Dr. Jacob Abraham, President IMA Cochin and Chief Cardiac Anaesthesiologist, Lissie Hospital, 2. "Role of UDCA in Hepatobiliary Diseases" Dr. Johns John Roy, Consultant Physician, MBMM Hospital, 3. "Wings on Wheels-Care of the Wheel Chair Bound" by Dr. Kora George, Consultant Orthopaedician	IMA AMS Kothamangalam,
73.	21st August 2025	CME on 1. Brains in Dialogue: the Science and art of Awake Neurosurgery by Dr. Adarsh I Nath, 2. Microvascular free flap in complex trauma reconstruction by Dr. Jijo Joseph	IMA AMS Kozhikode Branch, Kerala State
74.	21st August 2025	CME on Finding the Abnormal in the Normal by Dr. Mohamma Shafeek, MS Orthopedic Surgery	IMA AMS Kuthuparamba Branch, Kerala State
75.	28th August 2025	CME on Hydrochlorothiazide – Reassurance of CV Protection from Newer Evidence by Dr. Shiji Thomas Varghese, MBBS, Fellowship in interventional Car	IMA AMS Muvattupuzha, Kerala State
76.	31st Aug 2025	CME on Diet and Exercise... How to get it right by Dr Shyjus Nair a reknowned gynaecologist	IMA AMS Kuthuparamba Branch, Kerala State
77.	18th Sept. 2025	CME on Robotic assisted cardiac surgery- what is possible with good outcome by Dr. M. M. Yusuf Apollo hospital Chennai	IMA AMS Kozhikode Branch, Kerala State
78.	22nd October 2025	Scientific sessions on - A CME with 4 eminent speakers in various domains1. Pearls & pitfalls in headache management by Dr V V Ashraf, Senior Consultant & Director Neurology Aster Mims Calicut 2. Clinical approach to incidentally detected Fatty Liver by (Prof.) Dr Vargheese Thomas Senior Consultant & Hod Gastro sciences Malabar Medical College Modakkallur3. Non Surgical treatment of Aortic aneurysms by Dr Ashishkumar Senior Interventional cardiologist Myhart centre for cardiac care 4. Solving the Diabetes DilemmaTreating strategies in Type 2 Diabetes Dr Joe George Senior Consultant Endocrinology Endodiab Clinic Kozhikode	IMA AMS Kozhikode Branch, Kerala State

Activity Report of IMA AMS from 24th Nov. 2024 to 15th Nov. 2025











IMA AMS Karnataka State

S.No	Date & Time	Topics/ Speakers	State/Branch
1	7th January 2025	CME on Antimicrobial stewardship by Dr. Sudhindra K S Prof. Chitradurga	IMA AMS Karnataka State
2	4th March 2025	CME on Approach to Patient with Renal Failure by Dr. Ravi K.R., Chief consultant Nephrologist	IMA AMS Karnataka State
3	8th April 2025	CME on Metabolic dysfunction and Fatty liver by Dr. Ravikiran Sparsh hospital Bangalore	IMA AMS Karnataka State

IMA AMS Madhya Pradesh State

S.No	Date & Time	Topics/ Speakers	State/Branch
1	28th January 2025	A panel discussion was organised on ' Osteoporosis - Recent Advances and Management' under Aegis of IMA AMS Gwalior chapter on Date 28 January 2025 at Hotel Sayaji, Gwalior.	IMA AMS Gwalior Branch, MP State
2	7th March 2025	IMA AMS Chhindwara ladies celebrated International Women's Day with Road walkathon and felicitation of seniors	IMA AMS Chhindwara Branch, MP State
3	15th March 2025	Dr Alpana Shukla of IMA AMS Chhindwara gave a radio talk on Obesity, lifestyle, NCD and challenges of Adolescents and solutions on 15th March 2025.	IMA AMS Chhindwara Branch, MP State
4	21st March 2025	Chhindwara Academy of Specialists with IAP conducted a number of activities on World Down's Syndrome Day (21st March 2025).	IMA AMS Chhindwara Branch, MP State
5	22 & 23 March 2025	Meeting with the Office Bearers of the IMA AMS Gwalior Branch took place in which organisational matters and management of finances were discussed. And presented a scientific paper titled "Medico Legal Issues in Geriatric Practice", which was well received.	Gwalior Branch, MP State
6	2nd April 2025	IMA AMS with Chhindwara Academy of Pediatrics and Mission Pink Health celebrated Autism Awareness Day (2nd April 2025) with Adhaar Foundation school of special children. There are 84 students in this school for challenged group. Dr Alpana Shukla with other members Dr Reena Patni and Dr Ranjana Tandekar participated in the activity. We donated water cans also to the school.	IMA AMS Chhindwara Branch, MP State
7	3rd April 2025	IMA AMS Chhindwara conducted activity on Autism awareness in Medical college with doctors and patients on 3rd April 2025. Dr Alpana Shukla was the speaker	IMA AMS Chhindwara Branch, MP State
8	8th May 2025	IMA AMS with Chhindwara Academy of Pediatrics conducted Seminar as celebration of Thalassemia Day (8th May 2025) with doctors of IMA, Ayurvedic and parents of Thalassemia children . Dr Alpana Shukla was the speaker. Dr Joshi from Bhopal was also a speaker	IMA AMS Chhindwara Branch, MP State
9	24th May 2025	IMA AMS members Dr Alpana Shukla, Dr Sudhir Shukla with Red cross conducted awareness activity with NCC cadets of 4 districts in a camp on 24th May2025. Nutrition, Exercise, Healthy lifestyle, Menstrual hygiene, screentime etc were discussed.	IMA AMS Chhindwara Branch, MP State
10	6th June 2025	IMA AMS with doctors conducted cme on Complementary feeding, lifestyle, exercise and vaccine for adults on June 6th 2025	IMA AMS Chhindwara Branch, MP State
11	19th June 2025	IMA AMS with Red cross conducted awareness activity in MLB higher secondary school on Sickle cell anemia on 19th June 2025. Dr. Alpana Shukla was speaker. Adolescent health nutrition, Menstrual hygiene was also explained	IMA AMS Chhindwara Branch, MP State
12	28th June 2025	IMA AMS members Dr Sudhir Shukla, Dr Alpana Shukla with with Red Cross conducted a screening camp in MLB Higher S School on 28th June 2025.Screening for Sickle Cell Anemia, TB, NAFLD was done for students, and teachers	IMA AMS Chhindwara Branch, MP State
13	17th July 2025	IMA AMS conducted CPR Awareness session on 17th July 2025. Doctors, Medical students were the participants. Session and hands on was given by Dr Alpana Shukla. Active participation was there by doctors. Dr Mahendra Singh spoke on Pediatric Surgical Emergencies	IMA AMS Chhindwara
14	13th -17th Oct 2025	IMA AMS Chhindwara , CIMS Chhindwara and Red Cross Society conducted CPR Awareness session.	IMA AMS Chhindwara Branch, MP State











IMA AMS Maharashtra State

S.No	Date & Time	Topics/ Speakers	State/Branch
1	14th Feb 2025	IMA AMS Maharashtra State conducted CME on "ARTIFICIAL INTELLIGENCE & TECHNOLOGY IN MEDICINE" by Dr. Raja Nagarkar, Oncologist, Nashik	IMA AMS Maharashtra
2	12th March 2025	IMA AMS Maharashtra State is conducted CME on Happy Doctor formula, success at work and home by Anil Nirale on 12th March 2025 in virtual way.	IMA AMS Maharashtra
3	6th May 2025	CME on Nittigritties of Indemnity Insurance for Clinical Practitioners by Dr. Priti Jayakar	IMA AMS Mumbai Branch, Maharashtra

IMA AMS Tamilnadu State (IMA AMS TNSB)

S.No	Date & Time	Topics/ Speakers	State/Branch
1	26th Nov 2024	CME on Women with Epilepsy and Pregnancy by Dr. P. Baskar, Neurologist from KMCH and Surgery for Seizures by Prof. Malla Bhaskar Rao ,Neuro Surgeon from NIMHANS	IMA AMS Tirupur Branch, Tamil Nadu State
2	27th Nov 2024	Conducted Public Education Awareness meet at Indian Bank zonal office circle 50 people attended the program with the topic epilepsy freedom programe on Epilepsy by Dr. V. Rajesh Babu, Chairman IMA AMS TNSB.	IMA AMS TNSB
3	28th Nov 2024	Inauguration of LAPIMA Chennai 2 and Sleep Medicine fellowship course SLEEPMEDIMA 2024 by IM TNSB President Dr. Abul Hasan and then conducted CME on How to setup a Laparoscopy unit and Role of Laparoscopy in acute abdomen by Dr. S. M. Sivaraj, Course Director of LAPIMA CH 2 from Billroth Hospitals Chennai	IMA AMS TNSB
4	5th Dec 2024	CME on What is new in HIV by Dr. R. Surendran, Consultant Infectious Disease, SIMS Hospital Chennai and Gastro Intestinal Lymphoma by Dr. Joeimon J. L, Associate Professor, Institute of Heapato Billiary Sciences, Madras Medical College, Chennai	IMA AMS TNSB
5	22nd Dec 2024	CME on Heart Failure with Preserved Ejection Fraction (HFpEF) Current Concept in Management by Dr. Srikumar Consultant Cardiologist from Kauvery Hospital	Chennai Villivakkam Ayanavaram

S.No	Date & Time	Topics/ Speakers	State/Branch
6	2nd January 2025	IMA AMS monthly webinar conducted for the commemoration of World Cervical Cancer Awareness, World Leprosy Day and Road Safety Week. Dr. P. Senguttuvan, President of IMA TNSB inaugurated this webinar. Dr. Ramneek Bedi, Chairman of IMA AMS Headquarters, Dr. C. Sairam, Hony. Secretary, IMA AMS Headquaters, Dr. Alex Franklin, Vice President of National IMA and other IMA leaders participated and felicitated. The Topics are as follows: 1. Cervical Cancer Prevention by Dr. Indira Nedumaran 2. Current Scenario of Leprosy-Diagnosis & Management By Dr. D. Dinish Kumar Approach to poly trauma by Dr. N. Ragunandhan	IMA AMS TNSB
7	4th January 2025	1. Dr.V.Rajesh Babu, Chairman of IMA AMS TNSB released the Road safety awareness video for the public awareness	IMA AMS TNSB
8	26th January 2025	IMA TNSB Coimbatore branch AMS Chairman Dr. R. Balamurugan and team conducted Diabetes detection and Diabetes awareness program at Gandhi park. Dr. Harish Seetharaman, Secretary of IMA Coimbatore branch and Dr. Parameswaran were participated in this special camp.	IMA Coimbatore Branch,
9	26th January 2025	IMA AMS Chennai Villivakkam and Ayanavaram conducted monthly clinical meet. Dr. Indra Nedumaran spoke on Abnormal Uterine bleeding, Dr. Jovita Martin spoke on Latest drugs on Breast cancer management and Dr. Anjalakshi Chandrasekar spoke on Hope and Scope for Diabetes free generation	Chennai Villivakkam & Ayanavaram Branch, Tamil Nadu State
10	29th January 2025	Dr. V. Rajesh Babu, Chairman IMA AMS TNSB and Dr. Sumathi attended a programme at Udhavum Karangal Parivarthan. A home for mental health affected people at Othakkal mandapam, Myeliripalayam, distributed one male and one female goat for each one of mental ill health patients' family and given to 29 families and for 10 families	IMA AMS TNB
11	30th January 2025	COVID Martyes day were observed by the IMA Coimbatore Branch	IMA AMS Coimbatore Branch, Tamil Nadu State
12	6th February 2025	IMA AMS Monthly Webinar conducted by IMA AMS TNB. The topics are as follows: Colorectal Cancer-Current Trends by Dr. Vijay Guru, MD, DM, Medical Oncology HOD Dept. of Oncology Sexual and Reproduction Health by Dr. Priya Kannan, MBBS, Med, MCE Director and Embryologist	IMA AMS TNB
13	9th February 2025	To commemorate World Cancer Day IMA AMS Secretary Dr.S.Jayaraman has released 2 videos for general public awareness and IMA members	IMA AMS TNB
14	19th February 2025	CME on Congenital Heart Disease Awareness by Dr. A. Jaleel Ahamed, Consultant Paediatrician	IMA AMS Coimbatore Branch, Tamil Nadu
15	20th February 2025	CME on Role of Neurophysician in HIV by Prof. Dr. M. Sacratis, MD, DM and Advances in Neurorehab by Dr. G. Balamurali Surgical Neurology	IMA AMS Coimbatore Branch, Tamil Nadu
16	23rd February 2025	IMA AMS Chennai Villivakkam and Ayanavaram branch conducted monthly CME on 23rd February. Dr. Jayanth, Bariatric Surgeon from GEM Hospitals Chennai spoke about Obesity-The pandemic we don't talk about and Dr. Monika spoke on Advances in Hernia surgery and Dr. Anjalakshi Chandrasekar spoke on Hope and Scope for Diabetes Free Generations	IMA AMS Chennai Villivakkam and Ayanavaram Branch,
17	28th February 2025	Youtube Awareness talk by Dr. Jayaraman, Secretary IMA AMS Tamil Nadu State on the occasion of World Cancer Day Ayanavaram Branch	IMA AMS Chennai

S.No	Date & Time	Topics/ Speakers	State/Branch
18	6th March 2025	CME conducted on occasion of World Kidney Day and World Sleep Day, the topics are 1. CKD Management by Dr. Nithyashree Nandagopal Consultant Nephrologist and Transplant Physician,Apollo Hospitals, Chennai 2. Current Diagnosis and treatment of Obstructive Sleep Apnea by Dr. S. Jayaraman Senior Consultant Pulmonologist MGM Healthcare, Chennai	IMA AMS Chennai Villivakkam and Ayanavaram Branch,
19	14th March 2025	Awareness Video released by Dr. Jayaraman, Secretary IMA AMS Tamil Nadu State on the occasion of World Sleep Day	IMA AMS TSB
20	16th March 2025	MGM Health Care in association with IMA AMS Tamil Nadu State Branch and South East Asian Academy of Sleep Medicine conducted Sleep Summit on 16th March 2025 at MGM Health care, Chennai IMA AMS Tamil Nadu State	
21	17th March 2025	CME on BLOOD AND ORGAN DONATION conducted by IMA AMS Tamil Nadu State Branch. The topics are as follows: 1.Eye Donation by Dr. S. Suresh Babu 2. Process of Organ Donation by Dr. Pavithra 3. Legal and Ethical issues by Mr. C. Amutharajan 4. Blood Bank & Blood Donation by Dr. K. Bommusamy	IMA AMS TSB
22	24th March 2025	IMA AMS Tamil Nadu State conducted World Tuberculosis Day by Dr.S.Jayaraman IMAAMS TNSB Secretary	IMA AMS TSB
23	25th March 2025	IMA AMS conducted the Neuro Sciences forum CME. Dr.Ajith Chelian MD General Medicine, spoke about "Anti-Epileptic drugs Medication" and Dr.Visvanathan DNB Neuro Surgeon spoke about the "An Overview of Epilepsy Surgery Techniques	IMA AMS Coimbatore Branch, Tamil Nadu State
24	30th March 2025	IMA AMS Tamil Nadu State conducted the CME along with IMA Chennai Villivakkam branch. Dr. Sairam Subramanian Senior Vascular Surgeon spoke about the Varicose Vein -Debunking the Myths. Dr. Surendran R Consultant - Infectious Diseases & Hospital Infectioncontrol spoke about the Approach to a Patient with HIV: an Update. Dr.Erika Patel Clinical Lead &Senior Consultant -IVF spoke about the Demystifying Male Infertility.	IMA AMS Chennai Villivakkam and Ayanavaram Branch, Tamil Nadu
25	3rd April 2025	CME on RESTORATIVE NEUROSURGERY by Dr. Ramnarayan MBBS., MCh Senior Consultant Functional Neurosurgeon New hope hospital Kilpauk, Chennai and 2nd topic on HEMOPHILIA UPDATE by Dr. Gopinathan Senior Consultant Haemato-Oncology & Bone Marrow Transplant MGM Cancer Institute, Chennai.	IMA AMS TNB
26	22nd April 2025	CME on Topic-1: Early Experience in Surgical Treatment of Basilar top Aneursysm by Dr. A. Rajesh, Consultant Brain and Spine Surgeon and Topic-2: Management Approach to Parkison's Disease by Dr. Pramod Kumar Pal, Prof of Neurology	IMA AMS Coimbatore Branch, Tamil Nadu State
27	20th May 2025	CME on Topic-1: A Clinical & Practical approach to Vertigo by Prof. Dr. Vedhanayagam, DNB (Medicine), DNB (Neurology), Coimbatore, Topic-2: Management of Head Injury by Dr. K. Selvamuthukumaran, M.Ch. (Neurosurgery), Madurai.	IMA AMS Pollachi Branch, Tamil Nadu State
28	25th May 2025	CME on Topic -1 "Do not delay" by Dr. Vanitha Shri R., Senior Consultant Obst & Gynae Reproductive Medicine, Topic -2 Interesting Scenario With Positive results by Dr. Archishmati Gurde, Registrar-Varam IVF, Topic-3 Male Infertility-Pushing the Boundaries by Dr. Karthikeyan, Uro-Andrology. Topic-4 The Science Behind-An AV by Dr. Madhan Kumar, Senior Embryologist Uro-Andrology ,	IMA AMS Chennai Villivakkam and Ayanavaram Branch,

S.No	Date & Time	Topics/ Speakers	State/Branch
		Topic-5 Advances in Varam to deliver more by Dr. Dakshayani, Director and Clinical Head -Varam IVF	
29	27th May 2025	Panel discussion on Body Donation by Dr. Megala, MD Anatomy Asst. Professor of Anatomy, Dr. S. Vijayalakshmi, Prof. Dept. of Anatomy, Dr. G. Amudha, Prof & Head Dept. of Anatomy, Dr. Suriya Karthikeyhan, MD, DNB, Anatomy, Dr. V. Anandhi. M. S., Anatomy DGO and Dr. M. Manivannam, MBBS, DPH	IMA AMS TNB
30	17th June 2025	CME on Topic-1: Anti-Seizure Medication My Perspective in 35 years by Dr. M. Gunasekaran, MDDM (Neurology) and Topic-2: Advances in Neurosurgical Management of Malignant Gliomas by Dr. P. R. Rajkumar, MD (Neurosurgery)	IMA AMS Pollachi Branch, Tamil Nadu State
31	23rd June 2025	CME on Topic-1: Managing Urological Challenges: A Practical Guide to Common Complications and Effective Solutions by Dr. Rajesh Rajendran MS, Mch (Urology) and Topic-2: Renal Complications of Common Medications by Dr. Vaishanavi Devi R, MD, DM (Nephro)	IMA AMS TNB
32	25th June 2025	Role of Surgery in Sleep related Breathing Disorders, Moderator by Dr. S. Jayaraman, Senior Consultant Pulmonologist, MGM Healthcare	IMA AMS Chennai Villivakkam Ayanavaram Branch, Tamil Nadu State
33	29th June 2025	CME on Topic-1: Robotics in Joint Replacement Surgery by Dr. K. P. Kosygan, Consultant-Orthopaedic Surgeon, Apollo Hospital, Greams Lane, Chennai. Topic-2: Robotics Surgery in GI Cancers by Dr. K. S. Santhosh Anand, Consultant-Surgical Gastroenterologist and Laparoscopic Surgeon	IMA AMS Chennai Branch, Tamil Nadu
34	23 - 27 June 2025	Annual Conference of IMA AMS TNSB (TAMSCON-2025) organized by IMA AMS Tamil Nadu State at Cuddalore inaugurated by Dr. V. Amuthan, National Vice Chairman IMA AMS, Dr. C. Sairam, Secretary IMA AMS Hqrs along with Leaders of IMA Tamil Nadu State. CMES Start with 23rd June, topics covered on Urology, Nephrology, Orthopaedics, Sleep Medicine, Sleep Surgery, Medical Legal Issues and Oncology	IMA AMS TNB
35	24th July 2025	CME on Topic-1: Dr.M.S.Abirami MBBS MD. DVL., PG DIP. IN Cosmetology spoke about Training the Future of Aesthetic Dermatology. Topic-2: Dr.Dr.Lakshmikanth Charan MBBS., MD., IDCCM., EDIC., EDAIC Consultant Royal Care Super Speciality Hospital, Coimbatore spoke about Overview of Critical Care Medicine. Topic-3: Dr.Pradeep Kumar MBBS., DCH, Director, Gheeth Hospital & IVF centre, Kanyakumari, spoke about the Hospital Marketing Mastery Course	IMA AMS TNB
36	19th August 2025	AMS wing of IMA Coimbatore branch in association with Neurosciences forum conducting an online CME program, Topic-1: Central Nervous system demyelinating disorders differential diagnosis and approaches to management by dr. K. K. Prachet, senior consultant neurologist, Coimbatore and topic-2: Brain Death Certification and organ donation by Dr. V. Rajesh Babu, Sr. Consultant Neurosurgeon, Coimbatore.	IMA AMS Coimbatore, Tamil Nadu State.
37	29th August 2025	Conducted Eye Donation workshop by IMA AMS State West Zone Conference in association with IMA Tamil Nadu State Branch and IMA Coimbatore Branch held on 29th Aug 2025 at Coimbatore Medical College Topics are: 1. Anatomy of Eyeball & applied anatomy by Dr. Naveen 2. Challenges in Eye donation, Retrieval & Utilization by Dr. Revathi	IMA AMS TNB

S.No	Date & Time	Topics/ Speakers	State/Branch
		3. Steps of Enucleation & Eye Ball retrieval by Dr. Prabhu Vijayaraghavan 4. eye Retrieval-Legal Aspects & Challenges faced by Dr. Paneer Selvam 5. Workshop & Demonstration by Dr. P. Santhi, Dr. P. Sumathi and Dr. B. Koshal Ram	
38	4th September 2025	CME on Topic-1: End Stage Lung Disease and Lung Transplantation" by Dr. Aishwarya Rajkumar, Senior Consultant Interventional and Transplant Pulmonologist, Lung Transplant Physician. Topic-2: "Pharmacotherapy in Heart Failure" by Dr. S. N. Nagaraj, Consultant Interventional Cardiologist, R R Cardiac and ENT Clinic, Tirupur.	IMA AMS TNB
39	17th Sept 2025	CME on Medico Legal Issues by Dr. R. M. Meenakshi Sundari, Hony. Secretary IMA Chennai Villivakkam Branch Branch, Tamil Nadu State	IMA AMS Chennai Villivakkam Ayanavaram
40	12th -14th Sept 2025	State successfully conducted the 7th International Conference on Sleep Disorders (ICSD) for the first time in India, in collaboration with the Australasian Sleep Association (ASA). The prestigious event was held in the healthcare capital Chennai,	IMA AMS Tamilnadu IMA AMS TNB
41	23rd Sept 2025	CME on Topic-1 Expect the Unexpected: A Diagnostic Challenge by Dr. Kaushik M.G., MBBS, MD, DM, Consultant Neurologist, Kumaran Medical Centre and Velavan Health Centre, Coimbatore Topic-2 Interesting Paediatric Neurosurgical Cases by Dr. M. R. Balasenthil Kumaran, MBBS, DNB, MNAMS, Consultant Neurosurgeon, GKNM Hospital, Coimbatore	IMA AMS Coimbatore Branch,
42	25th Sept2025	On the occasion of World Lung Day, observed a special awareness programme will be conducted through Facebook Live.	IMA AMS Tamil Nadu
43	13th October 2025	CME on topic-1 Multiple Unexplained Physical Symptoms by Dr. A. V. Subrahmanyan Sr. Consultant Neurologist, Trichy Topic-2 Current concepts in the Management of Acute Ischemic Stroke by Dr. Srinivasan Paramasivam, Sr. Consultant Neurosurgeon and head of Neuroendovascular surgery, Chennai	IMA AMS Coimbatore Branch, Tamil Nadu
44	26th Oct 2025	CME on topic-1: Ventricular Septal Rupture by Dr. Arunkumar Krishnasamy Senior Consultant, Chennai Topic-2: Neurosurgical Conditions & Challenges in Elderly By Dr. Rajesh Menon Moothedath Consultant Neurosurgery Kauvery Hospital, Chennai Topic-3: Living will by Dr. Ashok Chackalackal Mathew Palliative, Care specialist, Chennai.	IMA AMS Chennai Villivakkam Ayanavaram Branch, Tamil Nadu State













Suggestions & Appeal:

1. We Request to form a new IMA AMS State Chapter in the following States- **ARUNACHAL PRADESH**, **RAJASTHAN, GOA, HIMACHAL PRADESH, MANIPUR, MEGHALAYA, MIZORAM, NAGALAND, SIKKIM, JAMMU & KASHMIR, PONDICHERRY and TRIPURA**.
2. For Union Territories and small State Branches to start an AMS State Chapter the minimum membership strength of the AMS Body has been reduced to 25 only.
3. For local branch within a state, only 20 members are needed to start the branch.
4. Request the State Presidents and Hon State Secretaries and the Chairmen and State Secretaries of IMA AMS to increase membership and fellowships of IMA AMS and start IMA AMS courses.
5. State Chapters/Branch Chapters to conduct at least one activity in every month either CME or Webinar on behalf of IMA AMS in your respective State Chapters and their Branch Chapters involving basic Speciality. **IMA AMS HQrs will provide free Zoom Link to conduct State/ Branch webinars.** AMS State Chapter and National Chapter must be included in that programme. The IMA AMS Hqrs will monitor all the activities and recognition of your efforts will be done and you will be eligible for AMS National Awards in the National Conference (AMSCON) of IMA AMS.
6. We request all the office bearers to enrol at least 3 Members & Fellows of IMA AMS to strengthen our AMS which is working towards reaching new goals and academic heights in the coming years.

Future Activities of IMA AMS

1. We are planning to conduct more IMA AMS virtual CMEs of various Specialities.
2. To increase Life Membership and Fellowships.
3. New IMA AMS Branches to be inaugurated.
4. To be Conducted More speciality Courses

Forthcoming Events:

North Zone Conference	North Zone Conference along with AMSCON-2025 at Chandigarh
IMA AMSCON-2025 2nd Governing Council Meet	Will be organized by Chandigarh State 29th & 30th November 2025

We expect all your kind cooperation in the membership drive, please feel free to express any of your doubts, thoughts and advice.

My sincere thanks to our Chief Patron Dr. Ketan Desai, Dr. Dilip Bhanushali, National President, Dr. Anilkumar J Nayak, National President Elect, IMA Hqrs, Dr. Sarbari Dutta, Hony. Secretary General, IMA Hqrs, Dr. Peeyush Jain, Finance Secretary, IMA Hqrs, Dr. R. V. Asokan, Imm. Past National President IMA Hqrs, Dr. Ramneek Bedi, National Chairman IMA AMS Hqrs, Dr. M. Venkatchalapathy, Chairman Elect IMA AMS Hqrs, Dr. V. Amuthan, Vice Chairman, IMA AMS Hqrs, Dr. Santosh Kadam, Joint Secretary, IMA AMS Hqrs, Dr. Ranveer Singh, Joint Secretary IMA AMS Hqrs, Dr. R.K. Nema, Hony. Editor (Annals), IMA AMS Hqrs, Dr. Sandeep Bhaskar Naik, Executive Editor (Annals), IMA AMS Hqrs, and Dr. Srirang Abkari, Imm. Past Secretary IMA AMS Hqrs for their valuable guidance and suggestions. We acknowledge the support and encouragement of all the National IMA office bearers, Past Presidents and Secretaries of IMA and IMA AMS, State Chairman, Secretaries and office bearers of IMA AMS and also thanked Ms. Saritha & Rakesh, Office Staff of IMA AMS for their tremendous work.

Thank you very much

Jai Hind Jai IMA Jai IMA AMS

Dr. Ramneek Bedi
Chairman IMA AMS HQs

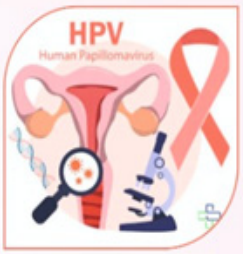
Dr. C. Sairam
Hon Secretary IMA AMS HQs

For Public Awareness

HPV Vaccination

HPV is hidden sneaky thief
inside the body it slowly creeps
withers the body day by day
leaves dark & dreadful future ahead.

HPV is most common STI ;
incredibly prevalent worldwide.
Infects both male & female alike.
50-80% sexually active once in a lifetime;
get infected somehow, sometime.



Single exposure puts lives in peril
Be cautious, any type of sex
or intimate skin to skin contact
gives chance to virus to access its way.
14 demons out of 200 types go astray & stay;
reason for genital warts & many cancers, make life gray.



Cancer Cervix in women is most common worldwide,
In men causes penile, anal &
oropharyngeal cancer side by side.
Mostly culprit is HPV, beware of its dark side.
1/5 th of global death is from cervical cancer.
In India, it stands 2nd for death from all cancers
If, HPV vaccination is given in proper time
Indeed, cervical cancer can be eliminated worldwide.



HPV vaccine is most powerful weapon,
acts like body's first line defence
It's a shield of protection against cancer
offers a glimpse of light amidst the darkness
It restrains the virus's stride;
keeps the body healthy & bright.



To make life secure;
Ideal age for vaccination is 9-14, it's sure
two doses of them make life secure,
for 15 through 26, three doses are applicable,
upto the age of 45, Catch up vaccination is there.

Message is loud and clear,
Vaccination if given before exposure, it works best.
At an early age, when immune response is robust
If given to both male & female, result will be best .
Early intervention carries wisdom, foresight matters
Safety is better than suffering later.



Step towards cervical cancer free future,
get the vaccine, the sooner the better.
Vaccine is safe, effective and simple
So why to wait, why to hesitate
Before demon comes out to play
Its shadow engulfs light of the day
Give vaccination in time & in proper way.

Dr Mrs Deepti Prakash Saxena
MBBS, MD
Past Vice President, IMA Chhattisgarh State
Past Jt Sec. IMA Chhattisgarh State
Past Chief Editor, IMA CG State Bulletin (for four years)
First Lady President, IMA,
Durg branch, Chhattisgarh,2004 - 2005

HPV vaccination poem is written for public awareness. Poem highlights following points for benefit of society at large:-
*What is HPV ?
*How it spreads
*Why it's dangerous
*Prevalence of cancer, mainly Cancer Cervix
*How to prevent
*Role of HPV vaccination
*Step towards cervical cancer free future
Dr Mrs Deepti Prakash Saxena is writing poems on medical topics since four decades for mass awareness. Many poems are published in national health magazines

" HPV Vaccination " poem written by **Dr Mrs Deepti Prakash Saxena** was released for public awareness by **Dr Priya Ganeshkumar** , MD, DGO, DFP, FICOG, **National Convenor FOGSI and IMA HPV Vaccination Project** Thane, Mumbai, Maharashtra,on auspicious occasion of Navratri festival, 23rd September 2025 for benefit of society at large .

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Contents...

S.No.	Title name with Author	Page No.
1	Adult Vaccination - Focus on HPV Vaccination – **Dr. Usha Rani Poli**	**01**
2	Vaccines Hesitancy and Communication – **Dr Anirban Dalui**	**12**
3	Adult Vaccination in India: Focus on HPV Vaccination and Beyond **– Dr N P Tiwari**	**21**
4	HPV Vaccination in Adults: Protection Against Cancer and Disease **– Dr Priya Ganeshkumar**	**24**
5	Vaccination & the Surgeon **– Dr Rashmi Mehta**	**28**
6	Addressing Stigma, Attitudes, and Behavioural Barriers in HPV Vaccination: A Narrative Review and Conceptual Framework in Health Psychology **– Dr. S. M. Kadri & Dr. Farnaz Shaygan Majd**	**35**
7	The HPV Vaccine: Playing the Devil's Advocate **– Dr Amitav Banerjee**	**41**
8	Early vaccination with universal Screening: A double-pronged approach to beat Cervical Cancer **– Dr. Sangeeta Jain & Dr. Vipin Kumar Jain**	**44**
9	Vaccine Hesitancy the mindset to set up effective Adult Vaccination with focus on HPV vaccination **– Prof (Dr) Ranjan Bhattacharyya**	**48**
10	The Growing Importance of Adult Vaccination **– Dr Sachin Narvekar**	**52**
11	Decoding Adult Vaccination -Focus on HPV Vaccination **– Dr. Alpana Shukla**	**66**
12	Cervical Cancer-Together we can make it a Disease of Past **– Dr. Dilip Kumar Acharya**	**81**
13	Human Papillomavirus (HPV) Vaccination in India: Evidence, Implementation and Future Directions **– Dr C Jyothi**	**82**
14	Guard Them from Puberty Prevent Cervical Cancer **– Dr Agnes Mathew**	**89**
15	Echocardiographic Pre-assessment for Adult Immunization **– Prof. Dr. V. Amuthan & Dr. R. V. A. Ananth**	**97**
16	Adult Vaccination for Travellers **– Dr. V. Rajesh Babu**	**105**
17	Vaccines for Cancer prevention & Treatment **– Dr. C. Sairam**	**109**



Adult Vaccination - Focus on HPV Vaccination

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HPV vaccines are the prophylactic vaccines given to prevent human papillomavirus (HPV) infection, which is the primary causative agent for cervical cancer. The HPV vaccination protects adolescent girls from being infected by HPV and thus reduces the risk of developing HPV related cervical cancer later in life.

HPV Pathogen:

HPV belongs to the family Papillomaviridae. The virion is non-enveloped and contains a double-stranded DNA genome. An icosahedral capsid, composed of major and minor structural proteins L1 and L2, encloses the genetic material. The viruses are highly tissue-specific and infect both cutaneous and mucosal epithelium. Over 200 HPV types have been identified, and based on their potential to induce cancer, they are classified as high-risk or low-risk types. Currently, 12 oncogenic high-risk HPV types identified are 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, with type HPV16 being the most oncogenic (1). HPV 16 and HPV 18 are the highest-risk types known to cause about 70% of all cervical cancers (2). They cause cancers of the cervix, vagina, and vulva in women and penile cancers in men, as well as anal and oropharyngeal cancers in both.

HPV Disease:

HPV infection is prevalent in the reproductive age group and spreads through contact with infected genital skin, mucous membranes, or secretions, or is transmitted through sexual intercourse, including oral sex. Around seven in every 10 people will have an HPV infection at some point in their lifetime. Most HPV infections (70–90%) are asymptomatic and resolve spontaneously within 1–2 years without any treatment. Because HPV lives on the skin, condoms do not offer full protection. Approximately one in 10 women develops persistent infection with high-risk types, which may progress to precancerous lesions, which, if not detected and treated appropriately, can progress to invasive carcinoma at the site of infection.

Cervical cancer: About 5–10% of all infected women develop persistent infection, which in the cervical site may progress within months or years to premalignant glandular or squamous intraepithelial lesions, classified histo-pathologically as CIN, and then to cancer. Most of the low-grade (1 and 2) CIN lesions regress spontaneously (3). The interval between the acquisition of HPV infection and progression to invasive carcinoma is usually 15–20 years or longer. The predisposing conditions and risk factors for the progression include the HPV type; immune status, HIV-infected, or receiving immunosuppressive therapy, co-infection with other sexually transmitted infections (STIs) like herpesvirus, chlamydia, and gonococcal infections, parity, young age at first pregnancy, current or recent use of hormonal contraceptives, and tobacco smoking. The estimated risk of developing cervical cancer is 6-fold higher in women living with HIV (WLWH) than that for women without HIV infection (4).

Epidemiology of HPV infection and HPV-related diseases:

HPV prevalence in women: Based on a 2010 meta-analysis, the global HPV prevalence (all types) in cervical specimens with normal cytological findings is estimated to be 12% among adult women, ranging from 2% to 42% (5). Age-specific HPV prevalence is highest in young age groups (<25 years) at 22%. In the pre-vaccination era, HPV types 16 and 18 were the most frequent worldwide.

Burden of cervical HPV infection in India: The average HPV 16 /18 prevalence in normal cytology is around 5.0 %, 28.2% in low-grade cervical lesions, and 62.8 % in high-grade cervical lesions and in cervical cancer; it is 83.2% (6).

HPV-related cervical cancer in women: Globally, in 2018, it was estimated that cervical cancer formed 91% of HPV-related cancers in women (7). Cervical cancer was the fourth leading cause of cancer and cancer deaths in women in 2020, with an estimated 604,000 new cases and over 340,000 deaths accounting for 8% of all female cancer deaths (8). Cervical cancer ranks as the second most common cancer among Indian women with an annual incidence of 134,420 cases, which accounts for about one fourth of (25.9%) of all cancers detected in women. The age standardized incidence rate for cervical cancer in India is 18.7 per lakh women, with a mortality rate of 11.7, which is higher than the global average (9). Indian women face a 2.01% cumulative lifetime risk and a 1.3% cumulative death risk from cervical cancer. At any given time, about 6.6% of women in the general population harbour cervical HPV infection. HPV serotypes 16 and 18 account for nearly 76.7% of cervical cancer in India (6).

Immune response after natural HPV infection:

HPV infections are restricted to the epithelial layer of the mucosa and do not induce a vigorous and generalised immune response. The median time from HPV infection to seroconversion is approximately 8–12 months, although immunological response varies by individual, HPV type, and duration of infection (10). After natural infection, 70–80% of women seroconvert, but their antibody responses are typically slow to develop and of very low titer and avidity. In men, the response to natural HPV infection is less, and any antibodies produced may not be protective. The available data on whether immunity to natural infection with HPV induced protection against reinfection are equivocal. In most cases, those who develop infection, an effective cell-mediated immune (CMI) response occurs, resulting in spontaneous regression of early lesions (11). Failure to develop such a response results in persistent infection and, in the case of the high-risk HPVs, results in increased probability of progression to CIN 2+ (12).

Contributing factors to HPV infection and cervical cancer:

Sexual practices like starting sexual activity at a younger age, having multiple sexual partners, HIV infection, and lack of comprehensive sexual education in schools and communities predispose individuals. Poor access to healthcare facilities, a lack of organized cervical cancer screening programs and vaccination programs, high vaccine costs, and parental hesitancy also contribute.

Importance of HPV Vaccines and Primary Prevention:

There is a unique opportunity for primary prevention of cervical cancer with HPV vaccination, or secondary prevention by early detection and treatment of precursor lesions. Currently, six prophylactic HPV vaccines are licensed worldwide. They are intended to be given before the onset of sexual activity, i.e., before exposure to HPV.

All vaccines are prepared, using recombinant DNA and cell-culture technology, from the purified L1 structural protein to form HPV type-specific empty shells, termed as virus-like particles (VLPs), along with an adjuvant to boost

the immune response. They are not live viruses. VLPs are self assembled purified L1 structural proteins that are non-infective and non pathogenic. Following vaccination, the immune system of the host identifies VLPs in the local lymph nodes and produces a strong antibody response (IgG), which is at much higher levels than that induced by natural HPV infections, and provides cross protection to some extent against non vaccine related serotypes also. On subsequent exposure to HPV infection, the plasma cells and memory B cells in circulation produce IgG antibodies (13). All available HPV vaccines contain VLPs against high-risk HPV types 16 and 18 (bivalent vaccines). The quadrivalent vaccines additionally contain HPV 6 and 11 VLPs to protect against ano-genital warts. The nonavalent vaccine also contains VLPs against high-risk HPV types 31, 33, 45, 52, and 58, along with VLPs of the quadrivalent vaccine. These vaccines are for prophylactic use only and are not used for the treatment of HPV infections or HPV related disease.

HPV vaccines available in India:

Vaccine immunogenicity, efficacy, and effectiveness:

HPV vaccines are highly immunogenic, leading to seroconversion in more than 99% of vaccinated girls and women (14). Following intramuscular vaccination, the L1 protein in VLPs is recognized by the regional lymph nodes to generate a strong antibody response (IgG). The immune response to vaccination is much stronger (1–4 logs higher) than the response after natural infection. The Vaccine- induced immune memory from the circulating plasma cells and memory B-cells allows generation of antibodies that reach the site of infection by active IgG transudation in the mucosa of the female genital tract to neutralize the virus, thus preventing its entry into cells.

Efficacy of vaccines: The randomized clinical trials (RCTs) of the pre-licensure phase 3 for the bivalent vaccine (PATRICIA trial and CVT trial) and FUTURE I and FUTURE II trials for the quadrivalent vaccine have proved highly efficacious in preventing CIN 2, CIN 3, or AIS

HPV Vaccine type	Age of administration	No. of Doses	Schedule
Bivalent Vaccine (Cervarix)	9 -14 years	2	0 and 5–13 months
	>15 years	3	0, 1–2.5, and 5–12 months
Quadrivalent Vaccine (Gardasil-4)	9 -13 years	2	0 and 6 months
	>14 years	3	0, 1–2, and 4-6 months
Quadrivalent Vaccine (Cervavac)	9 -14 years	2	0 and 6 months
	>15 years	3	0 ,2 ,6 months
9-Valent Vaccine (Gardasil 9)	9-14 years	2	0,6-12 months
	15-45 years	3	0,1-2 ,6 months

Dose: 0.5 ml of any type of vaccine is administered intramuscularly in the deltoid region.

caused by vaccine-targeted types when given as 3 3-dose schedule in HPV naive individuals. Both vaccines demonstrated high immunogenicity in girls aged 9-14 years, and the post-vaccination antibody titers in the young girls were 1.7-2.0-fold higher than those in the 15-26-year-old women in whom the protective efficacy of the vaccine against infection and disease was already established (15). The sero-positivity rates at 14 years post-vaccination in the total IgG Luminex immunoassay were 100 % for HPV 16 and 94% for HPV 18, and neutralizing antibodies against HPV16 and HPV18 are 6- and 12-fold higher, respectively (16).

Evidence on the efficacy of less than three doses of HPV vaccination:

The high immunogenicity of HPV vaccines in adolescent girls prompted randomized trials comparing two doses of the vaccine administered at 6 months or more interval in girls below 15 years of age to three doses in young women above 15 years, which proved to be immunologically non-inferior to three doses (17).

The IARC-Indian multi-centric study showed that the immunogenicity following two doses of HPV vaccination was non-inferior to that following three doses, and even one-dose recipients showed a robust and sustained immune response against HPV 16 and 18, but the titers were inferior to those seen after two or three doses, over a period of 5 years and 10 years (18).

Although one dose was less immunogenic than three doses, it generated detectable titers of neutralizing antibodies, and one-dose antibodies were as avid as three-dose antibodies.

Binding antibodies against HPV 16 and HPV 18 were detectable in 96% and 97% of the single-dose recipients, respectively, 10 years post-vaccination, and mean titers were significantly higher in them compared to unvaccinated women (19). The above observations and the fact that there is no known minimum protective threshold concentration of antibodies prompted us to recommend that one dose merits further assessment.

Cross protection: Significant reductions in the infections of HPV types 31, 33, 45 were also recorded in vaccinated girls (RR 0.72), suggesting some level of cross-protection occurs with both bivalent and quadrivalent vaccines.

Evidence on efficacy in prevention of persistent HPV infections: The Indian HPV vaccine study showed that the adolescent girls between 15-18 years vaccinated with two doses of the quadrivalent HPV vaccine had similar antibody profiles as those of 3 doses. The efficacy in protection against incident and persistent infections from the vaccine targeted HPV types is comparable in both the dose groups at 15-18 years or even at a younger age. Hence, it justifies extending the two-dose recommendation to the 15-18-year-old healthy adolescents as well (20). Vaccine efficacy against persistent HPV 16 and 18 infection was reported to be 95·4%, 93·1% and, 93·3% in one-dose, two dose, and three dose recipients, respectively, offering equivalent protection when followed up for 10 years. A single dose of the HPV vaccine provides high protective efficacy against persistent HPV 16 and 18 infections and associated neoplasia 15 years post-vaccination in the Indian multi-centric study (21). This fact is validated by the WHO position paper, which affirms that a single dose and two dose schedule of HPV vaccine provides a comparable efficacy and durability of protection (22). The Cochrane systematic review of RCTs, involving 13,753 females aged 16–26 years, showed no difference in efficacy with an odds ratio of 1.00 against the outcomes by quadrivalent (Gardasil) and nonavalent (Gardasil-9) vaccines (23). There is also 100% protection against anogenital warts associated with HPV6 and HPV11 with the quadrivalent vaccine.

Duration of protection:

With a multi-dose schedule, antibody titers remain high for at least 12 years for both the bivalent (Cervarix) vaccine and quadrivalent (Gardasil) vaccine, and for at least 6 years for the more recently licensed nonavalent vaccine. Efficacy estimates against HPV16/18 infections were similar for single- dose and multi-dose regimens, and HPV16/18 antibodies were shown to persist at levels several times above natural infection for up to 11 years in all subjects, including those who received a single dose. Vaccine efficacy was high (>90%) for at least 10 years post-vaccination for all schedules. With a 3-dose schedule of the quadrivalent (Gardasil) vaccine, no breakthrough cases of cervical or genital disease related to HPV types 6, 11, 16, or 18 were observed among vaccinated pre-adolescents and adolescents during 10 years of follow-up (21). There is no evidence to suggest the necessity of a booster dose even several years after the primary HPV vaccination.

Vaccine effectiveness and global impact:

Randomized controlled trials of HPV vaccine effectiveness use the development of the precursor lesion cervical intraepithelial neoplasia (CIN) 2 and 3 as a surrogate marker for HPV-associated malignancies, as invasive disease develops years to decades after HPV infection. Significant reductions in cervical cancers and high-grade pre-cancers were observed among young women in countries with high vaccination coverage (24, 25, 26). Systematic review and meta-analysis on the impact of HPV vaccination showed a significant decrease in HPV 16 and 18 infections, ano-genital wart diagnosis, and CIN2+ (27).

Herd immunity: There is a significant decrease by 83 % in the prevalence of HPV 16 and 18 among girls aged 13-19 years and by 66% among women aged 20-24 years after 5-8 years of vaccination in the studies comparing pre- and post-vaccination periods, involving more than 60 million individuals in the general population (27). There is evidence of indirect protection of unvaccinated females through herd effects. Substantial decreases in cases of genital warts have occurred following the introduction of a national HPV immunization program using the quadrivalent vaccine in a number of countries, with reductions observed in unvaccinated young men in settings with female-only programs, indicating herd protection (28).

Safety of HPV vaccines:

Since licensure in 2006, over 500 million doses of HPV vaccines have been distributed so far. The safety of the HPV vaccine has been regularly reviewed by the Global Advisory Committee for Vaccine Safety (GACVS), which has not identified any safety concerns. Data from all sources continue to be reassuring regarding the safety profile of HPV vaccines currently in global use (29).

Local reactions: Overall, local adverse events were reported in 39–87% of recipients of the bivalent or quadrivalent HPV vaccine (30). Among males and females of all ages receiving the HPV vaccine, adverse effects are generally limited to mild local reactions, including injection site pain (35–88%), redness (5–40%), and swelling (4–35%). Severe pain (spontaneous pain or pain that prevented normal activity) was reported by 6% only.

Systemic reactions: Mild systemic adverse events possibly related to vaccination included headache, dizziness, myalgia, arthralgia, and gastrointestinal symptoms (nausea, vomiting, abdominal pain). Systemic reactions were reported among 69% and 55% of recipients of bivalent and quadrivalent vaccines, respectively. There is little or no difference in overall systemic adverse events between nonavalent (Gardasil-9) and quadrivalent (Gardasil) vaccines. Hypersensitivity reactions, including anaphylaxis, are rare (reported as approximately 1.7 cases per million doses), and syncope was mainly due to injection related anxiety or stress. Post-marketing surveillance found that systemic reactions were reported as generally mild and self-limiting. Although a few case reports of

new-onset chronic conditions, including autoimmune diseases after vaccination, have been reported, the population– based post-licensure safety surveillance showed no association between the HPV vaccine and such conditions. Data is reassuring that the HPV vaccine does not increase the risk of Guillain-Barré syndrome, Bell's palsy, complex regional pain syndrome (CRPS), or postural orthostatic tachycardia syndrome (POTS) (31). Similarly, no association was found between HPV vaccination and infertility (32).

Contraindications and precautions: HPV vaccination is contraindicated in patients with a known history of severe allergic reactions to any of the vaccine components, or after a previous dose. Vaccination is postponed during an acute severe febrile illness. Precautions must be taken while vaccinating individuals with any coagulation disorders, as bleeding may occur after an intramuscular administration. Post-vaccination syncope has been reported, as for many vaccines, but can be minimized and its complications avoided with appropriate preparation. After the vaccination, it is advised to observe the person for 15 minutes for any post-vaccination syncope. If syncope is associated with tonic–clonic movements, the individuals need to be maintained in a supine or Trendelenburg position, which restores cerebral perfusion and emergency management of a vasovagal attack.

Pregnancy and breastfeeding: HPV vaccines are not recommended for use in pregnant women. However, in 16 RCTs including more than 25,000 participants, no specific safety concerns were identified for the outcome of pregnancy, spontaneous abortion, miscarriage, stillbirths, or fetal development (33). However, inadvertent HPV vaccination during pregnancy has not been associated with a higher rate of adverse pregnancy outcomes in retrospective cohorts; therefore, it is not an indication for pregnancy termination. Any subsequent doses should be delayed until after pregnancy. HPV vaccination can be safely administered to individuals who are breastfeeding.

Co-administration with other vaccines: As per licensing indications, specific HPV vaccines can be administered concomitantly with other routine vaccines containing diphtheria (d), tetanus (T), and acellular pertussis (pa), without any clinically relevant interference with antibody response to the components of vaccines.

Vaccination schedule:

Two-dose schedule: The current evidence supports the recommendation that a 2-dose schedule be used in the primary target group from 9 years and above for all licensed HPV vaccines. The minimum

interval between the first and second dose is 6 months. A 12-month schedule also results in higher GMTs and is suggested for programmatic and efficiency reasons.

Alternative single-dose schedule: As an off-label option, a single-dose schedule can be used in girls and boys aged 9–20 years. Current evidence suggests that a single dose has comparable efficacy and duration of protection as a 2-dose schedule and may offer program advantages, be more efficient and affordable, and contribute to improved coverage. From a public health perspective, the use of a single-dose schedule can offer substantial benefits.

Schedule for Immunocompromised persons: Individuals known to be immunocompromised or HIV- infected (regardless of age or antiretroviral therapy status) should receive at least two HPV vaccine doses (minimum 6 months interval) and, where possible, three doses.

Vaccination strategies:

HPV vaccination can be introduced through a combination of delivery strategies, which could be based in health facilities or schools, or part of community outreach or campaigns. Approaches that are (i) compatible with their delivery infrastructure and cold chain capacity, (ii) affordable and sustainable, and (iii) capable of achieving the highest possible coverage

should be considered. For the prevention of cervical cancer, the WHO-recommended primary target population for HPV vaccination is girls aged 9–14 years before they become sexually active. HPV immunization programs should prioritize high coverage of girls. The vaccination of secondary targets such as boys and older females is recommended where feasible and affordable. Multiple opportunities should be provided for girls to receive their HPV vaccine doses. Catch-up vaccination of multiple age cohorts (MACs) of girls aged between 9 and 18 years at the time of introducing the HPV vaccine results in faster and greater population impact, as a result of increased direct and herd protection (34).

Current recommendations of HPV vaccination:

- A one or two-dose schedule for girls aged 9-14 years
- A one or two-dose schedule for girls and women aged 15-20 years
- Two doses with a 6-month interval for women older than 21years
- Immunocompromised individuals should receive at a minimum two doses and, where possible, three doses.

Cost-effectiveness: Global cost-effectiveness analysis suggests that vaccinating pre-adolescent girls is usually cost-effective for cervical cancer prevention, particularly in resource-constrained settings where screening and other cervical cancer prevention and control measures often have limited coverage (35). At current prices for the bivalent and quadrivalent vaccines, girls-only vaccination is cost-effective (compared with no vaccination) irrespective of the schedule or vaccine used, even when no cross-protection or herd protection is assumed. HPV vaccination is considered a "best buy" for non-communicable disease prevention. Gender-neutral vaccination is less cost-effective than vaccination of girls only. The incremental cost-effectiveness decreases for girls e"15 years of age because a proportionally larger number of individuals receiving the vaccine proportionally will already have been infected. Models using the evidence on the effectiveness of a 1-dose schedule on the primary target showed that under the assumption of at least 20 years' protection, adding a second dose was not cost-effective. Analysis indicates that a 1-dose MAC strategy can save a comparable number of lives as a 2-dose MAC strategy, even at marginally lower assumed efficacy, and is more efficient as fewer doses are needed to prevent each case of cervical cancer (36).

HPV vaccination in India: The state-wide introduction of HPV vaccination in Sikkim, vaccination in two districts of Punjab, and opportunistic vaccination in Delhi took place as a 2-dose schedule with a 6-month interval. The results are encouraging, thus proving to be sustainable programs at the public level. The subsequent cost-effectiveness analysis for Punjab reported HPV vaccination to be very cost-effective. It is estimated that the discounted incremental cost per quality-adjusted life-year for HPV vaccination was 73 Indian rupees (INR), resulting in a 64% reduction in the lifetime risk of cervical cancer with three to four cases prevented for every 1000 girls immunized (37).

WHO position on HPV vaccination programs:

Monitoring: HPV vaccine coverage is monitored through the national immunization data reporting systems, registries, and periodic surveys. To date, 76% (148 of 194) of the WHO member states have HPV vaccination included in their national immunization program, and about half of these countries have HPV vaccination programs for both sexes.

The 2020 WHO Global Strategy was proposed to accelerate the elimination of cervical cancer as a public health problem. The 90–70–90 targets were set with an aim of 90% of girls being fully vaccinated with the HPV vaccine by 15 years of age, 70% of women undergoing screening by 35 years and 45 years of age with an HPV test, and 90% of women with pre-cancer

and invasive cancer receiving treatment so as to maintain the incidence rate of <4 / 100,000 women by 2030 (38). The role of prophylactic HPV vaccination forms a foundational pillar of the WHO global strategy. Modelling predicts that girls receiving HPV vaccination alone with 90% coverage in LMICs will reduce the age-standardized cervical cancer incidence from 19.8 to 2.1 cases per 100,000 women-years over the next century, which is equivalent to almost 90% reduction in the incidence of cervical cancer (39).

Integration of vaccination with other preventive measures: A comprehensive strategy to introduce HPV vaccination should include health education about reducing behaviours that increase the risk of acquiring HPV infection, and information about screening, diagnosis, and treatment of precancerous lesions, cancer, and risk factors. HPV vaccination alone does not eliminate the need for screening later in life, since the existing vaccines do not protect against all high-risk HPV types and will have a limited impact on disease in unvaccinated women and those vaccinated at older ages. Hence, access to quality screening and treatment services should also be improved. However, it is not necessary to screen for HPV or HIV infection prior to HPV vaccination.

Introduction of the HPV vaccine for the Indian population:

Presently, less than 1% of girls have received the HPV vaccine, and less than 2% of women have undergone screening for cervical cancer in India (40). Current evidence shows that the HPV vaccine plays an important role in preventing high risk HPV infections and thereby preventing cervical cancer. Hence, it is critical to have this vaccine in the national immunization schedule of India. This would help the country to accelerate the targets that need to be met by 2030, according to the cervical cancer elimination strategy recommended by the WHO.

Favourable factors facilitating HPV vaccination in India:

- In India, currently, we have homegrown low cost quadrivalent HPV vaccines that have a proven safety profile -the Cervavac vaccine.
- Indian studies have shown that a single dose is equivalent to two or three doses of the HPV vaccine, as endorsed by the WHO for LMICs.
- Primary vaccination of 9- to 14 year old adolescent girls at the time of HPV vaccine introduction would be a cost effective approach and make the program sustainable.
- Various field trials have shown that in Indian settings, schools form an ideal platform for vaccinating adolescent girls.
- Gender-neutral vaccination has several advantages – faster elimination of infection through robust herd immunity, a more resilient program, protection of boys against anal and oropharyngeal cancers, and avoiding stigma associated with a girls-only vaccine.
- However, adequate planning, inter-sectoral collaboration, and necessary capacity building are critical for the success of the program.
- Fear and myths about the vaccine need to be alleviated among health workers and parents through proper communication.
- Strengthening the cervical cancer screening programs in parallel to vaccination programs, dealing with HPV vaccine hesitancy, and generating awareness among parents and the community are crucial in the elimination of cervical cancer.

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Vaccines Hesitancy and Communication

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Introduction

Vaccination stands among the most powerful public health tools ever developed. From smallpox eradication to dramatic reductions in polio, measles, and many other infectious diseases, vaccines have saved millions of lives and prevented untold suffering. Yet despite overwhelming scientific evidence of vaccine benefits, many communities and individuals delay, reject, or accept vaccines with uncertainty — a phenomenon known as vaccine hesitancy.

Vaccine hesitancy is complex, dynamic, and context-specific. It sits on a spectrum that ranges from complete acceptance to outright refusal. Understanding why people hesitate and how to communicate effectively about vaccines is essential for public health practitioners, clinicians, policy-makers, and community leaders. This article explains the drivers of vaccine hesitancy, the principles of effective communication, actionable strategies for different audiences, evaluation metrics, ethical considerations, and practical case studies (including HPV and COVID-19). The goal is to provide a practical, evidence-informed roadmap for improving vaccine confidence.

Defining Vaccine Hesitancy

Vaccine hesitancy refers to delay in acceptance or refusal of vaccines despite availability of vaccination services. It is not the same as anti-vaccination ideology; hesitancy often reflects uncertainty, fear, lack of information, misinformation, access barriers, cultural beliefs, or mistrust in institutions.

The determinant matrix is usually described along three axes:

Confidence trust in the safety and effectiveness of vaccines, in the health system that delivers them, and in policymakers

Complacency perception that the risks of vaccine-preventable diseases are low and vaccination is unnecessary

Convenience (or constraints) the physical and structural availability, affordability, accessibility, and appeal of immunization services

Additional drivers include socio-cultural factors, religious beliefs, historical injustices, political ideology, and the prevailing information environment (social media, news cycles).

Why Vaccine Hesitancy Matters

Public health impact: Lower vaccination uptake leads to outbreaks (measles, pertussis), greater morbidity and mortality, and health care burden.

Herd immunity threshold: Many vaccines require high coverage to protect those who cannot be vaccinated (e.g., immunocom-promised). Hesitancy undermines community protection.

Economics: Outbreaks are expensive — treatment costs, lost productivity, and disruptions to services and schooling.

Equity: Hesitancy often compounds other barriers in underserved groups, amplifying health disparities.

Common Myths and Misconceptions (and simple rebuttals)

Table: Common Vaccine Myths and Evidence-Based Rebuttals

Myths / Misconceptions	Evidence-Based Rebuttals
Vaccines cause the disease they aim to prevent.	Most vaccines contain inactivated or non-infectious components that cannot cause the disease. Live-attenuated vaccines contain weakened forms that very rarely cause illness, and only in severely immunocompromised individuals.
Natural immunity is better than vaccine-induced immunity.	Natural infection can result in severe disease, complications, or death. Vaccines provide a safe way to develop immunity without the risks of infection.
Vaccines contain harmful toxins or dangerous ingredients.	Vaccine ingredients such as adjuvants, stabilizers, and preservatives are used in extremely small, safe amounts and are strictly regulated. The levels are far below toxic thresholds and much lower than what we encounter daily in food or the environment.
Too many vaccines overwhelm the immune system.	The human immune system encounters thousands of antigens every day. The total antigenic load in modern vaccines is much lower than in older vaccines, and multiple vaccines can safely be administered at the same visit.
Vaccines cause autism.	Extensive scientific studies worldwide have shown no link between vaccines and autism. The original study that suggested this association was fraudulent and retracted.
Vaccine-preventable diseases are no longer a threat.	Many of these diseases still exist and can return quickly if vaccination rates drop, as seen with measles outbreaks in under-immunized communities.
Vaccines are unnecessary because infection rates are already low.	Low infection rates are the result of widespread vaccination. Stopping vaccination would allow diseases to spread again, reversing public health gains.
Vaccine side effects are common and severe.	Most vaccine side effects are mild (e.g., soreness, low-grade fever) and short-lived. Serious adverse events are extremely rare and continuously monitored by surveillance systems.
Vaccines are part of a profit-driven conspiracy by pharmaceutical companies.	Vaccines are among the most regulated medical products, often sold at low margins or subsidized by governments and NGOs. Their societal benefit far exceeds commercial profit.
COVID-19 and new vaccines were developed too quickly to be safe.	Rapid development was possible due to unprecedented global collaboration, existing mRNA research, and simultaneous manufacturing scale-up — without compromising safety standards. All approved vaccines underwent rigorous clinical testing and safety monitoring.

The Information Environment: How Misinformation Spreads

Social media, echo chambers, and algorithm-driven content amplification allow misinformation — sometimes emotionally charged and tailored — to spread rapidly. Motivated reasoning, confirmation bias, and distrust of authorities amplify false narratives. Effective communication cannot simply supply facts; it must engage with emotions, values, and trusted relationships.



Principles of Effective Vaccine Communication

- **Listen first.** Start by understanding concerns, motivations, and the local context. Listening builds rapport and identifies specific misinformation or logistical barriers.
- **Use empathy and respect.** Dismissing concerns as "irrational" alienates people. Validate feelings without endorsing incorrect beliefs: "I understand why you're worried; let's look at the evidence together."
- **Tailor messages to the audience.** One-size-fits-all messaging fails. Adapt to culture, language, literacy, and local influencers.
- **Use trusted messengers.** People trust family doctors, community leaders, religious figures, or peers more than faceless institutions.
- **Be clear and concise.** Short, actionable messages beat long explanations. Use plain language and avoid jargon.
- **Frame messages positively.** Emphasize benefits (protecting family, keeping kids in school) rather than fears alone.
- **Be transparent about uncertainties and risks.** Hiding uncertainty damages credibility. Explain side-effect profiles, frequency, and monitoring systems honestly.
- **Employ stories along with data.** Personal stories humanize statistics; data provides scale.
- **Repeated exposure — but varied channels.** Reinforcement across platforms increases impact; adapt content per channel.
- **Provide easy next steps.** Clear instructions on where, when, and how to get vaccinated reduce friction.

Audience Segmentation: Who Are We Talking To?

Effective campaigns start with segmentation — dividing the population into groups by their attitudes, beliefs, and practical barriers. Common segments include:

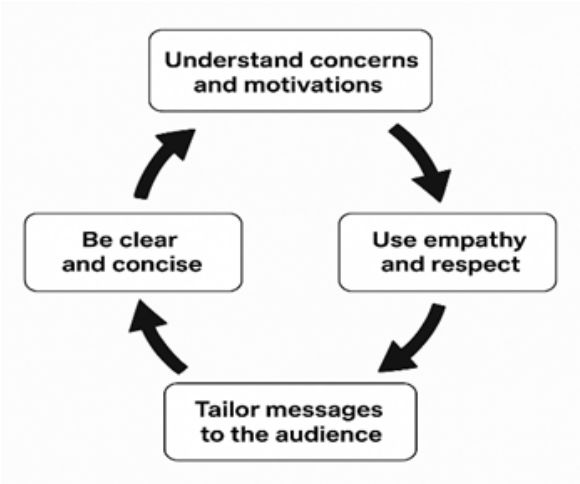
- Accepting without reservation — require minimal intervention; focus on convenient access and reminders.
- Cautious acceptors — willing but concerned; need reassurance, facts, and trusted messengers.
- Hesitant but open to persuasion — motivated reasoning may be present; targeted engagement, dialogue, and myth-debunking can help.
- Reluctant/refusers — deep ideological or religious opposition; often resistant to change; focus on risk mitigation and policy levers.
- Access-constrained — want vaccine but face barriers (distance, cost, time, paperwork); improve convenience.

Tailor communication and interventions to each group — resource allocation should prioritize changeable groups (cautious acceptors and hesitant-but-open).

Communication Channels and Tactics

1. **Clinical Settings (Primary care, schools, clinics)**

- Strong clinician recommendation: The most influential predictor of uptake.



Clinicians should give clear, presumptive recommendations (e.g., "Today your child will get the HPV vaccine") and be ready to answer questions.

- Motivational interviewing techniques: Open questions, reflective listening, empathy, and supporting autonomy.
- Reminder/recall systems: SMS, phone calls, or postcards to reduce missed opportunities.
- Decision aids and handouts: Short, visual tools that explain risks and benefits.

2. Community Engagement

- Partner with community leaders: Religious leaders, teachers, local activists can amplify trusted messages.
- Peer ambassadors: Train local volunteers who share lived experience and act as vaccine navigators.
- Town halls and listening sessions: Create safe spaces for dialogue rather than lectures.

3. Media and Digital Strategies

- Social media campaigns: Use short video testimonials, infographics, and shareable content. Employ influencers strategically (local and relevant).
- Search engine optimization (SEO): Ensure reliable content appears when people search for vaccine-related queries.
- Rapid response to misinformation: Debunk quickly with factual yet empathetic messages and provide alternative narratives.
- Use micro-targeting thoughtfully: Ads and content tailored to demographics can be effective but raise ethical concerns; transparency about targeting is important.

4. Schools and Workplaces

- School-based vaccination programs: Reduce convenience barriers and leverage trusted adult relationships.
- Employer vaccination drives: Offer on-site clinics and incentives like paid time off.

5. Policy and Structural Interventions

- Mandates and requirements (with exemptions appropriately managed) can increase coverage but risk backlash if implemented without engagement.
- Incentives (financial or non-financial) can nudge uptake for some groups.
- Reducing access barriers: Extended hours, mobile clinics, free vaccines.

Communication for Specific Vaccines:

HPV Case Study

HPV vaccination faces distinct challenges: it targets pre-adolescents, is linked to sexual transmission (a sensitive topic), and the long-term benefits (cancer prevention) are not immediate.

Example Case Scenario: Addressing Parental Concerns in a Clinic Setting

Situation:

A 12-year-old girl visits a pediatric clinic for her routine vaccination. When the clinician recommends the HPV vaccine, her mother expresses hesitation, saying, "My daughter is

too young for a vaccine related to sexual activity."

Approach:

The pediatrician calmly explains that the HPV vaccine is a cancer-prevention vaccine, not a vaccine about sexual activity. It protects against cervical and other cancers caused by HPV infection, which can occur even with limited sexual exposure later in life. The doctor uses the presumptive approach ("Today your daughter is due for her HPV vaccine") and provides a short, clear handout addressing safety and efficacy.

Outcome:

After reassurance and the clinician's confident recommendation, the parent agrees, and the child receives her first HPV vaccine dose.

Strategies that work for HPV:

- Clinician presumptive recommendation — present HPV vaccine as routine, like tetanus or MMR.
- Frame as cancer prevention rather than sexual behavior.
- School-based delivery — high uptake observed where schools are used.
- Parental education: short, clear materials explaining safety, schedule, and benefits.
- Address moral concerns by emphasizing health benefits and clarifying that vaccination does not increase sexual activity.
- Use adolescent-centered materials (age-appropriate) and involve adolescents in decision-making.

Communication During Emergencies: COVID-19 Lessons

The COVID-19 pandemic highlighted the speed at which misinformation can spread and the importance of agile communication.

Example Case Scenario: Transparent Risk Communication in a Local Health Department

Situation:

During the early months of the COVID-19 vaccine rollout, a district health office in India faced public anxiety about vaccine safety after reports of side effects on social media. People began avoiding vaccination camps.

Approach:

The district health officer conducted daily press briefings and live Q&A sessions through social media explaining what was known and what was still being studied about vaccine side effects. Health workers were trained to respond empathetically to community fears. The communication emphasized transparency — sharing verified numbers of mild and serious adverse events and explaining monitoring procedures.

Outcome:

Public trust improved significantly, vaccination coverage rose by 35% in one month, and misinformation posts saw reduced engagement on local social media platforms.

Key takeaways:

- Transparency matters — acknowledge uncertainties (e.g., new variants) while explaining what is known.
- Consistent messaging across agencies reduces confusion; but avoid over-centralization that ignores local contexts.
- Rapid myth correction helps but must avoid repeating the myth in the corrective framing.
- Use data dashboards and real-time monitoring to show vaccine safety surveillance.
- Address structural inequities: prioritize outreach to communities historically underserved or mistreated by health systems.

Messaging Frameworks and Message Examples

Presumptive vs Participatory Approach

- Presumptive: "Your child is due for three vaccines today — we'll give them now." Works well to normalize vaccination.
- Participatory: "What do you want to do about vaccines today?" Useful when parents express strong hesitancy.

Example messages

- For parents worried about safety: "Millions of children have safely received this vaccine. Like any medicine, vaccines can have side effects — most are mild and short-lived. Serious reactions are very rare and monitored closely."
- For young adults about HPV: "This vaccine prevents cancers caused by HPV. It works best if given before exposure — that's why we recommend it at 11–12 years."
- For communities with low trust: "We want to hear your concerns. Let's talk with community leaders and local health workers to answer questions openly."

Countering Misinformation — Practical Tactics

- *Don't amplify a false claim unnecessarily.* If you must debunk, lead with the fact, then briefly explain the myth and why it's incorrect.
- *Use prebunking/ inoculation techniques*. Warn people ahead of exposure that they might see manipulative arguments and give them the tools to spot them.
- *Provide simple factual alternatives*. Replace the myth with a short fact-based message.
- *Visual and narrative corrections*. Graphics and stories can be more persuasive than text.
- *Engage platforms*. Collaborate with social media platforms to flag misinformation and promote authoritative sources.
- *Correct influential nodes*. Target people or pages that amplify misinformation—engage them respectfully or provide correct information.

Measurement and Evaluation

Monitoring and evaluation should be built into communication strategies:

- Process indicators: number of community meetings, materials distributed, social media engagements.
- Output indicators: changes in knowledge, attitudes, and intentions measured via surveys.
- Outcome indicators: vaccination uptake rates, missed-dose rates, reduction in outbreaks.
- Qualitative feedback: focus groups, interviews to understand barriers.
- A/B testing: on messages and channels to identify what resonates.
- Rapid-cycle evaluation: iterative improvements based on real-time data.

Key point: measure both short-term (attitude change) and long-term (coverage) outcomes.

Ethical Considerations

- Respect for autonomy: provide clear information and avoid coercive tactics unless ethically justified (e.g., to prevent harm).
- Equity: prioritize interventions for marginalized groups to avoid widening disparities.
- Transparency: disclose conflicts of interest and be honest about uncertainties.
- Privacy: protect personal data in reminder systems and digital campaigns.

- Avoid stigmatization: communication should not shame or ostracize those who are unvaccinated.

Organizational Capacity and Training

Successful communication requires investment:

- Train clinicians in communication skills: brief modules on presumptive recommendation and motivational interviewing.
- Employ communication specialists: behavior change experts, social scientists, and community liaisons.
- Create rapid response teams: to monitor rumor trends and coordinate rebuttals.
- Develop ready-to-use materials: modular, adaptable content for different languages and literacy levels.
- Budget for evaluation and community partnerships.

A Simple Algorithm for Designing a Vaccine Communication Campaign

- Define objective — e.g., increase HPV coverage among 11–14-year-olds by 20% in 12 months.
- Map audience segments — identify barriers and motivators per segment.
- Choose channels and messengers — clinical, community, digital, schools.
- Develop core messages — simple, tested, and translated.
- Pilot test — small-scale tests and A/B messaging.
- Scale up — roll out with monitoring dashboards.
- Evaluate — measure process, outputs, outcomes; iterate.
- (Implement this algorithm with local data and stakeholder buy-in.)

Practical Tools and Materials (Examples)

- One-page clinician scripts: short prompts for common parental concerns.
- FAQ sheets in multiple languages with visuals.
- Short testimonial videos featuring local families and health workers.
- Infographics showing risks of disease vs. vaccine side effects in plain proportions (e.g., 1 in X).
- SMS reminder templates and consent forms simplified for low-literacy audiences.
- Community listening guides: how to conduct respectful listening sessions.

Barriers Beyond Communication: Structural Solutions

Some low uptake is not due to poor messaging but structural problems:

- Supply chain breakdowns.
- Clinic hours incompatible with work schedules.
- Cost or administrative barriers.
- Lack of trained vaccinators.

Addressing these requires combined policy and operational solutions alongside communication.

Case Examples (Succinct)

1. **Measles Resurgence in a District (Hypothetical)**

   Problem: Drop in MMR uptake; outbreak among under-5s.

   Approach: Rapid community listening, door-to-door information by trusted community health workers, school vaccination drives, clinician training in presumptive recommendations, local

radio messages featuring parents whose kids were vaccinated. Outcome: Coverage improved; outbreak contained.

2. **HPV Rollout Success (Synthesis of known strategies)**

   Problem: Low adolescent vaccination due to parental concerns about sexuality.

   Approach: Frame as cancer prevention, school-based programs with parental consent packs and short videos, training for school nurses, involvement of religious leaders emphasizing health, targeted reminders. Outcome: Uptake increased and sustained.

3. **COVID-19 Vaccine Campaign (Lessons distilled)**

   Problem: New vaccine, rapid change in guidance, politicization.

   Approach: Transparent risk communication, targeted outreach to underserved communities, mobile clinics, vaccination sites near workplaces, engaging local clinicians and pharmacists, misinformation monitoring. Outcome: Coverage improved in many areas where these tactics were combined.

Common Pitfalls to Avoid

- Lecturing rather than listening.
- Over-reliance on data without emotion or narrative.
- Ignoring local context and cultural norms.
- Using technical language or long statistical explanations.
- Punitive policies without community engagement.
- Delayed response to misinformation.

Future Directions and Research Gaps

- Better understanding of how social networks shape vaccine decisions.
- Rigorous trials comparing messaging approaches across cultures.
- Effective strategies for countering deep-rooted mistrust.
- Ethical use of data-driven micro-targeting for public health.
- Long-term strategies that build resilience to misinformation.

Conclusion

Vaccine hesitancy is a multifaceted challenge that demands combined approaches: respectful communication, structural solutions that improve convenience and access, trusted relationships, community engagement, and evidence-based policy. Clear, empathetic, and tailored communication — led by trusted messengers and reinforced by practical access measures — can move hesitant individuals toward confident decisions. Success requires listening more than telling, measuring impact, adapting fast, and centering equity.

If you're designing a campaign, start with listening, use presumptive recommendations in clinical settings, involve local trusted leaders, and measure both attitudes and vaccination rates. Each context is different; there are no universal scripts, but the principles above provide a practical, ethical, and effective roadmap.

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Adult Vaccination in India: Focus on HPV Vaccination and Beyond

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Introduction

Vaccination is one of the most cost-effective public health strategies, preventing millions of deaths globally every year. While India has achieved substantial success in childhood immunization through the Universal Immunization Programme (UIP), adult vaccination remains largely neglected. This gap leaves adults vulnerable to vaccine-preventable diseases (VPDs), especially in the context of waning immunity, aging populations, and epidemiological shifts. Among adult vaccines, Human Papillomavirus (HPV) vaccination is particularly significant because of its role in preventing cervical cancer—the second most common cancer among Indian women.

This article reviews the current state of adult vaccination in India, focusing on HPV vaccination, barriers to uptake, and strategies to improve coverage, while also outlining other important adult vaccines.

Burden of Vaccine-Preventable Diseases Among Adults in India

Although India has reduced the burden of childhood VPDs, adults remain at risk. For instance:

- HPV and cervical cancer: Nearly 97,000 Indian women are diagnosed with cervical cancer annually, with over 60,000 deaths, accounting for one-fourth of the global burden.
- Influenza: In 2017, India reported nearly 39,000 H1N1 cases and 2,270 deaths.
- Diphtheria and tetanus: India contributed disproportionately high global cases in 2017—60% of diphtheria and 40% of tetanus.
- Other adult outbreaks: Periodic epidemics of hepatitis, measles, and varicella have significantly affected adults.

These figures highlight the urgent need for structured adult immunization.

HPV Vaccination in India

Epidemiology and Significance

HPV types 16 and 18 account for nearly 77% of cervical cancer cases in India. Preventive HPV vaccines—bivalent, quadrivalent, and the indigenous quadrivalent vaccine Cervavac—are highly effective in preventing persistent infections and precancerous lesions.

Current Status

Globally, over 100 countries have introduced HPV vaccines into national programs. In India:

- HPV vaccines are not yet part of UIP, but there are limited state-led programs (Delhi, Sikkim).
- In 2023, the Government of India announced plans to include HPV vaccines in UIP for girls aged 9–14 years, with catch-up programs.
- Cervavac, developed by the Serum Institute of India, is priced at low price, compared to imported vaccines costing , making scale-up feasible.

Barriers

1. Awareness & Hesitancy Only 30% of Indian doctors recommend HPV vaccination. Myths about infertility, safety, and sexual behavior deter uptake.
2. Cost: Although Cervavac is cheaper, cost remains a barrier in low-income families.
3. Sociocultural Factors Stigma around women's reproductive health limits acceptance.
4. Infrastructure: Poor integration of adult vaccines into existing immunization services.

Way Forward

- Integrate HPV vaccines into UIP nationwide
- School-based programs and community outreach for 9–14-year-old girls, with catch-up for older women.
- Public awareness campaigns using mass media, teachers, and healthcare workers to counter myths.
- Affordable supply chains leveraging indigenous production.
- Surveillance and research to monitor impact and safety.

While HPV is central, other vaccines are crucial for adult health, especially among high-risk groups:

1. Influenza vaccine – Recommended annually for older adults, pregnant women, and healthcare workers. Uptake in India is extremely low due to poor awareness.
2. Hepatitis B vaccine – Essential for healthcare workers, adults with chronic illnesses, and pregnant women. Cost and lack of awareness hinder use.
3. Pneumococcal vaccine – Recommended for those above 65 and immunocompromised adults. Rarely implemented in India.
4. Tetanus, diphtheria, pertussis (Td/Tdap) – Only tetanus toxoid in pregnancy is widely used, but Td/Tdap boosters every 10 years are underutilized.
5. Measles, mumps, rubella (MMR) – Important for adults lacking childhood immunization, especially women pre-conception.
6. Varicella & Herpes zoster – Indicated for adults without prior immunity and older adults respectively.
7. Travel vaccines – Typhoid, cholera, yellow fever, and Japanese encephalitis are recommended for specific groups.

Currently, no national adult immunization guideline is implemented. Existing recommendations are fragmented across medical societies like the Indian Medical Association (IMA), Federation of Obstetric and Gynaecological Societies of India (FOGSI), and Indian Society of Nephrology.

Recommendations to Strengthen Adult Vaccination in India

1. National Adult Immunization Policy – Develop and implement life-course immunization guidelines with HPV as a priority.
2. Inclusion in UIP – Gradually expand adult vaccines beyond HPV, especially influenza and hepatitis B for high-risk groups.
3. Awareness Campaigns – Educate public and healthcare providers; dispel myths.
4. Integration into Routine Care– Incorporate vaccination into adult health check-ups and antenatal care.
5. Financial Support – Government subsidies, insurance coverage, and public-private partnerships to reduce cost burden.

6. Digital Tracking – Use platforms like U-WIN for adult vaccination records.

7. Global Best Practices – Adapt Rwanda's community engagement model and Australia's school-based HPV program to the Indian context.

Conclusion

India has an opportunity to transform adult vaccination, starting with HPV. The indigenous Cervavac vaccine, combined with government commitment to include HPV in UIP, provides momentum towards eliminating cervical cancer. Simultaneously, structured policies and awareness campaigns must expand to cover other adult vaccines, ensuring life-course immunization for all Indians. With coordinated efforts, India can reduce the burden of preventable diseases and achieve WHO's cervical cancer elimination goals.

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HPV Vaccination in Adults: Protection against Cancer and Disease

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Introduction

Human Papillomavirus (HPV) is a common sexually transmitted infection that affects millions of people worldwide. While most HPV infections resolve on their own, some types of HPV can lead to serious health problems, including cervical, anal, and oropharyngeal cancers. The development of HPV vaccines has provided a powerful tool in the prevention of these diseases. This article will explore the importance of HPV vaccination in adults, addressing topics such as vaccine efficacy, safety, and public health implications.

Section 1: Understanding HPV

HPV is a group of more than 100 related viruses, with over 40 types transmitted through sexual contact. HPV types are classified as either low-risk or high-risk, depending on their potential to cause cancer. Low-risk HPV types, such as HPV-6 and HPV-11, are associated with genital warts, while high-risk types, such as HPV-16 and HPV-18, are responsible for approximately 70% of cervical cancers and many other HPV-related cancers.

HPV is the most common sexually transmitted infection worldwide, with an estimated 80% of sexually active individuals contracting at least one type of HPV during their lifetime. In India, the prevalence of HPV is estimated to be around 10-15% among women, with HPV-16 and HPV-18 being the most common high-risk types.

HPV-related cancers include cervical, anal, oropharyngeal, penile, and vulvar cancers. Cervical cancer is the second most common cancer among women in India, with over 120,000 new cases diagnosed annually.

Section 2: HPV Vaccine Overview

Two HPV vaccines are currently available: Gardasil 4(quadrivalent),by MSD, Gardasil 9 (Nonavalent) by MSD and Cervavac (quadrivalent), by SIL.

Gardasil 4 , Cervavac protects against HPV types 6, 11, 16, and 18, while Gardasil 9 Nonavalent vaccine protects against HPV types 6,11,16, 18,31,33,45,52,58. Both vaccines are highly effective in preventing HPV-related diseases, with efficacy rates ranging from 90-100% against vaccine-type HPV infections and associated lesions.

The HPV vaccine is typically administered as a three-dose series, with doses given at 0, 2, and 6 months. The vaccine is recommended for individuals aged 11-26 years, although some countries have extended the recommended age range to 45 years.

Current recommendation from FOGSI on HPV Vaccine schedule and dosages as per GCPR 2023

Table 1 FOGSI HPV vaccine recommendations

	Schedule	*Evidence level and grade of recommendation*
Optimal dose	• Two doses 9–14 years at least 6 months apart • Three doses above 15–26 years (0, 1–2 months, 6 months) • Three doses for older women till 45 years Regular screening as per guidelines has to be followed in this age group	Level I, Grade A Level II, Grade B
Reduced dose* A. Two doses WHO SAGE Recommendation B. Alternative single dose (Off label)	• One or two doses for 9–14 years • One or two doses for 15–20 years • Two doses for 21 years and above • Single dose schedule can be used for girls and boys aged 9–20 years	Level II, Grade B Level II, Grade B
Boys	Boys can be vaccinated from 9–26 years • 9–14 years 2 doses 0, 6 months • 15–26 years 3 doses 0, 2, 6 months	Level II, Grade C

*Reduced dose schedule of HPV vaccine awaits Drug Controller General of India (DCGI) approval.

http://www.fogsi.org/fogsi-gcpr-on-prevention-and-management-of-cervical-cancer-june-2023/

HPV vaccines available in India*

- Quadrivalent (MSD, SII)
- Nonavalent (MSD)

*Globally HPV Vaccines have been approved for use across countries for various age groups and genders with specific dose schedules. Please refer the package insert of each HPV vaccine for detailed information.

	Schedule	Level of Evidence
(Females)	• **Two doses** (9–14 years, at least 6 months apart (qHPV) • **Three doses** (9-14 years; 0,2,6 months, (9vHPV) • **Three doses** (15–26 years: 0, 2, 6 months) (qHPV, 9vHPV) • **Three doses** (Older women up to 45 years, qHPV(MSD)	**Level 1 Grade A**
Boys	• qHPV (SII) 9-14 years (2 doses; 0,6 months); 15-26 years; (3 doses;0,2,6 months) • 9vHPV -9 to 15 years (3 doses;0,2,6 months)	Level 2, Grade C

Section 3: HPV Vaccination in Adults

Current guidelines recommend HPV vaccination for adults up to age 26, with some countries recommending vaccination up to age 45. The vaccine is most effective when administered before becoming sexually active, but adults who are already sexually active may still benefit from vaccination. In adults woman, screening has to be advised and preferred over vaccination.

Benefits of HPV vaccination in adults include:

- Cancer prevention: HPV vaccination can prevent up to 70% of cervical cancers and many other HPV-related cancers.
- Herd immunity: Vaccination of adults can contribute to herd immunity, reducing HPV transmission and protecting unvaccinated individuals.

Special considerations for adults include:

- Immunocompromised individuals: HIV-infected individuals and those with weakened immune systems may benefit from HPV vaccination.
- Pregnant women: HPV vaccination is not recommended during pregnancy, although it can be administered postpartum.

Section 4: Addressing Concerns and Misconceptions

Common concerns about HPV vaccination include:

- Safety: HPV vaccines have been extensively tested and shown to be safe, with most side effects being mild (e.g., injection site pain, fever).
- Efficacy: HPV vaccines are highly effective in preventing HPV-related diseases, although they do not provide complete protection against all HPV types.
- Promoting promiscuity: HPV vaccination is intended to prevent cancer and disease, not promote risky behaviour. Education and awareness are crucial in addressing misconceptions and promoting HPV vaccination.

Section 5: Public Health Implications

Global and national HPV vaccination programs have been implemented to reduce HPV-related diseases. In India, the government has launched initiatives to promote HPV vaccination, particularly among adolescent girls.

Impact of HPV vaccination on public health includes:

- Reduced cancer incidence: HPV vaccination can lead to significant reductions in HPV-related cancers.
- Cost savings: HPV vaccination can reduce healthcare costs associated with HPV-related diseases.

Challenges and future directions for HPV vaccination include:

- Increasing vaccination coverage: Efforts are needed to improve vaccination rates, particularly among underserved populations.
- Addressing vaccine hesitancy: Education and awareness campaigns can help address concerns and promote HPV vaccination.

Section 6: Case Studies and Expert Insights

Real-life examples of HPV vaccination impact include:

- Australia's HPV vaccination program has led to significant reductions in HPV-related diseases, including cervical cancer.
- India's HPV vaccination initiatives have shown promise in reducing HPV prevalence among vaccinated populations.

Expert opinions on HPV vaccination in adults emphasize the importance of vaccination in preventing cancer and disease.

Conclusion

HPV vaccination is a crucial tool in the prevention of HPV-related diseases, including cancer. Adults up to age 45 may benefit from vaccination, particularly those who are immunocompromised or at high risk of HPV exposure. Education and awareness are essential in promoting HPV vaccination and addressing concerns. Healthcare providers play a critical role in recommending HPV vaccination and promoting public health.

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This article provides an overview of HPV vaccination in adults, addressing topics such as vaccine efficacy, safety, and public health implications. By promoting HPV vaccination, healthcare providers can contribute to the prevention of HPV-related diseases, including cancer.



Vaccination and the Surgeon

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Vaccination was for a very long time seen as a topic for discussion for Family Physicians and Paediatricians. Adult vaccination has now been established firmly as a critical component of immunity and overcoming certain health risks. However, it is still seen largely as a subject to be dealt with by Family Physicians, Internists and Chest Physicians. This results in missed opportunities to create awareness in certain sections of the general population. In fact, all specialities should have updated knowledge of Adult Vaccination so as to benefit the community by halting the transmission of infectious diseases in addition to preventing the vaccinated person from contracting a potentially serious illness.

As a surgeon, involvement in adult vaccination could be in the

(A) **Personal** domain that affects the discharge of one's duties or results from professional work or

(B) it could be entirely in the **professional** domain.

(A) **Personal vaccination:**

Vaccinating self is an essential preventive measure to protect surgeons and their patients against communicable diseases. Vaccine preventable diseases that should be protected against before undertaking one's professional duties include:

1. Hepatitis B
2. Tetanus (Tdap)
3. Pneumococcal infection
4. Influenza
5. Typhoid
6. Covid 19
7. Measles, Mumps, Rubella (MMR)

1. **Hepatitis B:** Hepatitis B vaccination is now a part of pediatric immunization program in India. Despite taking universal precautions, fingerprick injuries when operating or handling wounds makes a surgeon more prone to contracting Hepatitis B infection.

- Surgeons who have taken their immunization may need to check their anti HBs levels if they are working in high risk situations. If the titres fall below 10 IU/ml, three booster doses may be taken at 0, 1 and 6 months.
- Those who were not immunized against hepatitis B in childhood may take 3 doses at 0, 1 and 6 months. Repeat boosters after 5 years maybe recommended for those working with high risk patients.
- Boosters may be taken at 0,1 and 6 months after the age of 65 years.
- Twin vaccination of Hep A and Hep B can also be taken at 0,1 and 6 months.

2. **Tetanus**:

Tdap is again part of pediatric immunization program. Fingerprick injuries due to contaminated needles very rarely cause tetanus infection. However, it is safer for the surgeon to take a booster

dose of TT. More often, now it is Td (Tetanus and diphtheria), once in 10 years.

3. Pneumococcal vaccination:

- While PPSV (Pneumococcal Polysaccharide Vaccine) is recommended for all adults over 65 years, for Surgeons working with high risk patients, it is safer to take one dose of Pneumococcal conjugate vaccine - PCV13 at present but the new PCV 20 as soon as it is available.
- It is also safe for those with Diabetes and smokers to take the vaccine earlier, after 50.
- At age 65, PCV 23 was earlier recommended. Once PCV 20 is available, the guidelines may change. It will be a single dose of PCV 20.

4. Influenza vaccine:

- Annual shot of Inactivated Influenza Vaccine, preferably quadrivalent, as recommended by guidelines is all the more important – to immunize against getting infection from any patient and to prevent passing on the flu virus to any patient.

5. Typhoid:

- Those at high risk of exposure, such as working in mass gathering situations,with liver disease or cardiac disease should take a dose of conjugated vaccine once in 3 years. Typhoid Conjugate vaccine is to be administered.

6. Covid 19:

- Current Government guidelines about taking Covid booster shots should be followed.
- WHO guidelines recommended annual dose of Covid vaccine to all.
- The guidelines in India recommend 2 doses 4-6 weeks apart for those who have not been vaccinated. An additional booster dose is recommended after 12 months.

7. MMR:

- Measles, Mumps, Rubella vaccine: One dose is recommended to those who have not been previously vaccinated against the same.

(B) Role of the SURGEON in daily practice vis -a- vis vaccination:

In daily surgical practice, SURGEON can advise about vaccination in two kinds of situations:

1. Daily OPD.
2. Post-operatively

Surgical OPD and Vaccination:

1. **Rabies**:

- A surgeon in their OPD very often sees dog/ cat bites. Dog bites wounds are commonly categorised into three types –
- **Category 1:** No exposure

  The animal has only touched or licked intact (unbroken) skin: Immediate and thorough wound washing with soap and water is recommended, but no rabies post-exposure prophylaxis (PEP) is required.
- **Category 2:** Minor exposure

  Nibbling of uncovered skin, minor scratches, or abrasions without any bleeding. A lick on broken skin is also a Category 2 exposure. Immediate and thorough washing of the wound with soap and running water for 10–15 minutes is crucial.

  Anti-rabies vaccine (ARV): The patient must receive a course of the anti-rabies vaccine.

  Rabies Immunoglobulin (RIG): In most cases, RIG is not indicated. However, immunocompromised individuals with

Category 2 exposure should receive RIG.

- **Category 3:** Severe exposure.

  One or more transdermal (piercing the skin) bites or scratches, or contamination of mucous membranes or broken skin with saliva. Any bite by a wild animal is also Considered a Category 3 exposure.

  Risk: This is a severe exposure with the highest risk of rabies.

Treatment:

- Wound care: Thorough wound washing with soap and water is the critical first step.

  Anti-rabies vaccine (ARV): Immediate administration of the rabies vaccine is required. It is given as an intradermal dose on days 0, 3,7,14 and 28.

  Patients are advised not to rub anything on the injection site.

Same brand of vaccine is used for the entire course.

- **Rabies Immunoglobulin (RIG):** This is mandatory for all Category 3 exposures. The RIG is injected directly into and around the wound to provide immediate antibodies.

  The dose of ERIG (Equine Rabies Immunoglobulin) is 40 IU per kg body Weight of patient. The ERIG produced in India contains 300 IU per ml. The dose of the HRIG is 20 IU per kg body weight. HRIG preparation is available in Concentration of 150 IU per ml. HRIG is not easily available. ERIG can be administered as it carries a very small chance of anaphylactic reaction.

  Administration of Rabies Immunoglobulin: The RIG at room temperature is injected in and around wounds avoiding multiple pricks. If the wounds are very large, it may be diluted with sterile normal saline and injected in the wound.

- Tetanus prophylaxis and antibiotics are recommended. Suturing of the wound should be avoided.

- **Bite by rodents:** Exposure to domestic rodents, squirrel, hare and rabbits do Not ordinarily require PEP.

- **Bat rabies:** Bat rabies has not been conclusively proven in India and hence, at Present, exposure to bats does not warrant PEP.

- **Bite by wild animals:** Bite by all wild animals should be treated as category 3 Exposure. All animal bites in forest or in the wild should be treated as category 3 exposure.

- **Observation of the animal:** It is usually 10 days for dogs & cats. Although unvaccinated animals are more likely to transmit rabies, vaccinated animals can also do so if the vaccination of the biting animal was ineffective for any reason. A history of Rabies vaccination in an animal is not always a guarantee that the biting animal is not rabid.

It is advisable to give the complete course of vaccination.

- For those who have been vaccinated before:

  They usually need 2 doses: Day 0 and Day 3

2. Hepatitis A vaccination:

- It is part of childhood vaccination and is given between the ages of 12 – 23 months.

  For adults, it is given as a 2 doses course at 0 and 6 months, only for immuno compromised patients such as HIV +ve, Chronic liver disease.

- It is not to be given when a patient is febrile.

3. **Hepatitis B vaccination**:

It is part of childhood vaccination and is given at birth and months 1 & 6.

- For those adults who have not been vaccinated as a child, 0, 1 & 6 months schedule is to be followed.

Patients at risk who must be vaccinated:

- Healthcare professionals including laboratory and nursing staff, ward staff.
- Healthcare workers, conservancy workers in the public and private sector
- Intravenous drug users
- Household contacts of patients who are Hepatitis B +ve
- Immune compromised individuals such as HIV +ve, HCV +ve, Chronic liver disease, patients on dialysis, diabetics, frequent travelers to high incidence countries
- Adults over 50 years of age in certain high risk situations

Dosage: 0, 1 & 6 months deep intramuscular Recombinant DNA vaccine

When should a surgeon advise a patient to get vaccinated?

Once the patient is well and recovered from the surgery he can get vaccinated as per the dosage schedule.

4. **Influenza vaccine:**

- All adult patients should be advised Influenza vaccine shot annually. All patients coming to the OPD should be counselled about taking the influenza vaccine.
- It is the standard Injection Influenza vaccine (IIV) – tri or quadrivalent strains. It is also safe in pregnancy. All patients should be advised to take the vaccine.
- Live Attenuated Influenza vaccine (LAIV) is available for intranasal administration. It is contraindicated in pregnant and immunocompromised patients and to be avoided in age > 50 yrs.

To ensure optimal vaccine effectiveness against prevailing strains in both the northern and southern hemispheres, the composition of influenza vaccines is revised twice a year and adjusted to the strains of circulating influenza viruses, as obtained by the WHO Global Influenza Surveillance and Response System (GISRS).

India's climate allows for year-round circulation of influenza.

This means that depending on the time of year, either northern or southern hemisphere vaccines can be recommended to provide the most up-to-date protection against circulating strains.

- In the northernmost part of India, peak influenza circulation occurs during the winter months. Therefore, vaccination during October–November using the Northern Hemisphere vaccine formulation may be appropriate.
- Cities in India located north of 30°N latitude can continue vaccination in the winter, but those south of 30°N, including New Delhi, should consider vaccination in May–June. The Southern hemisphere vaccine is thus a key component of annual influenza vaccination strategies in the country.

5. **Tetanus**:

Tetanus is part of childhood vaccination schedule as part of Dtap. (Previously DPT).

- Tetanus booster shots are recommended every 10 years for adults to maintain protection. After the initial series of tetanus shots, which are given in childhood, a booster is advised every decade to keep immunity strong.

- Tetanus injection was prescribed before every surgery in the past. Today, all patients undergoing surgery or visiting the OPD should be asked about their last tetanus booster shot. If they have taken it in the recent past, they need not take a fresh dose. If they do not remember when they have taken last, it is better to give them one shot.

6. **Pneumococcal Vaccination:**

- All patients 65 and above should be enquired about their pneumococcal vaccination status. They should be encouraged to take the PPSV23 vaccine. The new PCV (Pneumococcal Conjugate vaccine) may be preferred when available.
- Immune compromised patients, diabetic patients visiting the OPD, patients with chronic liver disease, Respiratory illnesses may all be encouraged to take the pneumococcal vaccine. Those below the age of 65 should also be encouraged to take the vaccine when they have the above comorbidities. A patient who has taken 1 dose of PCV 13 before the age of 50 can take the PPSV 23 shot after reaching 65. PCV 20 may be the new option.
- PPSV maybe repeated after 10 years in selected patients over 65 who have already taken one dose when they reached 65.

7. **HPV: Human Papilloma Virus Vaccination:**

The HPV vaccine prevents infections from human papillomavirus (HPV), a common virus that can cause certain cancers and genital warts.

- Patients visiting the OPD maybe advised about the vaccine for themselves if they fall in the age group or for their family members who are of the appropriate age.
- It is recommended for routine vaccination at ages 11 or 12, but can be started as early as age 9, and is approved for individuals up to age 45. The vaccine is given as a series of two or three doses.
- People younger than age 15 typically need two doses, while those aged 15 to 45 need three. The doses are given over a period of six months. It is contraindicated in pregnancy.

8. **Shingles Vaccination:**

- Shingles vaccine is recommended for adults aged 50 and older (or 19+ with weakened immune systems). It is a two-dose injection that is highly effective at preventing shingles and its complications like long-term nerve pain. It is recommended for adults 50 and older. The vaccine is given as two doses, separated by two to six months.
- All patients over 50 visiting the OPD should be counselled about this vaccine to avoid morbidity related to herpes zoster.

Problems faced while prescribing vaccination in the OPD:

1. Certain vaccinations like rabies and tetanus are very easily accepted by patients as they see them as life saving. Most of the times these vaccines are given due to certain specific conditions or situations, hence no questions are asked about their administration or efficacy.
2. Preventive vaccination such as Hepatitis B, Pneumococcal, Shingles and Influenza certainly faces a lot of questions regarding their usefulness and cost. Influenza is being increasingly accepted by many patients as an annual ritual. Although not strictly falling In the surgeons purview, the role of these vaccinations to prevent future morbidity should be explained to all patients as part of community service.

Vaccination advice by the surgeon in operative and post operative situations:

1. **Splenectomy**: this can be either traumatic or therapeutic.

(a) **Traumatic** is an unplanned situation and the patient is otherwise immunocompetent before the surgery.

- Postoperatively the patient has to be advised about Pneumococcal vaccination – 1 or 2 doses depending upon the age of the patient, Annual shots of Influenza vaccine, Meningococcal vaccine and Hib-Haemophilus Influenza vaccine.
- Meningococcal vaccine: This includes vaccines against meningococcal serogroups A, C, W, and Y (MenACWY) and meningococcal B (MenB). A booster dose of MenACWY is needed every five years. A booster for MenB is recommended one year after the primary series, with subsequent boosters every 2-3 years.
- Haemophilus Influenzae Type B: A conjugate vaccine: One dose is required 2 weeks after splenectomy.

(b) **Therapeutic Splenectomy/ Functional Asplenia**:

- All immunizations listed above have to be done 2 weeks prior to any splenectomy that is planned. The patients have to be counselled about booster doses of certain vaccines such as influenza and Meningococcal vaccine.

2. **Organ Transplantation**:

(a) **Recipient**: The patient should have received all routine vaccines as per schedule. In patients on the transplant list, the following course of immunization must be done: Pneumococcal PCV 20, Influenza, Hepatitis A & B, Meningococcal, HPV, Tdap, Shingles (if age appropriate), Typhoid. MMR vaccination should be completed at least 4 weeks before the transplant.

(b) **Donor**: The donor should have taken all the routine vaccines as per immunization schedule. In addition, Pneumococcal, Influenza, Hepatitis B vaccination must be done. Tdap as per schedule, once in 10 years.

3. **Immunocompromised Patients Undergoing Surgery**:

- Before undergoing any major procedure, HIV positive or other immunodeficient patients should have taken Influenza, Pneumococcal, Typhoid, Tdap, Hepatitis B, MMR vaccines. Shingles vaccine if age appropriate. Live vaccines are to be avoided in immunodeficient patients.

4. **Cancer surgery & Haemopoietic Stem Cell Transplantation**:

- Patients should receive Pneumococcal, Hepatitis B, Influenza, Hib, Tdap, HPV, MMR vaccines prior to the surgery/ procedure.
- For those receiving bone marrow transplant, a full re immunization should be done 1 year after the procedure.
- Vaccination timing for cancer patients depends on the type of treatment and vaccine. Ideally, inactivated vaccines are given at least two weeks before chemotherapy or radiation, and live vaccines at least four weeks before. For surgery, wait for a few days to two weeks after the procedure to avoid confusion between vaccine and surgery symptoms, and delay for 6 months post-treatment with anti-B-cell therapies.
- Inactivated vaccines can be given during cancer treatment, but the immune response may be suboptimal. Revaccination after treatment may be necessary.

Co- administration of vaccines:

- Coadministration of vaccines in children is a long standing practice that has proven to be safe and effective in improving the efficiency of vaccine administration.
- In adult patients too, it is safe and prevents multiple visits thereby reducing the number of defaulters. The inactivated vaccines such as Pneumococcal, Shingles and Influenza have to be administered at different sites.
- If live vaccines such as MMR, LAIV and Yellow fever are to be administered, they should be done on the same day or else spaced at 28 - 30 days.

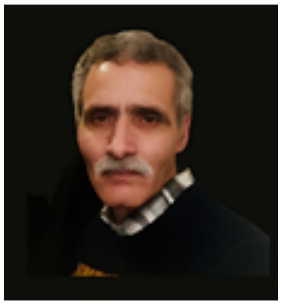
Conclusion:

National Vaccination Day, also known as National Immunisation Day, is observed on March 16 in India to commemorate the first oral polio vaccine dose administered on that day in 1995: It serves as a reminder of the power of immunization to protect both individuals and communities, especially vulnerable populations, and contributes to herd immunity.

A surgeon should also invest in this Public Health measure that gives very high returns to the community.

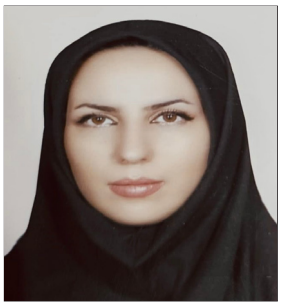
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"Addressing Stigma, Attitudes, and Behavioral Barriers in HPV Vaccination: A Narrative Review and Conceptual Framework in Health Psychology"

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Abstract

Human papillomavirus (HPV) vaccination is a proven preventive intervention against cervical and other HPV-related cancers. Despite strong evidence supporting its safety and effectiveness, global coverage remains well below the targets set by the World Health Organization (WHO). This narrative review synthesizes findings from diverse international studies, with an emphasis on psychosocial and cultural determinants of HPV vaccine uptake. Stigma, misconceptions, religious beliefs, and behavioral barriers such as fear and access difficulties are consistently identified as major drivers of vaccine hesitancy. Drawing on health psychology theories, a conceptual framework is proposed that explains how these factors interact. Evidence-based interventions—including education, motivational interviewing, normalization strategies, and digital health campaigns—are analyzed, with country-specific examples to highlight practical applications. The discussion underscores the need for integrating psychological perspectives into clinical and policy frameworks. Limitations of the present review are acknowledged, and recommendations for future research are provided.

1. Introduction

HPV is one of the most prevalent sexually transmitted infections globally, strongly linked to cervical cancer, anal cancer, and oropharyngeal cancers. According to **Arbyn et al. (2020)**, HPV types 16 and 18 account for nearly 70% of cervical cancer cases. Cervical cancer remains a leading cause of cancer-related mortality in low- and middle-income countries (LMICs), while in high-income countries, HPV-related oropharyngeal cancers, particularly in men, are on the rise (**Pytynia et al., 2014**).

Vaccination has demonstrated extraordinary effectiveness in countries where coverage is high. For instance, long-term studies in Australia and the UK have documented reductions not only in HPV prevalence but also in precancerous lesions and genital warts (**Shapiro, 2022**). On this basis, the WHO declared HPV vaccination as a key pillar of its strategy to eliminate cervical cancer by the end of this century (**WHO, 2024**).

Despite this progress, global vaccine uptake remains suboptimal. **Branda et al. (2024)** highlight that many countries are still far from achieving the WHO's target of 90% vaccination coverage among adolescent girls. Beyond supply and infrastructure, hesitancy is driven by psychological and social factors such as stigma, cultural norms, misinformation, and lack of trust (**Ebrahimi et al., 2023**).

This paper provides a narrative review of stigma, attitudes, and behavioral barriers to HPV vaccination across countries. It also applies health psychology theories, proposes a conceptual framework, and explores psychological interventions to guide clinicians and policymakers.

2. Literature Review

2.1 Stigma and HPV Vaccination

Research consistently identifies stigma as a primary barrier to HPV vaccination. In the United States, **Peterson et al. (2021)** found that many women associated HPV with promiscuity, leading

to embarrassment about vaccination. Similarly, in the UK, **Waller et al. (2007)** reported that HPV was perceived as a "dirty" infection, reinforcing social stigma.

In Japan, concerns about vaccine safety magnified stigma. Following widespread media reports of adverse effects, vaccination coverage plummeted, and HPV became further linked to sexual immorality (**de Figueiredo et al., 2020**). In Mexico, **León-Maldonado et al. (2025)** demonstrated that women often lacked spousal support, a factor rooted in cultural norms about family and sexuality. Among men who have sex with men (MSM), **Naidu and Polonijo (2023)** showed that fears of disclosure and anticipated healthcare discrimination discouraged uptake.

2.2 Attitudes and Beliefs

Parental attitudes significantly influence vaccine uptake. In the US, **Schuler et al. (2013)** documented fears about infertility and vaccine safety, while **McKenzie et al. (2023)** observed heightened hesitancy among parents of boys.

Cultural and religious beliefs further shape decisions. In Malaysia, **Wong et al. (2020)** reported that parents worried vaccination might encourage early sexual activity. Among East African immigrants in the US, **Ko et al. (2019)** found that religious conservatism and reliance on traditional medicine reduced willingness to vaccinate. These findings underscore how HPV vaccination decisions are embedded in cultural and value-based frameworks.

2.3 Behavioral Barriers

Even when stigma and attitudes are not primary obstacles, practical barriers persist. **Chen et al. (2023)** found that fear of side effects and logistical difficulties such as clinic distance deterred families in underserved areas. In addition, in migrant communities, lack of language knowledge makes a lot of problems. Migrants often faced language barriers that limiting access to reliable information. On the other hand, in Malaysia, high vaccine costs discouraged parents (**Wong et al., 2020**), while in LMICs, supply chain issues further restricted availability.

2.4 Comparative Insights

Table 1. Cross-country comparison of barriers to HPV vaccination

Country	Key Findings	Type of Barrier	Source
USA	HPV linked to promiscuity; infertility fears	Stigma, Misbeliefs	Peterson et al. (2021); Schuler et al. (2013)
UK	HPV perceived as "dirty infection"	Stigma	Waller et al. (2007)
Japan	Safety controversy + sexual stigma	Stigma, Attitudinal	de Figueiredo et al. (2020)
Mexico	Lack of spousal support	Cultural/Relational	León-Maldonado et al. (2025)
Malaysia	Fear of early sexual activity, high cost	Attitudinal, Economic	Wong et al. (2020)
East African immigrants (US)	Religious conservatism, traditional medicine reliance	Cultural, Religious	Ko et al. (2019)
MSM (Global)	Fear of disclosure, discrimination	Stigma, Behavioral	Naidu & Polonijo (2023)

Narrative summary:

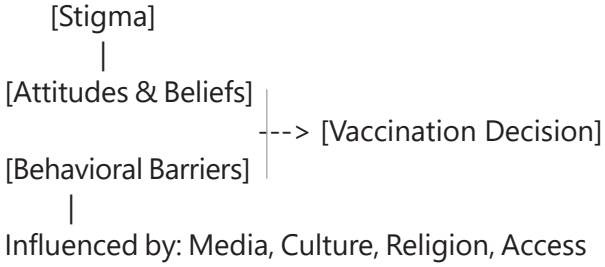
This comparative overview demonstrates that while stigma is a universal factor, its expression differs across contexts—from moral stigma in the US and UK to safety controversies in Japan, relational dynamics in Mexico, and religious concerns among immigrant groups. Behavioral and economic barriers, such as access and cost, are particularly prominent in LMICs. This underscores the necessity of culturally sensitive, context-specific interventions.

3. Theoretical Models in Health Psychology

- Health Belief Model (HBM): is a psychological framework explaining individual health behaviors based on their beliefs about illness and health actions. It proposes that people are more likely to take preventative health actions if they believe they are susceptible to a serious health threat and that the benefits of the action outweigh its barriers, especially if they feel confident (self-efficacy) in their ability to succeed and are prompted by a cue to action. Studies demonstrate that perceived susceptibility and severity predict vaccine acceptance, while perceived barriers undermine intentions (Smith et al., 2017).
- **Theory of Planned Behavior (TPB):** This theory is a psychological model that predicts behavior by focusing on an individual's intentions, which are shaped by three key factors: their attitude toward the behavior (positive or negative feelings), subjective norms (perceived social pressure from others), and perceived behavioral control (belief in one's ability to perform the behavior). The theory posits that a stronger intention to perform a behavior leads to a greater likelihood of that behavior being performed. Social norms and parental attitudes strongly shape adolescents' intentions. **McKenzie et al. (2023)** found that parental disapproval was the strongest predictor of refusal.
- Social Cognitive Theory (SCT): This theory developed by Albert Bandura, describes how individuals learn by observing others and the consequences of their actions within their social environment. It is based on the principle of Reciprocal Determinism, which states that personal factors (like beliefs and self-efficacy), environmental factors, and behavior all interact dynamically and influence each other. Key constructs include self-efficacy (belief in one's own ability), observational learning (learning by watching others), outcome expectations (beliefs about consequences), and self-regulation (ability to manage one's own behavior). Role modeling by healthcare providers and influencers normalizes vaccination, Social reinforcement and observational learning play key roles in vaccine uptake (Bandura, 1986; Wong et al., 2020).

4. Conceptual Framework

Figure 1. Conceptual framework of stigma, attitudes, behavioral barriers, and systemic influences on HPV vaccination.



This framework integrates psychosocial determinants and highlights opportunities for interventions.

5. Psychological and Behavioral Interventions

Interventions must address multiple levels:

- **Education and Campaigns:**In this level Irland is a good example. Ireland's national campaign successfully rebuilt trust after a major vaccine scare (**Corcoran et al., 2018**). Also, in Japan, targeted public communication gradually improved parental confidence (**Namba et al., 2023**).

- **Motivational Interviewing (MI):** Studies show MI helps hesitant parents express concerns and reconsider vaccination (**Brewer et al., 2017**).
- **Normalization Strategies:** Framing HPV vaccination as a routine adolescent vaccine decreases stigma (**McKenzie et al., 2023**).
- **Cultural Engagement:** In Turkey, working with religious leaders reduced community resistance (**Kisa & Kisa, 2024**).
- **School-Based Programs:** In Malaysia, school-based vaccination improved access and equity (**Woo & Razali, 2012**).
- **Digital Health Interventions:** Social media campaigns that counter misinformation, provide fact-checked resources, and use influencers have shown promise in boosting vaccine uptake (**Betsch et al., 2020**).

6. Recommendations for Policy and Practice

There is some recommendation that we think can be useful for policymakers to help to achieving to 90% vaccination goal. For example:

1. Integrate HPV vaccination into national immunization schedules.
2. Train healthcare providers in culturally sensitive communication.
3. Collaborate with religious and community leaders.
4. Develop digital strategies to counter misinformation.
5. Prioritize school-based vaccination to achieve equity.

7. Discussion and Clinical Implications

The evidence highlights HPV vaccination as both a biomedical and psychosocial challenge. Addressing stigma, cultural barriers, and misinformation is as essential as ensuring vaccine supply. Clinicians should adopt empathetic communication, normalize vaccination in routine adolescent care, and involve both parents—especially fathers—in decision-making.

For policymakers, a one-size-fits-all approach is insufficient. Successful strategies must adapt to local sociocultural dynamics. In LMICs, economic and logistical barriers must be prioritized, while in high-income countries, emphasis should be placed on combating misinformation and stigma. Integrating psychological frameworks into national policies can enhance trust and acceptance.

8. Limitations

This paper is a narrative rather than systematic review, which introduces selection bias. Some geographic regions and minority populations are underrepresented. Furthermore, reliance on published English-language studies may omit relevant local perspectives.

9. Future Research Directions

Future studies should:

1. **Cross-cultural comparisons:** Conduct comparative studies to examine how stigma and beliefs vary across cultural and religious groups.
2. **Role of fathers and male caregivers:** Investigate paternal influence in HPV vaccination decisions, particularly in patriarchal societies.
3. **Digital health and misinformation:** Explore the effectiveness of social media–based interventions in countering misinformation.
4. **Longitudinal studies:** Assess the long-term impact of motivational interviewing and digital health campaigns.
5. **Cost-effectiveness:** Evaluate the cost-effectiveness of psychosocial interventions alongside biomedical programs.
6. **Equity-focused interventions:** Examine how school-based and community-driven programs reduce disparities in LMICs.

10. Conclusion

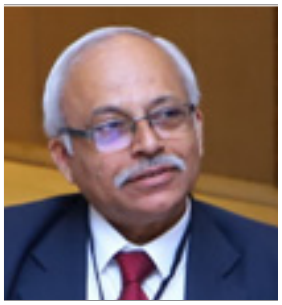
HPV vaccination is a powerful tool in cancer prevention, yet global uptake remains suboptimal.

Stigma, misconceptions, and cultural resistance significantly hinder acceptance. By applying psychological theories, this paper has shown how these factors interact and how targeted interventions can improve uptake. To achieve WHO's elimination goals, policymakers and clinicians must adopt culturally tailored, psychologically informed approaches that normalize vaccination, counter misinformation, and ensure equitable access.

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The HPV Vaccine: Playing the Devil's Advocate

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Last year, a struggling starlet and model, Poonam Pandey had her one minute of fame. The news of her death from cervical cancer at the young age of 32 years sent shock waves. Couple of days later she rose like a phoenix from "death" creating a sensation. What was the method in this madness? According to her she enacted this drama for a noble cause - to draw attention to cervical cancer which affects a large number or women in the country. Her stunt was similar to the mother coaxing her child to go to sleep else "Gabbar" the dacoit will come to borrow the phrase from the popular Hindi movie Sholay. Beta so ja nahintho "Gabbar aa jayega!" She perhaps wanted to shock all girls into taking the Human Papilloma Virus (HPV) vaccine else they may die from cervical cancer. Vaccine le le, nahin to "Cervical Cancer" aa jayega!"

For many this frivolity left a bad taste in the mouth. Was it a coincidence that a day before the news of her death, on 01 February 2024 the Union Budget announced its intention to push for preventive vaccination against cervical cancer for girls aged 9 to 14 years. Keep in mind that the average age of getting cervical cancer is 50 years,[1] about 4 decades later. Will the promise of the vaccine to prevent cervical cancer hold good 4 decades down the line? These are some serious questions which cannot be wished away by frivolous stunts. We need solid evidence. Propaganda is short-lived and often backfires. What is the current evidence?

Nobody knows for sure but the concept of prevention by vaccination is based on the fact that one of the causes for cervical cancer is the HPV virus which has over 200 types. Types 16 & 18 have been associated with precancerous lesions of cervical cancer, while types 6 & 11 are associated with genital warts. Other HPV strains linked to cervical cancer are,31, 33, 35, 39, 45, 51, 52, 56, 58, and 59.[2]

The natural history of these precancerous lesions does not follow a straight path. The majority of these lesions is self limiting and clear without treatment. Therefore using these proxy markers instead of the main outcome, i.e. cervical cancer can overestimate the efficacy of the HPV vaccines. Most trials have followed up the vaccine recipients for less than a decade using surrogate markers such as clearance of HPV virus and antibody response. All these endpoints are a poor substitute for predicting cervical cancer decades later. Another limitation is that the measure of efficacy of most HPV vaccine trials has been the relative risk instead of the attributable risk which depends on the prevalence of HPV virus infection in a particular population which has shown wide variations from 2% to 50%, being highest in commercial sex workers and people with HIV/AIDS.

For a detailed critique of the available evidence, one should refer to a peer reviewed paper by Rees and colleagues in the prestigious Journal of the Royal Society of Medicine, titled, "Will HPV vaccination prevent cervical cancer?" The authors conclude there is great uncertainty whether the vaccine prevents cervical cancer.[3]

Another disconcerting feature of the HPV virus is that it has 200 types and vaccine covers only few types. We do not know whether vaccine pressure can cause other strains not covered by the vaccine

to become dominant becoming a risk for cervical cancer. Because of these uncertainties, even the manufacturers of the vaccines recommend that even after taking the HPV vaccine women should keep undergoing periodic screening with PAP smear for early detection of cervical cancer.

We really do need more serious scientists doing serious research to resolve these issues instead of film stars and public figures including "celebrity doctors" promoting vaccines in the manner of advertisements for fast foods. Fast foods have their downside leading to obesity and a number of chronic diseases. Similarly vaccines promoted like fast foods without careful research can have its downside. Some efforts are required to promote good health including safe sex to prevent cervical cancer. HPV virus is sexually transmitted just like other sexually transmitted diseases such as syphilis, gonorrhoea, HIV/AIDS, Hepatitis B, Hepatitis C and others.

The risk factors for HPV infection and cervical cancers are multiple sex partners, unprotected sex, poor genital hygiene and repeated pregnancies. A holistic approach to prevent all sexually transmitted diseases including HPV infection would be to educate young boys and girls about responsible and safe sexual behaviour during their lifetime. Would getting a HPV vaccine protect against HIV for which there is no vaccine? One can use this scientific information to stress among the youth the need for responsible sexual behavior.

A recent paper shows that the trend of cervical cancer is declining in India for the past three decades.[4] The AIDS pandemic during this period is likely to have created awareness about safe sex in addition to better living standards including genital hygiene all adding up to the steep fall in cervical cancer in many states of India. Shouldn't we wait and watch the declining trend further instead of including the HPV vaccine in the UIP in midst of so many uncertainties? Or do we by pushing mass vaccination muddy the waters which will destroy all evidence by elimination of the control group which is essential to establish the efficacy or harm, if any, of the HPV vaccine.

The latter assumes significance in view of the chequered history of the HPV trials in India. The Bill and Melinda Gates Foundation through its Program for Appropriate Technology in Health (PATH) conducted trials among vulnerable tribal girls in Andhra Pradesh and Gujarat from 2009 to 2010. To bypass ethical issues the investigators labelled the trials as observational instead of a clinical trial. During the trial a few girls died due to the HPV vaccine. The girls were residents of a government hostel for tribal children. The investigators including scientists from the ICMR denied that the deaths were due to the vaccine.

As a result of public outcry, the trial was halted. The tragedy was investigated by a Joint Parliamentary Committee. The Committee tabled its report - the 72nd Report titled, "Alleged Irregularities in the conduct of studies using human papilloma virus vaccine (HPV) vaccine," on August 30, 2013. to both houses of parliament The committee found many major irregularities and indicted the Gates Foundation and the ICMR and the researchers for dereliction of duty.[5,6] Unfortunately, pubic memory seems to be short. Professionals like doctors promoting the

vaccine unconditionally also seem to be unaware of the uncertain evidence of efficacy and the botched up trials leading to deaths of vulnerable tribal girls. Glitz and glamour of high pressure marketing is poised to brush these uncomfortable truths under the carpet.

Given the uncertainties, it would be premature to include the HPV vaccine in the Universal Immunization Program, at huge cost and resources, with the taxpayer's money. Let it be in the market for those who want to go for it. This strategy will also generate a control group for long term appraisal of efficacy and safety. Universal rollout on the other hand will erase the control group and we may never have the answers to these uncertainties.

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Early Vaccination with Universal Screening: A Double-Pronged Approach to Beat Cervical Cancer



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Abstract

Cervical cancer remains one of the leading causes of cancer-related morbidity and mortality among women in developing countries, despite being one of the most preventable cancers. Persistent infection with high-risk strains of Human Papillomavirus (HPV) is the principal cause. While HPV vaccination provides primary prevention, universal cervical cancer screening ensures early detection of pre-malignant and malignant lesions — a synergistic approach that can drastically reduce disease burden. This review highlights the rationale, scientific evidence, and public health implications of implementing an early vaccination strategy in conjunction with universal screening to achieve the WHO's goal of eliminating cervical cancer as a public health problem by 2030.

Introduction

Cervical cancer represents a major public health challenge, particularly in low- and middle-income countries (LMICs) such as India, which contributes nearly one-fifth of the global disease burden. According to the **Global Cancer Observatory (GLOBOCAN 2022)**, cervical cancer ranks as the **second most common cancer among Indian women**, with an estimated **1.23 lakh new cases and over 77,000 deaths annually**. Persistent infection with high-risk HPV types — mainly **HPV 16 and 18** — accounts for approximately 70% of cervical cancer cases worldwide.

Despite being preventable, the slow progress in implementing widespread HPV vaccination and organized screening programs has delayed elimination efforts. A **double-pronged approach** — early HPV vaccination for preadolescent girls and universal screening for adult women — holds the key to controlling and eventually eradicating this disease.

Burden of Disease and Global Initiatives

The World Health Organization (WHO) launched the **Global Strategy for Cervical Cancer Elimination (2020)**, targeting the "90–70–90" framework by 2030:

- 90% of girls fully vaccinated with the HPV vaccine by age 15,
- 70% of women screened using a high-performance test at ages 35 and 45, and
- 90% of women with cervical disease receiving appropriate management.

In India, the disease primarily affects women from rural and socioeconomically disadvantaged backgrounds. Limited access to screening, poor awareness, stigma, and infrastructural barriers remain significant obstacles.

Rationale for Early HPV Vaccination

Vaccination before the onset of sexual activity provides the best protection. The **WHO**, **CDC**, and **Government of India** recommend starting HPV vaccination between **9–14 years**, ideally around **9–11 years**.

Immunogenic and Epidemiological Evidence

- Immunogenicity studies show that girls vaccinated at 9–12 years generate **2–3**

times higher antibody titres compared to those vaccinated in late adolescence or adulthood.

- Long-term follow-up studies indicate **sustained protection for at least 12 years**, with no evidence of waning immunity.
- Early vaccination ensures **pre-exposure prophylaxis**, preventing initial infection and thus interrupting the chain leading to cervical intraepithelial neoplasia (CIN) and cancer.

Current HPV Vaccines in India

India's current HPV vaccination program uses the **quadrivalent (Gardasil)** and **nonavalent (Gardasil-9)** vaccines, as well as the **indigenously developed quadrivalent vaccine Cervavac (by Serum Institute of India)** — launched in 2023 under the Government of India's "Make in India" initiative. **Cervarix**(the bivalent vaccine) has been discontinued in the Indian market and is no longer available.

Recommended Schedules:

- **Ages 9–14 years:** 2 doses (0 and 6 months)
- **Ages 15 years and above:** 3 doses (0, 1–2, and 6 months)

Public Health and Sociocultural Benefits

- School-based vaccination programs have been proven most effective in achieving high coverage.
- Early vaccination, framed as a "cancer prevention vaccine," reduces stigma associated with sexual activity.
- Parental acceptance is highest when linked with cancer prevention messaging and supported by physician advocacy.

Universal Screening: The Second Line of Defense

Even with widespread vaccination, **screening remains essential** because vaccination does not protect against all oncogenic HPV types and millions of women remain unvaccinated.

Screening Methods

1. **HPV DNA Testing:** Now recommended as the preferred primary screening test due to its higher sensitivity and objectivity compared to cytology.
2. **Pap Smear (Cytology):** Detects cellular changes but has lower sensitivity; best used where molecular testing is unavailable.
3. **Visual Inspection with Acetic Acid (VIA):** A cost-effective option in low-resource settings, suitable for community-based programs.

Screening Guidelines

- **WHO (2021):** Primary HPV testing every 5 years for women aged 30–49 years.
- **Government of India:** Opportunistic screening for women aged 30–65 years using VIA, Pap, or HPV DNA where available.
- **American Cancer Society (ACS, 2020):** Start screening at age 25 with HPV testing every 5 years (preferred).

Integration with Vaccination

Vaccination prevents future disease, while screening detects existing lesions — making the combination indispensable. In countries like Australia and the UK, where both strategies were implemented early, cervical cancer incidence has dropped by more than 70%.

The Double-Pronged Approach: Synergy and Impact

The dual strategy of **early HPV vaccination plus universal screening** is complementary.

- **Vaccination** reduces infection and transmission, thereby lowering the future disease pool.
- **Screening** ensures early detection and treatment in currently at-risk populations.

Mathematical models predict that countries adopting both strategies can **eliminate cervical cancer within one to two generations**. Australia is projected to become the first country to eradicate cervical cancer by **2035** following this approach.

Implementation Challenges in India

1. **Awareness and Stigma:** Cultural misconceptions associate HPV vaccination with sexual activity, hindering acceptance.
2. **Infrastructure and Logistics:** Rural areas lack organized screening facilities and cold-chain support for vaccines.
3. **Cost and Accessibility:** While Cervavac has made vaccines affordable, further subsidization and inclusion in national immunization schedules are needed.
4. **Training and Quality Control:** Uniform training of healthcare workers for VIA and HPV testing is essential to ensure accuracy.
5. **Data and Surveillance:** Establishing a national HPV registry and robust cancer screening data system is vital for monitoring progress.

Policy Recommendations

1. **Inclusion of HPV vaccine in the Universal Immunization Programme (UIP)** nationwide.
2. **School-based vaccination drives** with parental consent, ensuring equitable access.
3. **Community education campaigns** emphasizing cancer prevention rather than sexual transmission.
4. **Transition from cytology to HPV DNA-based screening** for improved sensitivity and early detection.
5. **Integration of vaccination and screening data** through digital health platforms for longitudinal monitoring.
6. **Public–private partnerships** to strengthen capacity, outreach, and awareness.

Future Directions

- **Single-dose vaccination schedules**, endorsed by WHO (2022), could improve compliance and reduce costs.
- **Self-sampling for HPV testing** may increase screening participation among underserved women.
- **AI-assisted cytology and molecular diagnostics** could enhance accuracy and scalability.
- **Digital awareness campaigns** leveraging social media and community influencers can address vaccine hesitancy.

Conclusion

Cervical cancer is preventable, yet thousands of women continue to die from it every year — primarily due to gaps in prevention and screening. The combination of **early HPV vaccination and universal screening** offers a scientifically sound, economically viable, and socially acceptable pathway to eliminating cervical cancer. For India, this dual approach, supported by strong political will, healthcare infrastructure, and public education, can transform the future landscape of women's health and move the nation closer to the WHO 2030 elimination goals.

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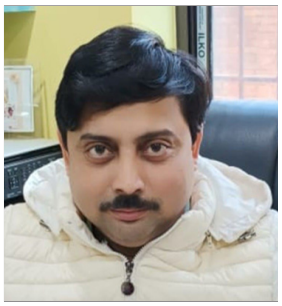
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Vaccine Hesitancy the mindset to set up effective Adult Vaccination with focus on HPV vaccination

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Vaccine Hesitancy with Adult Vaccination

Vaccine hesitancy refers to the delay in acceptance or refusal of vaccines despite availability of vaccination services. While it is often discussed in the context of childhood immunization, **vaccine hesitancy among adults** is an emerging public health concern that can undermine disease prevention efforts.[1]

1. Understanding Adult Vaccine Hesitancy

Adult vaccination covers a range of immunizations — such as influenza, pneumococcal, hepatitis B, HPV, COVID-19, and tetanus boosters — aimed at preventing morbidity and mortality in adults. However, uptake remains suboptimal due to hesitancy arising from multiple factors.[2]

2. Causes of Vaccine Hesitancy in Adults

a. Cognitive and Psychological Factors

- **Risk perception:** Many adults underestimate their susceptibility to infectious diseases.
- **Misinformation:** Online misinformation and myths about vaccine safety (e.g., fertility, chronic illness) create doubt.
- **Trust deficit:** Lack of trust in pharmaceutical companies, government agencies, or new vaccine technologies.

b. Sociocultural Factors

- **Beliefs and values:** Religious or cultural beliefs opposing medical interventions.
- **Peer and social influence:** Negative experiences or opinions within social circles can discourage vaccination.

c. Structural and Systemic Factors

- **Accessibility issues:** Inconvenient clinic hours, cost, or lack of awareness of vaccine availability.
- **Healthcare provider influence:** Absence of strong recommendations from healthcare professionals significantly reduces vaccine uptake.

3. Impact of Adult Vaccine Hesitancy

- **Resurgence of preventable diseases:** Outbreaks of influenza, measles, or pertussis among unvaccinated adults.
- **Higher morbidity and mortality:** Especially among elderly and immunocompromised individuals.
- **Economic burden:** Increased healthcare costs due to preventable illness and lost productivity.

4. Strategies to Overcome Adult Vaccine Hesitancy

a. Education and Communication

- Use **clear, evidence-based communication** addressing safety, efficacy, and benefits.
- Counter **misinformation on social media** through verified sources.

- Employ **community influencers** or local leaders to build trust.

b. Provider-Based Interventions

- Encourage **strong, routine vaccine recommendations** from physicians and nurses.
- Integrate vaccination reminders and counseling into routine adult check-ups.

c. Policy and Access Measures

- Implement **workplace vaccination programs**.
- Ensure **free or low-cost access** to adult vaccines.
- Develop **digital reminder systems** and **national immunization registries**.

5. Special Contexts

- **COVID-19 pandemic** highlighted both the dangers of hesitancy and the potential of rapid awareness campaigns.[3]
- **Healthcare workers** — paradoxically — may also show hesitancy, emphasizing the need for targeted education.[4]

HPV vaccine hesitancy is driven by factors unique to the vaccine, such as cultural stigma around STIs and a misunderstanding of the link between HPV and cancer, as well as more general concerns like vaccine safety, misinformation, and a lack of confidence in medical authorities. Misconceptions include the belief that the vaccine promotes early sexual activity and that it is only necessary for girls, not boys. Overcoming this requires targeted communication and tailored public health interventions that address these specific barriers and build trust. [5]

Factors contributing to HPV vaccine hesitancy

- **Misconceptions and lack of knowledge:**
- Not knowing about the vaccine or its link to cancer.
- A belief that the vaccine promotes promiscuity.
- Thinking that children are not susceptible to HPV.
- **Concerns about safety and side effects:**
- Safety concerns about the vaccine itself.
- General mistrust of new vaccines or a perception that they are unnecessary risks.
- **Cultural and social stigma:**
- The association of the HPV vaccine with sexually transmitted infections (STIs) creates cultural stigma.
- **Lack of recommendation:**
- A lack of recommendation from doctors or healthcare providers is a significant barrier for parents.
- **Mistrust in authorities:**
- Mistrust in health authorities and the pharmaceutical industry can influence vaccine acceptance.
- **Practical and access barriers:**
- Lack of access to the vaccine.
- Vaccine being out of the recommended age range.

Strategies for addressing hesitancy

- **Targeted public health campaigns:**
- Develop communication strategies that specifically address the unique concerns surrounding the HPV vaccine.
- Educate the public about the link between HPV and cancer to raise awareness of its importance.
- **Provider engagement:**

· Encourage healthcare providers to make strong, clear recommendations for the vaccine.

- **Community involvement:**
- Engage parents and adolescents in developing communication strategies to ensure they are resonant and address their specific concerns.
- **Behaviorally informed interventions:**
- Utilize approaches like text message campaigns to combat misinformation and increase uptake.

Vaccine hesitancy surrounding the human papillomavirus (HPV) vaccine is a complex issue driven by misinformation, safety concerns, and socio-cultural factors. Despite its proven safety and effectiveness in preventing HPV-related cancers, vaccine uptake remains suboptimal in many regions. [6]

Common sources of hesitancy

Safety concerns and misinformation

The most prominent factor driving hesitancy is worry over the vaccine's safety and potential side effects.

- **Worry over severe side effects:** Parents often express concern about unsubstantiated claims linking the vaccine to autoimmune disorders or infertility. However, decades of research and millions of vaccinations have shown that serious side effects are extremely rare and not causally linked to the vaccine.
- **The perception of "newness":** Some parents hesitate because they view the HPV vaccine as too new, unlike other childhood vaccines that have been in use for longer periods.
- **Influence of social media:** Misinformation spread on social media has contributed to rising safety concerns, even as scientific data continues to reaffirm the vaccine's safety.

Lack of knowledge and understanding

Many parents lack adequate information about HPV and the vaccine, which fuels hesitancy.

- **Misunderstanding HPV infection:** Parents may not be aware that HPV is a common sexually transmitted infection that can cause various cancers in both males and females. They may also mistakenly believe their child is not at risk.
- **Inadequate provider communication:** Parents often report feeling dissatisfied with how healthcare providers communicate about the vaccine. They want detailed, non-judgmental discussions about the vaccine's risks and benefits, which they may not receive due to time constraints in a clinical setting.
- **Insufficient information:** Hesitant parents frequently report not having enough clear and reliable information to feel confident in their decision-making.

Socio-cultural and personal beliefs

Hesitancy is often rooted in personal values, beliefs, and broader social perceptions.

- **Early adolescent vaccination:** Many parents perceive the recommended vaccination age of 11–12 as too young, citing their child's lack of sexual activity. They may feel uncomfortable discussing a sexually transmitted infection with their child or believe that the vaccine encourages sexual activity. Evidence, however, shows that the vaccine has no impact on a child's sexual behavior.
- **Perception of low personal risk:** Parents may believe their child is not susceptible to HPV due to their family's lifestyle or religious beliefs that promote abstinence.
- **Skepticism toward institutions:** Broader mistrust of government health recommendations, pharmaceutical companies, or specific healthcare providers can play a role in vaccine refusal. Some also believe that natural immunity from infection is superior to that from vaccination

Strategies for addressing hesitancy

Targeted and empathetic communication strategies are crucial for increasing HPV vaccine uptake.

- **Improve provider-parent communication:** Health practitioners should offer strong, confident recommendations and engage in respectful, two-way conversations. This includes addressing specific parental concerns and providing clear, factual information on both benefits and side effects.
- **Provide educational resources:** Giving parents written materials or tools, such as a list of questions to prepare for an appointment, can empower them and increase their confidence in the decision.
- **Engage community stakeholders:** Involving respected community leaders, such as religious figures, can help build trust and acceptance, especially in regions with strong cultural or religious reservations.
- **Debunk specific myths:** Directly and calmly addressing common misconceptions, such as links to infertility, can help dispel inaccurate information.

Ailor communication: Given the diverse nature of hesitancy, a "one-size-fits-all" approach is ineffective. Communication should be tailored to address the specific concerns and worries of different parent groups. 7

Conclusion

Adult vaccine hesitancy is a **multifactorial social and behavioral challenge** that requires coordinated efforts involving **healthcare providers, policymakers, and communities**. Addressing misinformation, improving access, and strengthening trust are essential to enhance adult vaccination rates and ensure public health resilience.

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The Growing Importance of Adult Vaccination

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Introduction:

Vaccines stand as one of the most effective tools for the prevention of infectious diseases across the lifespan. Historically, immunization efforts primarily focused on the pediatric population. However, the scope of public health strategies has dramatically expanded toward comprehensive protection for adults, recognizing adult vaccination as an increasingly crucial pillar.

This expanded view is necessitated by aging populations, epidemiological transitions, and the recognition of persistent risks among older individuals. Adult vaccination is critical for diseases such as HPV, hepatitis B, influenza, and pneumococcal disease. It is essential not only for promoting individual health but also for reducing the overall burden of disease, mitigating healthcare costs, and protecting vulnerable groups within the community. Adults often remain susceptible to vaccine-preventable diseases due to waning immunity or incomplete childhood vaccination schedules.

The focus of this article centers on Human Papillomavirus (HPV) vaccination, where sustained transmission through sexual contact and the subsequent risk of HPV-related malignancies necessitate vaccine coverage extending beyond adolescence. For those who missed vaccination during adolescence, receiving the vaccine in adulthood still offers a tangible benefit of protection against new infections.

The human papillomavirus (HPV) is a ubiquitous, double-stranded DNA virus belonging to the *Papillomaviridae* family, recognized globally as the most common sexually transmitted infection [1}. HPV infection causes significant morbidity and mortality in both women and men worldwide. The development and implementation of prophylactic HPV vaccines represent one of the major public health achievements of the century, offering a safe and highly effective means to prevent HPV infection and the resulting cancers and diseases [2]. This article provides a comprehensive overview of HPV virology, the burden of associated diseases, vaccination guidelines and schedules, clinical efficacy data, safety profiles, and current public health challenges regarding HPV vaccination.

The Human Papillomavirus: Virology and Pathogenesis

HPV is a non-enveloped, double-stranded DNA virus with a genome of approximately 8000 base pairs [3] It primarily infects basal epithelial (skin or mucosal) cells, typically gaining access through microlesions in the epithelium. The virus is

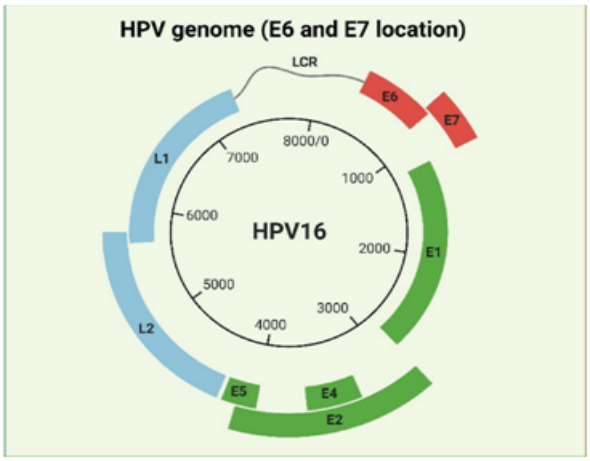


Fig1:Schematic representation of the Human Papillomavirus (HPV) genome

primarily transmitted through genital skin-to-skin contact, usually during sexual activity, although transmission from mother to infant during childbirth is also possible [4].

HPV Genotypes and Risk Classification

To date, over 200 HPV types have been identified.These genotypes are broadly classified into high-risk (oncogenic) and low-risk types based on their potential to cause cancer [5].

High-Risk Types (Oncogenic HPV): High-risk genotypes are known to contribute significantly to cancer development [6]. The alpha family comprises twelve high-risk types including HPV 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, and 59 [7]. Among these, **HPV 16 and 18 are the most common and oncogenic**, responsible for approximately 70% of invasive cervical cancers worldwide and strongly associated with cancer onset [6]. The E6 and E7 viral oncogenes play a central role in HPV-associated cancers by targeting tumor suppressor genes and disrupting cell growth [8].

Low-Risk Types (Non-Oncogenic HPV): Low-risk types generally cause benign growths such as warts or papillomas . HPV genotypes 6 and 11 are responsible for approximately 90% of genital warts (condyloma acuminata) and also cause recurrent respiratory papillomatosis [9].

Natural History of Infection

HPV infection is extremely prevalent, with epidemiological studies suggesting that the majority of sexually active individuals are likely to contract an HPV infection at least once in their lifetime [10]. Fortunately, most infections are asymptomatic and transient [11]. Over 90% of detected HPV infections are cleared or become inactive by the host immune system within 12 to 24 months [10]. However, when infections caused by high-risk HPV types persist, they increase the likelihood of progression to various cancers, a process that typically takes 10 to 20 years to develop fully [11].

HPV-Associated Disease Burden

HPV infection is responsible for a significant global cancer burden. In 2018, there were 45,000 new cases of HPV-associated cancers diagnosed in the United States [12]. Globally, in 2020, cervical cancer alone accounted for 604,000 cases and 341,000 deaths [13]. The burden is particularly heavy in low- and middle-income countries, where approximately 80% of HPV-related cancer cases and 98% of cervical cancer deaths occur [14].

Cervical Cancer: Cervical cancer is the most common HPV-related malignancy [15]. Persistent high-risk HPV infection is responsible for roughly 90% of anal and cervical cancers, 70% of vaginal and vulvar cancers, 60% of penile cancers, and up to 70% of oropharyngeal cancers [15]. In the United States, cervical cancer is diagnosed in more than 13,000 women annually, resulting in nearly 4,000 deaths, often occurring in women who have had inadequate screening [23]. Premalignant changes, or cervical intraepithelial neoplasia (CIN) grades 2 or 3 (CIN2/3), have a high chance of leading to invasive cancer if untreated [16].

Other Cancers: HPV infection is associated with anogenital cancers (cervical, vaginal, vulvar, penile, and anal) and oropharyngeal cancer (back of the tongue, tonsils) [17]. Specifically, HPV potentially contributes to around 90-93% of anal cancers, 12-63% of oropharyngeal cancers, 36-40% of penile cancers, 40-64% of vaginal cancers, and 51% of vulvar cancers [18].

Genital Warts: Human papillomavirus also is associated with genital warts, approximately 90% of which are caused by HPV genotypes 6 and 11 [19]. Marked reduction in genital warts has been observed in countries with high HPV vaccine coverage [20]. Table 1

HPV Vaccines: Types and Mechanisms

Prophylactic HPV vaccines work to prevent HPV infection and subsequent disease, but they are not intended to treat existing infections or diseases caused by HPV [21].

Table1:HPV subtypes and diseases caused by them

Type Category	Examples	Diseases Caused
High-risk (carcinogenic)	16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59	Cervical, anal, vulvar, vaginal, penile, and oropharyngeal cancers
Probable/possible carcinogens	26, 53, 66, 67, 70, 73, 82, 30, 34, 68, 69, 85, 97	Occasionally found in cervical cancers
Low-risk	6, 11	Genital warts, recurrent respiratory papillomatosis (RRP)

Vaccine Types and Coverage

The U.S. Food and Drug Administration (FDA) has historically approved three types of HPV vaccines, covering 2, 4, or 9 HPV serotypes, respectively:

1. **Bivalent Vaccine (Cervarix):** Protects against high-risk types HPV 16 and 18 [22].
2. **Quadrivalent Vaccine (Gardasil):** Protects against types 6, 11, 16, and 18 [22].
3. **Nonavalent Vaccine (Gardasil 9):** Currently the only HPV vaccine available in the United States, it is licensed for women and men through age 45 years [23]. It protects against types 6, 11, 16, 18, 31, 33, 45, 52, and 58 [24]. By covering these nine types, the 9-valent vaccine has the potential to increase prevention of cervical cancer from 70% (covered by previous versions) to approximately 90% [25].

Globally, several other vaccines exist, including three bivalent (Cervarix, Cecolin, Walrinvax), two quadrivalent (Gardasil, Cervavac), and one nonavalent vaccine (Gardasil 9)

Mechanism of Action

HPV vaccines are prepared from purified L1 structural proteins that self-assemble into non-infectious, DNA-free **Virus-Like Particles (VLPs)** [26]. Because VLPs are protein-only structures and do not contain live biological products or viral DNA, they are non-infectious. The formation of VLPs through the self-assembly of L1 protein forms the basis of modern HPV vaccines. Upon administration, the VLP vaccines induce high levels of serum antibodies, often 10 to????? times higher than those seen after natural infection, generating a robust immune response [27].

The bivalent vaccine (Cervarix) uses a unique adjuvant system (AS04, containing monophosphoryl lipid A and aluminum hydroxide), which may contribute to enhanced and durable antibody responses and confer a degree of cross-protection against non-vaccine HPV types such as 31 and 45 [28]. Both quadrivalent and nonavalent vaccines use aluminum hydroxyphosphate sulfate as an adjuvant and are produced in *Saccharomyces cerevisiae* yeast[28]. Table 2

HPV Vaccination Recommendations and Schedules

Vaccination is the cornerstone of primary prevention against HPV-related diseases [29]. Health care professionals, including obstetrician–gynecologists (OB-GYNs), should **strongly recommend** HPV vaccination to eligible patients, emphasizing the benefits and safety of the vaccine [30]. Given the importance of access, OB-GYNs are also encouraged to stock and administer HPV vaccines in their offices when feasible [30].

Target Age and Routine Vaccination

The optimal period for HPV vaccination is **early adolescence** because the vaccine is most effective before exposure to HPV through sexual activity [30]. The Advisory Committee on Immunization Practices (ACIP) and the American College of

Table2: Approved HPV vaccines with their manufacturers currently available:

Vaccine Name	Valency / HPV Types Covered	Manufacturer	Adjuvant	Expression System	Schedule	WHO Prequalification / Year
GARDASIL®	Quadrivalent (6, 11, 16, 18)	Merck & Co.	Aluminium hydroxy phosphate sulfate	Yeast (*S. cerevisiae*)	2-dose (9–13 yrs), 3-dose ≥14 yrs	2006
Cervarix®	Bivalent (16, 18)	GlaxoSmithKline	Aluminium hydroxide + MPLA	Insect cells	2-dose (9–14 yrs), 3-dose ≥15 yrs	2007
GARDASIL9®	Nonavalent (6, 11, 16, 18, 31, 33, 45, 52, 58)	Merck & Co.	Aluminium hydroxy phosphate sulfate	Yeast (*S. cerevisiae*)	2-dose (9–14 yrs), 3-dose ≥15 yrs	2014
Cecolin®	Bivalent (16, 18)	Innovax, China	Aluminium hydroxide	*E. coli*	2-dose (9–14 yrs), 3-dose ≥15 yrs	2020
WalrinvaxV®	Bivalent (16, 18)	Walvax, China	Aluminium phosphate	Yeast (*P. pastoris*)	2-dose (9–14 yrs), 3-dose ≥15 yrs	2022
Cervavac®	Quadrivalent (6, 11, 16, 18)	Serum Institute of India	Aluminium-based	—	2-dose (9–14 yrs), 3-dose ≥15 yrs	2022

Obstetricians and Gynecologists (ACOG) recommend routine HPV vaccination for girls and boys at the target age of 11–12 years, though it may be given starting at age 9 years [30].

Dosing Schedule for Children and Adolescents (Ages 9–14):For immunocompetent individuals who receive their first dose before age 15 years, only **two doses** are needed [31]. The schedule is:

- Dose 1 (baseline)
- Dose 2 at 6–12 months after the first dose

The 6-month interval between the two doses is critical for ensuring adequate immune titers and durability of protection . If the interval between the first two doses is less than 5 months, a third dose is recommended [32]. This two-dose schedule in younger adolescents provides antibody levels equivalent to those receiving three doses at age 15 years or older [31].

Catch-Up Vaccination (Ages 15–26)

Unvaccinated individuals through age 26 years are recommended to receive the HPV vaccine series,

regardless of sexual activity, prior HPV exposure, or sexual orientation [30].

Dosing Schedule for Teens and Young Adults (Ages years):If the first dose is received at age 15 years or older, **three doses** are needed [30]:

• Dose 1 (baseline) .

• Dose 2 at 1–2 months after the first dose .

• Dose 3 at 6 months after the first dose .

Although the vaccine is less effective in individuals previously infected with HPV, some benefit is still expected because prior exposure to all nine vaccine types is highly unlikely .Vaccination is recommended even if the patient is tested for HPV DNA and the results are positive [33,36].

Adult Vaccination (Ages 27–45):

Rationale and Evidence for Adult Vaccination

The justification for expanding HPV vaccination to adults rests on persistent exposure risks and demonstrated efficacy data. Many adults remain susceptible to one or more vaccine-covered HPV types, especially those with new sexual partners. The risk of acquiring HPV infection continues throughout adulthood:

- In a Colombian cohort, the 5-year cumulative risk of HPV infection remained significant for women aged 25–29 years (30.0%) and 30–44 years (21.9%) [1].
- A multinational study of men aged 18–70 years found the incidence of new genital HPV infections was 38.4 per 1000 person-months, with **no significant variation by age** [31, 34].

Key Efficacy Data (Adults):

- Clinical trials have demonstrated the efficacy and safety of HPV vaccines in adults up to and beyond age 26 [33].
- The **FUTURE III trial**, which included 3,819 women aged 24–45 years, showed a per-protocol efficacy of **88.7%** for the quadrivalent vaccine against a combined endpoint of persistent HPV infection, external genital lesions, and/or CIN grade 1 or worse [33, 36].
- While HPV vaccination cannot treat an existing infection, it can prevent future re-infection with the same type and new infections from other genotypes [37, 36].

Recommendations for vaccinations between 27-45yrs:

The HPV vaccine is licensed for women and men through age 45 years in the United States. However, routine vaccination is generally not recommended for all adults older than 26 years [37].

For previously unvaccinated women aged 27–45 years, OB-GYNs and other health care professionals may use **shared clinical decision-making** regarding vaccination. This decision should consider the patient's risk for acquiring a new HPV infection and whether the vaccine may provide benefit [37].

The overall public health benefit in this age range is markedly diminished compared with use in the target age range due to the likelihood of prior exposure [37]. Individuals most likely to benefit are younger women, women not in committed monogamous relationships, and women with recently diagnosed sexually transmitted infections . Women aged 27–45 years in long-term monogamous relationships are not routinely recommended to receive the vaccine.

Special Populations and Vaccination Timing

Immunocompromised Individuals: Patients with immunosuppression, such as those with human immunodeficiency virus (HIV) infection or organ transplantation, are not contraindicated for HPV vaccination . However, the immune response may be less robust .Therefore, the **three-dose schedule** is recommended for all immunocompromised patients (adults and adolescents), even those younger than 15 years

of age [38].

Sexual Abuse/Assault Victims: In children with a history of sexual abuse or assault, the HPV vaccine should be given as early as possible, starting at age 9 years [37].

Pregnancy and Breastfeeding: HPV vaccination is **not recommended during pregnancy** . If a patient starts the series and then becomes pregnant, completion should be delayed until the pregnancy is finished, but it is not necessary to restart the series [37]. Routine pregnancy testing is not recommended before vaccination [23] . The HPV vaccine can and should be given to breastfeeding women age 26 years and younger who have not previously been vaccinated, as it has not been shown to affect the safety of breastfeeding for them or their infants [42] .

Health Care Workers (HCWs): Unvaccinated clinicians aged 27–45 years who are routinely exposed to HPV in their practices (e.g., through surgical smoke during gynecologic procedures, which may contain HPV DNA) should consider vaccination, a recommendation supported by the ASCCP (American Society for Colposcopy and Cervical Pathology) [43].

Prior HPV Exposure: Testing for HPV DNA is not recommended before vaccination [43]. Vaccination is still recommended for individuals through age 26 years even if they test positive for HPV DNA, as they are unlikely to have been exposed to all vaccine types [44]. Some studies suggest that vaccination after an excisional procedure for high-grade cervical intraepithelial neoplasia (CIN 2–3) may provide a significant reduction in persistent or recurrent lesions [45].

Vaccine Efficacy and Effectiveness

HPV vaccines are among the most effective vaccines available worldwide. They show unequivocal data demonstrating greater than **99% efficacy** when administered to women who have not been exposed to that particular type of HPV [30].

Clinical Efficacy Data

The HPV vaccine significantly reduces the incidence of anogenital cancer and genital warts in both women and men [30]. The overall efficacy against cervical cancer precursor lesions (CIN 2 or worse, CIN 2+) caused by targeted HPV types in young women aged 15 to 26 years who received the full three-dose vaccination and were HPV-naïve ranged between 89.5% and 100% [46].

The 9-valent HPV vaccine protects against over 99% of HPV disease related to genotypes 6, 11, 16, and 18, and up to 96.7% for HPV disease related to genotypes 31, 33, 45, 52, and 58 [47]. This includes prevention of cervical, vaginal, vulvar, and anal disease caused by these types [40].

Population-Level Impact and Herd Effects

Since the vaccine's introduction, observed data confirm a marked reduction in HPV-related diseases:

- Prevalence of vaccine-type HPV infection decreased by **71%** among women aged 14–19 years in the US between 2006 and 2014 [48].
- HPV infections among adolescent girls decreased by 88%, and among young adult women by 81% (US, 2003–2018 data) [49].
- Rates of cervical precancers (CIN2 and CIN3) in vaccinated women decreased by 40% [34].
- Countries with high vaccination rates show a significant reduction in anogenital warts [35].
- In Sweden, girls vaccinated before age 17 experienced an almost 90% reduction in cervical cancer cases [52-53].

The widespread adoption of vaccination leads to herd effects, benefiting unvaccinated individuals, including older women and adolescent boys, through reduced HPV transmission [54].

Duration of Protection and Boosters

Long-term studies have monitored the durability

of the immune response. Currently, there is **no indication for a booster vaccine** [55]. Protection has been demonstrated to last for at least 8 to 14 years in the general population [56]. In long-term follow-up studies, antibody levels typically fall between the peak after the third dose and 18 months post-vaccination, and then level off, remaining high [57].

Comparision between Bivalent(2v) vs Quadrivalent(4v) vs Nano valent (9v) vaccines:

The overall research findings suggest that the 9v-HPV vaccine provides higher efficacy due to its coverage of additional carcinogenic genotypes, thus supporting its public health benefit. Given its long-term preventive efficacy against HPV16/18 and its lower potential cost compared to 4v-HPV and 9v-HPV vaccines, the **2v-HPV vaccine may be suitable for large-scale vaccination programs, especially in developing countries [59,76,77]**

Single-Dose Vaccination Efficacy

Recent research has focused heavily on the efficacy of a single dose, especially to simplify delivery and reduce costs globally [58-59].

- **Evidence Base:** Data supporting single-dose efficacy largely stem from analyses of trials where not all participants completed the full dose series
- **Protection Levels:** Across efficacy studies, the incidence/prevalence of HPV 16/18 infection was found to be very low among HPV-vaccinated participants, regardless of the number of doses received, suggesting that one dose provides similar efficacy to two or three doses in preventing vaccine-type HPV infection [60-61] High vaccine efficacy against HPV 16/18 infection has been sustained for 10 years in the India trial (averaging 95.4%) and 1.5 years in the Kenya trial (averaging 97.5%) following a single dose [62-66].
- **Immunogenicity:** While single-dose regimens produce significantly lower antibody levels compared to two or three doses, these levels appear stable and sustained, lasting up to 11 years post-vaccination in some studies (CVT trial) [67-70]. Crucially, the antibody levels achieved appear sufficient for protection.
- **Recommendations Shift:** Based on this evidence, the **World Health Organization (WHO)** has amended its position to allow either a one-dose or two-dose HPV vaccination schedule for individuals aged 9–20 years [71]. However, the CDC in the United States continues to recommend the two-dose or three-dose schedule based on age . Ongoing randomized controlled trials (RCTs), such as ESCUDDO, are expected to provide further conclusive evidence regarding the potential shift to a single-dose regimen [72].

Vaccination Safety and Adverse Events

Safety data for all three licensed HPV vaccines are consistently reassuring . Since 2006, over 270 million doses of HPV vaccine have been distributed worldwide, and monitoring systems like the Vaccine Adverse Events Reporting System show no data linking severe adverse effects or adverse reactions to vaccination [60,61,73].

Common Side Effects

The most commonly reported adverse events (AEs) are local injection site reactions, such as pain, swelling, and erythema, which occur frequently. Systemic adverse events typically include fever, nausea, headache, and dizziness, often comparable in rate between vaccine and control groups in clinical trials .

Serious Adverse Events

Serious adverse events are rare [56,62,63,64]. The surveillance of the 9-valent vaccine (2014–2017) demonstrated no additional or unexpected safety concerns . Studies investigating potential links between the HPV vaccine and conditions such as autoimmune diseases, neurological disorders, and venous thromboembolism have found **no**

observed association [62-64].

Fainting Risk (Syncope): Dizziness and fainting (syncope) can occur, particularly among adolescents .Adolescents should be observed for at least 15 minutes after vaccination to mitigate the risk of injury from fainting .

Contraindications: The HPV vaccine should not be administered to anyone who has had a life-threatening allergic reaction to any component of the vaccine (such as yeast) or to a previous dose of the HPV vaccine.

Public Health Challenges and Future Directions

Despite the high efficacy and proven safety of the HPV vaccine, vaccination rates remain

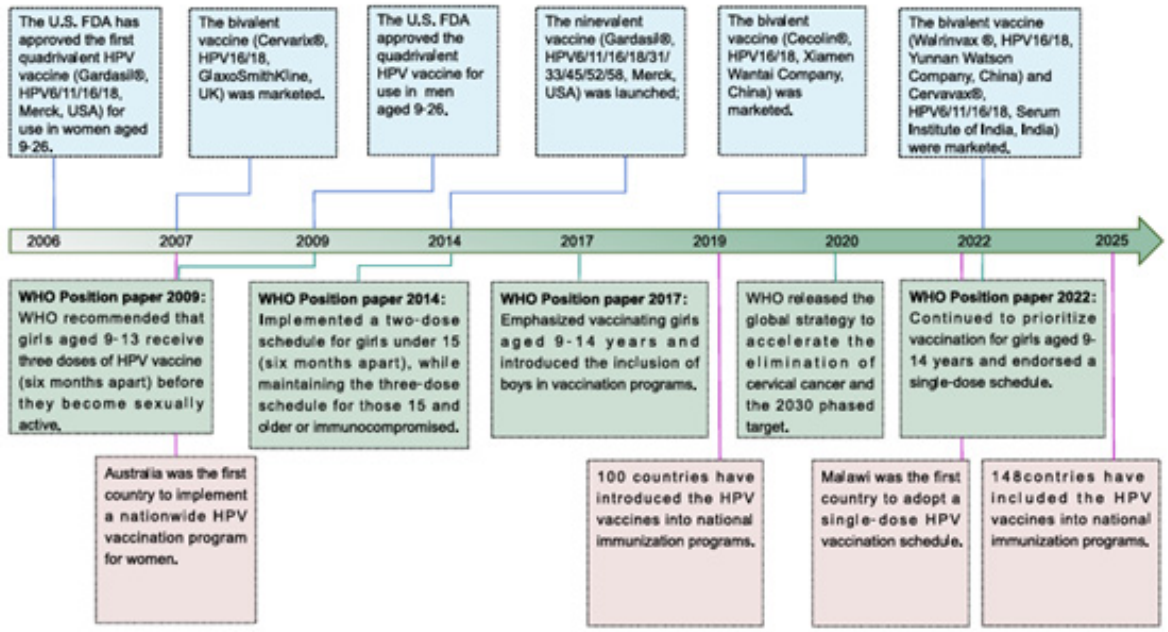


Fig2:Key milestones in the development of the HPV vaccination. Abbreviations: FDA, Food and Drug Administration, WHO, World Health Organization. HPV, Human Papillomavirus [Ref.59]

Global HPV Vaccination Coverage and Progress

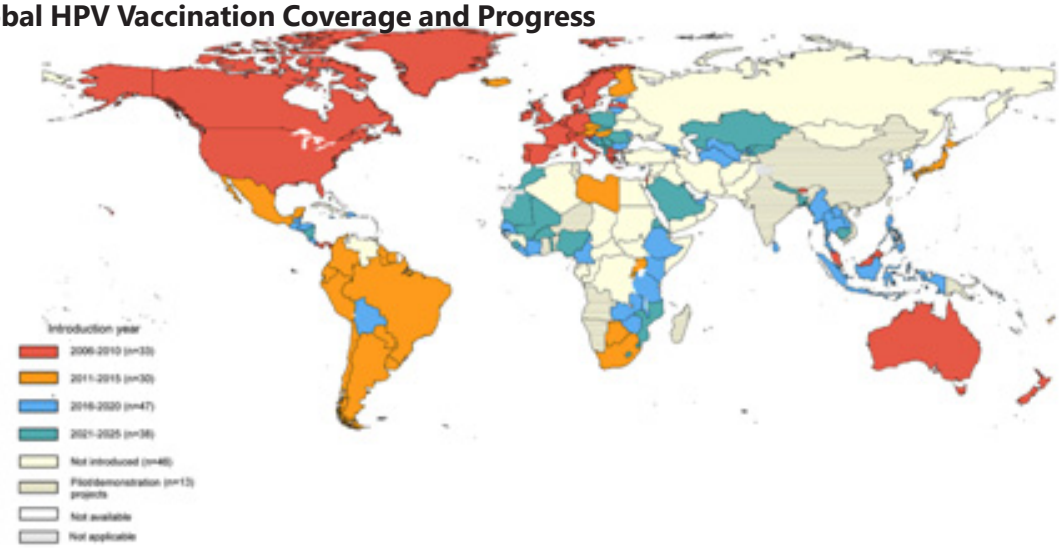


Fig3:Global status of the HPV vaccine introduction into national immunization programs by year of introduction in 2024.[Ref 59]

with many other countries. Only 54% of eligible women and 49% of eligible men received all recommended doses as of recent data [65]. If vaccination rates reached 80% in the target age range, an estimated additional 53,000 cases of cervical cancer could be prevented [66].

Global HPV vaccination coverage

Nearly two decades after the introduction of the quadrivalent HPV vaccine in 2006, global coverage remains uneven, with marked disparities across regions and income levels. As of February 2025, 148 WHO member states have incorporated HPV vaccination either nationally or partially within their immunization programs. However, significant gaps persist: 14 (54%) of 26 low-income countries and 20 (37%) of 54 lower-middle-income countries have yet to include HPV vaccination in their national schedules. In the United States, coverage also remains suboptimal, with only 54% of eligible women and 49% of eligible men having received all recommended doses [65]. Modeling estimates suggest that achieving 80% vaccination coverage within the target age group could prevent an additional 53,000 cases of cervical cancer [66].

In countries where HPV vaccination is not yet part of the national program, access is often facilitated through pilot or demonstration projects. For example, in China, as of October 2024, eleven provinces and cities—including Zhengzhou, Ordos, and Chengdu—have initiated targeted HPV vaccination campaigns. Similar demonstration projects are planned in Papua New Guinea and Tunisia in 2025, and their outcomes are expected to guide broader policy decisions regarding early HPV vaccine implementation in these nations.

Despite WHO's recommendation to prioritize girls aged 9–14 years, global first-dose coverage in this age group was only 27% in 2023. Coverage varies substantially by income level, with upper-middle-income countries showing the highest rates, while low-income countries lag behind. Interestingly, some high-income countries that were early adopters of HPV vaccination report relatively lower coverage compared to resource-limited nations. Remarkably, countries such as Rwanda, Uganda, Bhutan, and Tanzania have achieved high vaccination rates through strong political commitment, school-based delivery, and campaign-style immunization programs. These successes underscore the effectiveness of structured, government-supported strategies in improving vaccine uptake, even in constrained health systems.

In India, large-scale national efforts are now underway to integrate HPV vaccination into the Universal ImmunisationProgramme. In January 2023, the Ministry of Health and Family Welfare directed seven state governments—from Himachal Pradesh to Tamil Nadu—to initiate preparations for HPV vaccine roll-out targeting girls aged 9–14 years. This campaign marks the first of three phases in India's national introduction plan. Once the initial states achieve full coverage, HPV vaccination will be included in routine immunization schedules. Subsequent phases, planned for 2024 and 2025, aim to expand coverage across all remaining states and union territories. By the completion of the program, an estimated 68 million girls are expected to be vaccinated, with an additional 11.2 million girls aged nine years targeted annually through routine immunization thereafter.

Barriers to Uptake and Disparities

Low vaccination uptake is influenced by parental, health care professional, and systemic barriers [67]. Parental barriers include safety concerns, lack of knowledge/education, and apprehension about promoting sexual behavior [67]. Provider barriers include lack of time, knowledge gaps, access issues, and financial concerns [67]. Crucially, studies consistently show that a **strong recommendation from a health care professional is the single strongest predictor of HPV vaccination uptake** .

Significant disparities exist:

- **Socioeconomic Deprivation:** In England, while the highest rates of cervical cancer and high-grade cervical intraepithelial neoplasia (CIN3) were traditionally seen in the most deprived areas, the HPV vaccination

program has achieved substantial reductions across all socioeconomic groups [68]. For cervical cancer, the downward gradient of incidence with decreasing deprivation observed in unvaccinated cohorts was largely eliminated in vaccinated cohorts [68].

- **Race and Ethnicity:** Black and Latinx women may have lower awareness of the vaccine compared to White counterparts, and they are also more likely to carry high-risk genotypes not covered by the current vaccine [89]. Furthermore, individuals from racial and ethnic minority groups often initiate the vaccine series but show greater disparities in completing the full regimen [69].

Future Research and Therapeutic Vaccines

Dose Optimization: The efficacy data supporting a single dose of HPV vaccine, particularly for younger adolescents, is driving global policy changes, especially in resource-limited settings where cost and logistical burden are major barriers [70-72].

Next-Generation Vaccines: Current prophylactic vaccines based on L1-VLPs provide protection primarily against the included types, neglecting other oncogenic genotypes [49]. Future efforts should focus on developing high-valent vaccines or L2-VLP based vaccines with broader protection against a greater spectrum of HPV types [73].

Therapeutic Vaccines: Unlike prophylactic vaccines, which prevent infection, therapeutic vaccines are being developed to treat established HPV infections and malignancies [73]. These vaccines target the E6 and E7 oncogenes, aiming to induce a cellular immune response to eliminate infected cells . While promising vaccine candidates, such as VGX-3100 for high-grade intraepithelial lesions (HSIL), are undergoing clinical trials, to date, no therapeutic vaccines have been approved that can fully cure cervical cancer [73].

Conclusion

HPV vaccination represents a major advancement in public health, offering strong and lasting protection against HPV infection and associated cancers. However, realizing its full global potential requires overcoming persistent disparities in access and coverage. To achieve maximum population impact, efforts must prioritize increasing vaccination rates among adolescents, addressing socioeconomic and racial inequities in vaccine uptake, and streamlining vaccine delivery.

Evidence indicates that supportive national policies, school-based immunization programs, reliable supplies of affordable vaccines, and the adoption of simplified single-dose schedules—supported by emerging data on comparable efficacy—can significantly improve coverage, particularly in low-resource settings . Strengthening these strategies worldwide will be essential to expand equitable access to HPV vaccination and to advance toward the WHO goal of eliminating cervical cancer as a public health threat.

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Decoding Adult Vaccination- Focus On Hpv Vaccination

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INTRODUCTION

Vaccination is one of the most cost-effective strategies available in public health today, protecting the vaccinated individual from developing a potentially serious disease, helping protecting community by reducing the spread of diseases[1]. It not only protects individuals from potentially life threateningdiseases, also providing herd immunity, preventing outbreaks at thecommunity level. India's journey with immunization began with the Expanded Programme on Immunization (EPI) in 1978 and expanded into the UniversalImmunization Programme (UIP) in 1985.The UIP targeted six major vaccinepreventablediseases—tuberculosis, diphtheria, pertussis, tetanus, poliomyelitis, andmeasles—and included vitamin A supplementation in 1990.(1)

A well-structured adult vaccination ecosystem for India is required which will focus on developing guidelines, public awareness program to tackle myths and misconceptions, ensuring availability and access, and establishment of dedicated vaccination centers.(2)

Due to shortage of surveillance, effect of vaccine-preventable diseases (VPDs) on Indian population is not well documented. Despite increased uptake in childhood vaccination, adult immunization in India remains underutilized (<2%), particularly among older adults and immunocompromised individuals. The absence of dedicated vaccination centers and effective delivery platforms compounds the problem. There is an urgent need for a well-structured adult vaccination ecosystem in India, focusing on developing guidelines, public education campaigns to tackle myths and misconceptions, ensuring availability and access, and the creation of dedicated vaccination centers. The alarmingly low coverage for adult vaccination highlights the immediate need to set up dedicated adult vaccination clinics.(2)

Most of the population in India is exposed to risk factors such as crowded living conditions, poor diet, low access to adequate healthcare, and substandard sanitation systems, the risk of infections remains high. However, owing to the limited surveillance of VPDs among adults, the burden is likely to be underestimated, leading to a low perceived risk. The burden of VPDs among adults is disproportionate, with older adults and those with an immunocompromised state being at a higher risk (3).

The 2017–2018 estimates from nationally representative data for individuals aged 60 years and above indicate a considerably low vaccination coverage. For instance, pneumococcal vaccine coverage stands at 0.74%, while the highest uptake is observed for diphtheria and tetanus vaccines at only 2.75%(4).The necessity for adult vaccination is the need to enhance the quality of life for the growing older adult population(5).

However, demographic trends toward aging populations and the consequent vulnerability to diseases have highlighted the importance of adult vaccination.(6)

Many childhood vaccine preventable infections are now found among adults. A massive diphtheria epidemic occurred in the former Soviet Union with more than 1,57,000 cases and 5000 deaths. A

majority of cases throughout this epidemic occurred in persons > 15 yrs old, and adults from 40 to 49 yrs old had very high incidence and death rates. Both in developed and developing countries, outbreaks ofmeasles, mumps and rubella have been seenin many college campuses, workplaces such as hospitals, prisons, etc . An estimated 6% to 11% of young adults are unprotectedagainst rubella. Among adults, with Community-Acquired Pneumonia (CAP) requiring hospital admission, S pneumoniae ranks first as a cause and accounts for most of such cases. There are 155.8 million clinical episodes of pneumonia globally. A study from the Gambia showed that mortality was 16% lower in a PCV immunized group compared to placebo recipients. Similarly, Pneumococcal disease is also estimated to account for 3,000 cases of meningitis, 50,000 cases of bacteraemia, 500,000 cases of pneumonia, and 7 million cases of otitis media each year.

Studies have estimated HBsAg carriers in India to bemore than 40 million. Annually around 2205,286 deaths related to chronic hepatitis occur in India. Tetanus causes nearly 309,000 deaths worldwide annually. Majority of the patients of tetanus after acute injury were found to be those inadequately vaccinated or with unknown vaccination history according to United States data between 1998 - 2000. Adults aged >60 years were at highest risk for tetanus and tetanus-related deaths.

The WHO scientific advisory group of experts (SAGE) has advised to include adult immunisation with immmunisation for children as a part of routine immunisation services (1).

Adult vaccination not only helps inpreventing diseases and their associatedrisks, complications, and fatality, but alsopromotes healthier aging trajectories (7,8). In this context, theWorld HealthOrganization (WHO) acknowledges the roleofvaccination as having significant publichealth implicationspertaining to restricting the spread ofcontagious diseases and impeding thedevelopment of antimicrobial resistance,a growing global health concern (9,10).

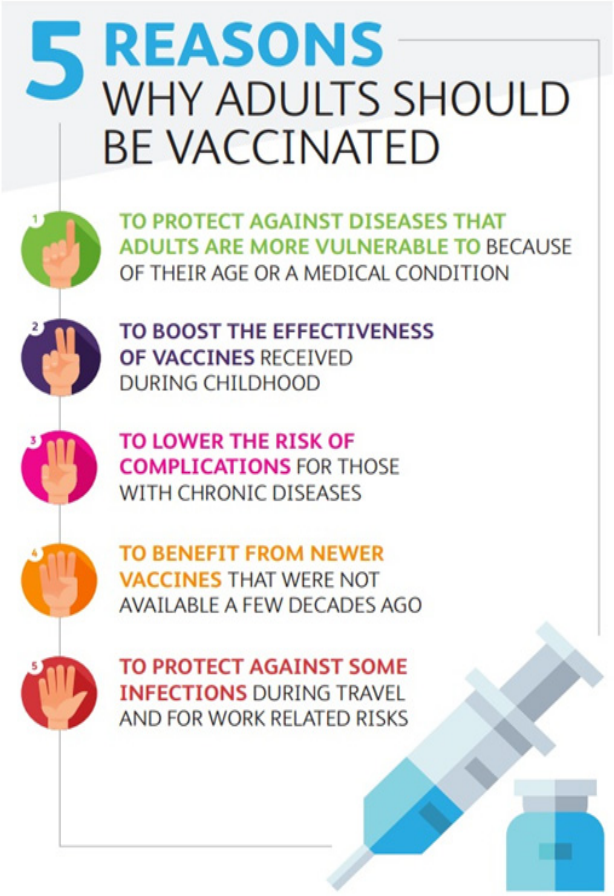


Fig 1: Reasons for need of adult immunization

The reasons for the vulnerabilityof adults to VPDs and the importance ofvaccination are outlined in Figure 2.

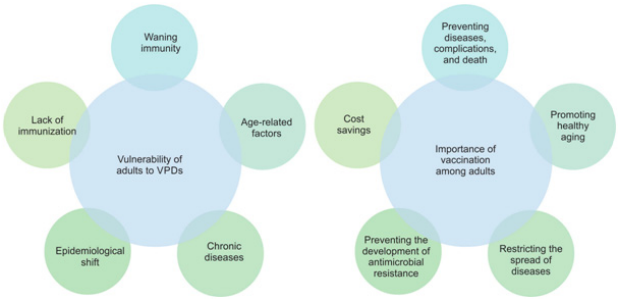


Fig. 2: Causes for VPDs of adults and need of vaccination

ADULT IMMUNISATION: BOTTLENECKS

Inspite of the heavier burden of diseases, vaccines recommended for adults are not widely used. There are several reasons for this such as:

- There is a limited perception on part of the health care providers and beneficiaries that

adult vaccine preventable diseases are significant health problems.

- There are doubts in the minds of some heath care providers and public about the efficacy and safety of several of the vaccines used for adults.
- Adult vaccination is customized according to need of target group.
- Healthy adults are harder to reach through public health system and hence vaccination of this age group becomes difficult.

ADULT IMMUNISATION: CATEGORIES

- Boost protection acquired by immunization earlier in life.
- Accelerate control or elimination efforts: Disease control initiatives frequently aim at increasing herd immunity, interrupting transmission and covering the non-immune cohorts.
- Counter specific risks such as travel, high risk behaviour and immuno-compromised state.(1).

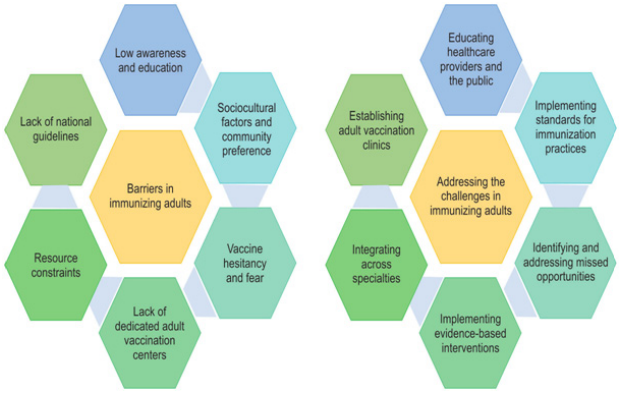


Fig. 3:Barriers to adult immunization and potential solutions

STRATEGIES FOR REACHING OUT TO ADULTS

Increase the demand for adult vaccination by improving provider and public awareness. Better public understanding of the seriousness of vaccine preventable diseases and the benefits of vaccination is essential. Studies have shown that literacy status and socioeconomic profile is an important determinant associated with adult immunization. (Guthmann JP, Med Mal Infect 2010) (1).

It becomes important that physicians both general as well as specialists should explore opportunities for vaccination while providing clinical care. For those working in the organized sector, employers should review the vaccination status of their employees from time to time.

Sufficient finances required to support delivery of vaccines to adult should be ensured.

Childhood immunization programme have received financial support from national as well as international agencies like Global Alliance for Vaccine Initiative (GAVI) and UNICEF. The Government of India currently spends over Rs. 200 crores annually on the procurement of the 6 UIP vaccines alone .Till now public health agencies have been negligibly involved with adult immunization. Steps should be taken to increase indigenous production capacity of vaccines used for adult immunization.

Ensure adequate support for research . An important policy for the Government is the prioritization and coordination of national vaccine development needs (2).

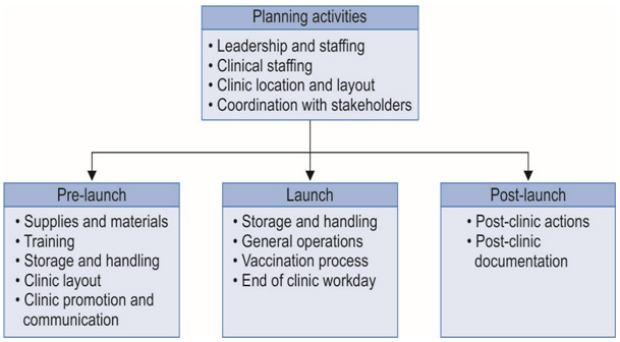


Fig. 4:Planning activities for adult vaccination clinics

Addressing the ChallengesAssociated with ImmunizingAdults in India

A systematic strategy is the need of our to increase adult vaccination rates in India. Table 1 summarizes the key challenges in implementing adult immunization in India and suggests practical

Table 1[2] : Summary of Key challenges in Adult Vaccination

Level	*Barrier*	*Strategy to address barrier*
Patient level	Awareness and education	Implement public education campaigns to increase awareness and understanding of vaccine preventable diseases and the importance of adult immunization
	Cultural beliefs and misconceptions	Engage community leaders and influencers to dispel myths and promote positive attitudes toward vaccines
	Accessibility and convenience	Improve vaccine access through clinics and extended service hours in healthcare facilities
	Cost concerns	Increase government subsidies for vaccines to reduce the financial burden on individuals
Physician level	Low perceived burden	Establish surveillance to monitor trends in vaccine preventable diseases
	Knowledge and training	Provide ongoing education and training for healthcare providers on adult immunization schedules and guidelines
	Perceived low priority	Advocate for adult immunization as a critical aspect of healthcare through guidelines, medical associations, and policy
	Vaccine availability	Enhance the vaccine supply chain and storage infrastructure to ensure consistent vaccine availability
Payer/policy maker level	Insurance coverage	Advocate for the inclusion of adult vaccines in health insurance policies
	Government policies and funding	Increased government funding and support for adult immunization programs
	Economic constraints	Integrate adult immunization into broader health initiatives to optimize resource allocation in limited-resource settings

approaches to overcome these barriers. Creating awareness and imparting health education to healthcare providers and the public is important(1).Taking the advantage of every OPD visit follow up, discharge, etc. are crucial steps for advising and vaccinating adult population(11,12).

Guidelines and Standards for AdultImmunization Practice

The Advisory Committee on Immunization Practices of the United States, Department of Health and Human Services, has set forth guidelines mandating healthcare professionals to ensure complete adult immunization.33 This entails assessing patients' immunization status during each visit, advocating for necessary vaccines, and meticulous record-keeping.

Implementing systems like reminder-recalls and eliminating administrative and financial vaccination barriers can improve immunization rates (14). The creation of harmonized vaccination guidelines in India represents a crucial advancement toward a rational and systematic approach to immunization (15).

Table 2: Medical and supplies for managing vaccine reactions [49]

First line medication : Epinephrine, aqueous 1:1,000 dilution, in ampules, vials of, or prefilled syringes, including epinephrine autoinjectors (e.g., EpiPen andEpinephrine injection, USP autoinjector). If autoinjectors are stocked, have at least three available (both pediatric and adult formulations)

Optional medication: H1 antihistamines

- Diphenhydramine (e.g., benadryl) oral (12.5 mg/5 mL liquid, 25 or 50 mg capsules/ tablets) or injectable (50 mg/mL solution)
- Hydroxyzine (e.g., atarax, vistaril) oral (10 mg/5 mL or 25 mg/5 mL liquid, 25 mg capsules)

Needed supplies for a community immunization clinic: Syringes (1 and 3 cc) and needles (22 and 25 gm, 1," 1.5," and 2") for epinephrine, diphenhydramine, or hydroxyzine. For ampules, use filteredneedles

- Alcohol wipes
- Tourniquet
- Airways (small, medium, and large)
- Child- and adult-size pocket masks with one-way valve
- Oxygen (if available)
- Stethoscope
- Sphygmomanometer with child-size, adult-size, extra-large cuffs
- Tongue depressors
- Flashlight with extra batteries (for examination of the mouth and throat)
- Wristwatch with a second hand or other timing device
- Cell phone or access to onsite phone

Considerations related to vaccine administration include (13,16):

1. Patient screening: Before administering vaccines, healthcare providers should screen patients for vaccine history, contraindications, and precautions. It is important to assess the patient's vaccine history and determine any contraindications or precautions for the specific vaccines being administered.

   A sample screening checklist for contraindications to vaccines for adults is provided in Table 4.50

2. Rights of vaccine administration: Guidelines emphasize the "Five Rights" of vaccine administration, which could be expanded to include documentation. Right patient.

   • Right vaccine and diluent.
   • Right time.
   • Right dose.
   • Right route.
   • Right documentation.

3. Vaccine preparation: Vaccines should be prepared just before administration.

4. Supplies and equipment: Healthcare providers should ensure that necessary supplies, including hand hygiene supplies, individually packaged sterile alcohol wipes, syringes, needles in varying lengths, and bandages, are available for vaccine administration.

5. Needle and syringe use: A new needle and syringe should be used to withdraw each dose. After administration, the needle and syringe should be immediately placed in a sharps container.

6. Administration: When administering vaccines, healthcare professionals should adhere to the recommended route and site as specified by the manufacturer 's package insert to maintain efficacy and minimize adverse reactions. During a single visit, multiple vaccines may be necessary, and they should be given at separate anatomical sites, ideally 1 inch apart, to reducethe risk of local side effects. Appropriate caution should be taken when vaccinating patients taking blood thinners.

7. Documentation: It is crucial to document vaccination in the permanent record of the patient, including details such as the type of vaccine, date of administration, manufacturer of the vaccine, vaccine lot number, expiration date, dose, site, and route (Fig. 5).51

8. Prevention and management of adverse events: Patients should be screened for contraindications every time before vaccination. It is recommended to have patients sitting down during vaccination and to consider observing patients for 15 minutes after vaccination to monitor for signs of adverse events, particularly anaphylaxis. Healthcare providers should be trained to recognize the signs and symptoms of anaphylaxis, which can occur within minutes after vaccination.

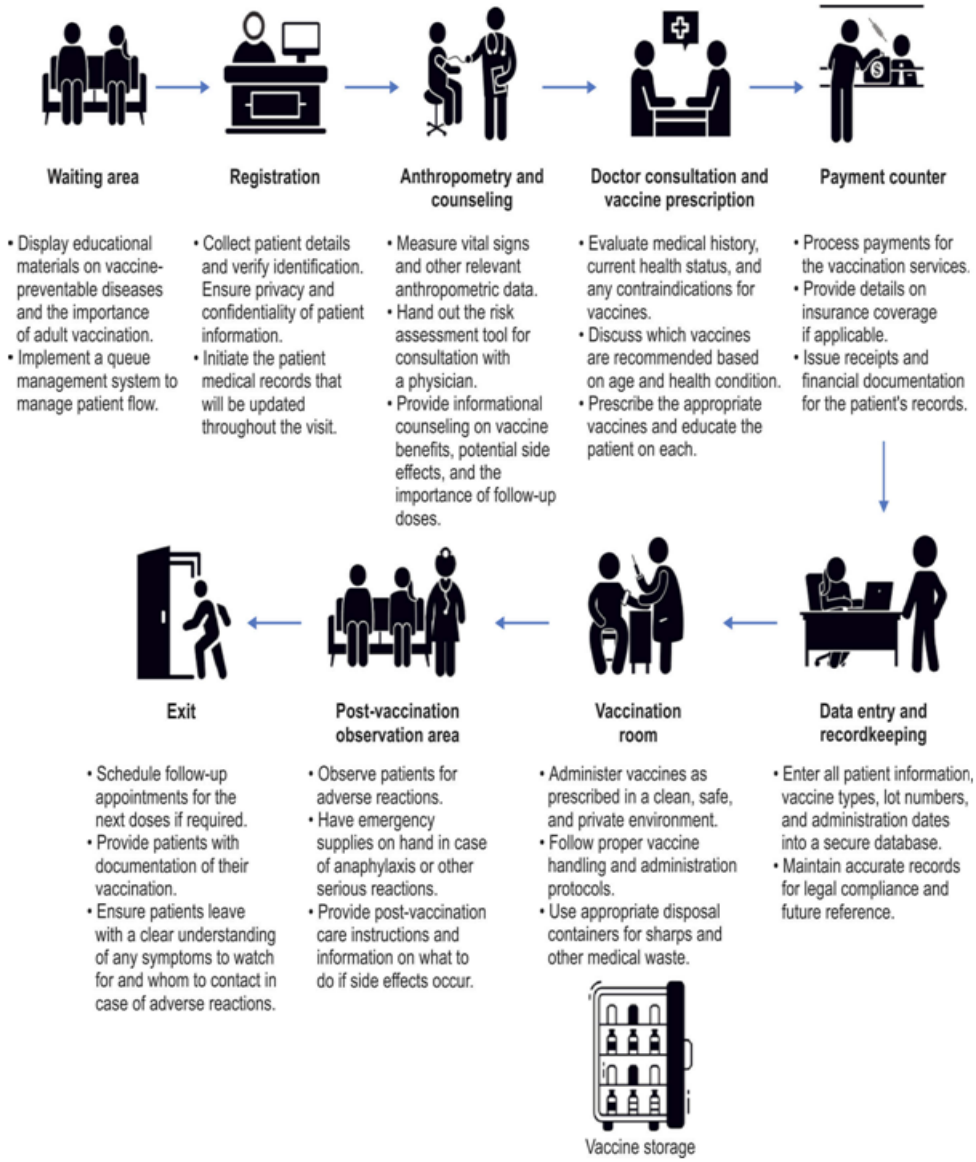


Fig. 5:Workspace and workflow in an adult vaccination clinic (2).

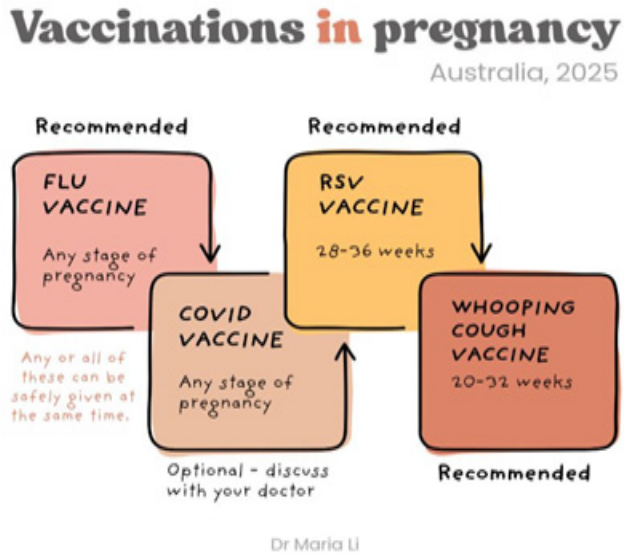


Fig 6: Vaccination in Pregnancy

Table 3: Adult immunization schedule in US 2025 (23)

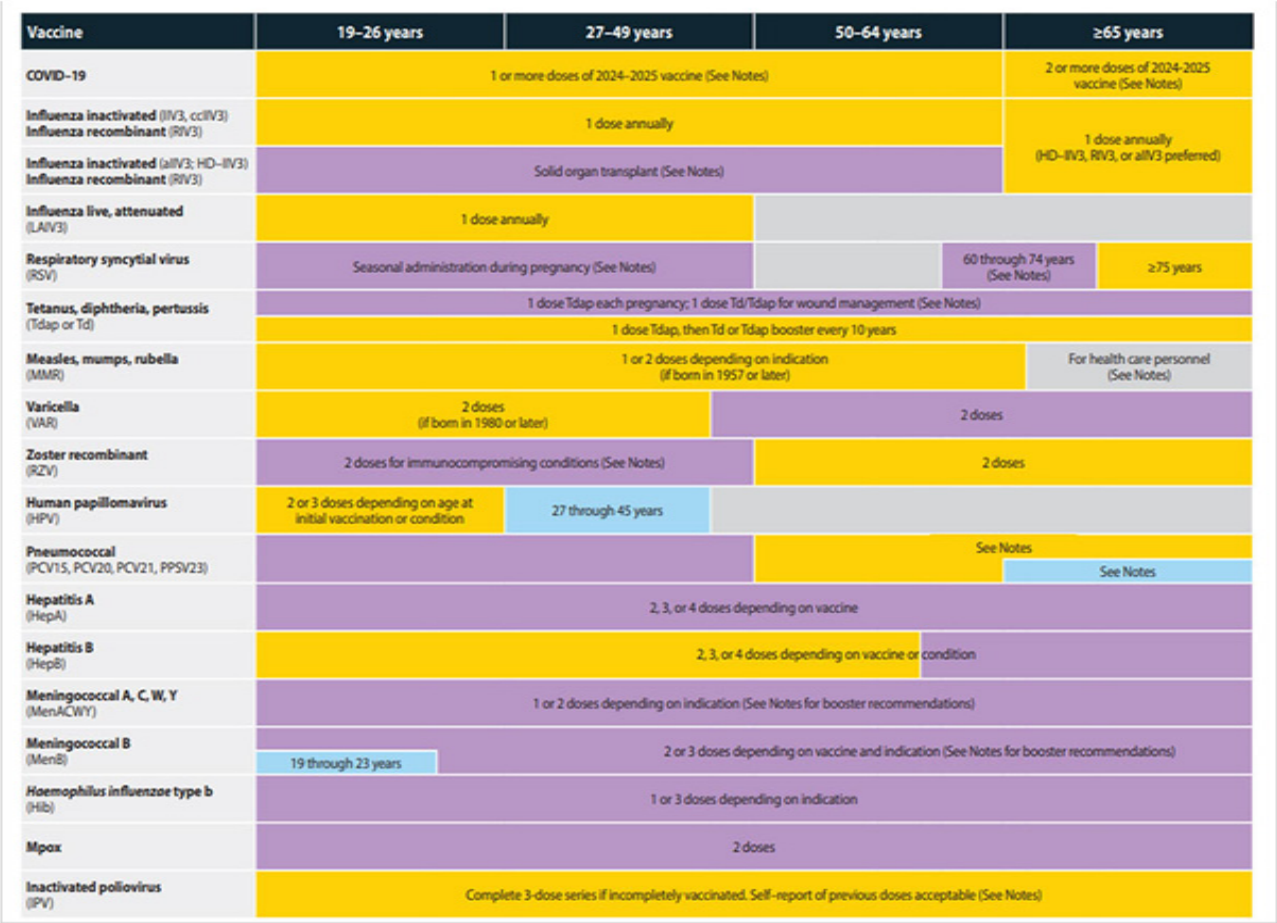


Table 4: Adult immunization recommendation (1)

Vaccine	19-26 yrs	27-49 yrs	50-59 yrs	60-64 yrs	>=65 yrs
Tetanus, diphtheria, pertusis	✓ (Tdap should replace one time dose of Td)				✓ (Td booster every 10 yrs)
Human Pipillomavirus	✓✓ (3 doses females)	×	×	×	×
Varicella	✓✓ (2 doses)				
Zoster	×	×	×	✓✓ (1 dose)	
Measles, mumps, rubella	✓✓ (1 or 2 doses)	✓ (1 dose)			
Influenza	✓	✓✓ (1 dose annually)			
Pneumococcal	✓ (1 or 2 doses)				✓✓ (1 dose)
Hepatitis A	✓ (2 doses)				
Hepatitis B	✓ (3 doses)				
Meningococcal	✓ (1 or more doses)				

(Source: Adapted from CDC MMWR, January 2010)

✓ **For all persons in the category who meet the age requirement and who lack evidence of immunity**
✓ **Recommended if some other risk factor is present (eg based on medical, occupational or other indication)**
× **Not recommended**

Vaccine Administration Record for Adults

Before administering any vaccines, give the patient copies of all pertinent Vaccine Information Statements (VISs) and make sure they understand the risks and benefits of the vaccine(s). Always provide or update the patient's personal record card.

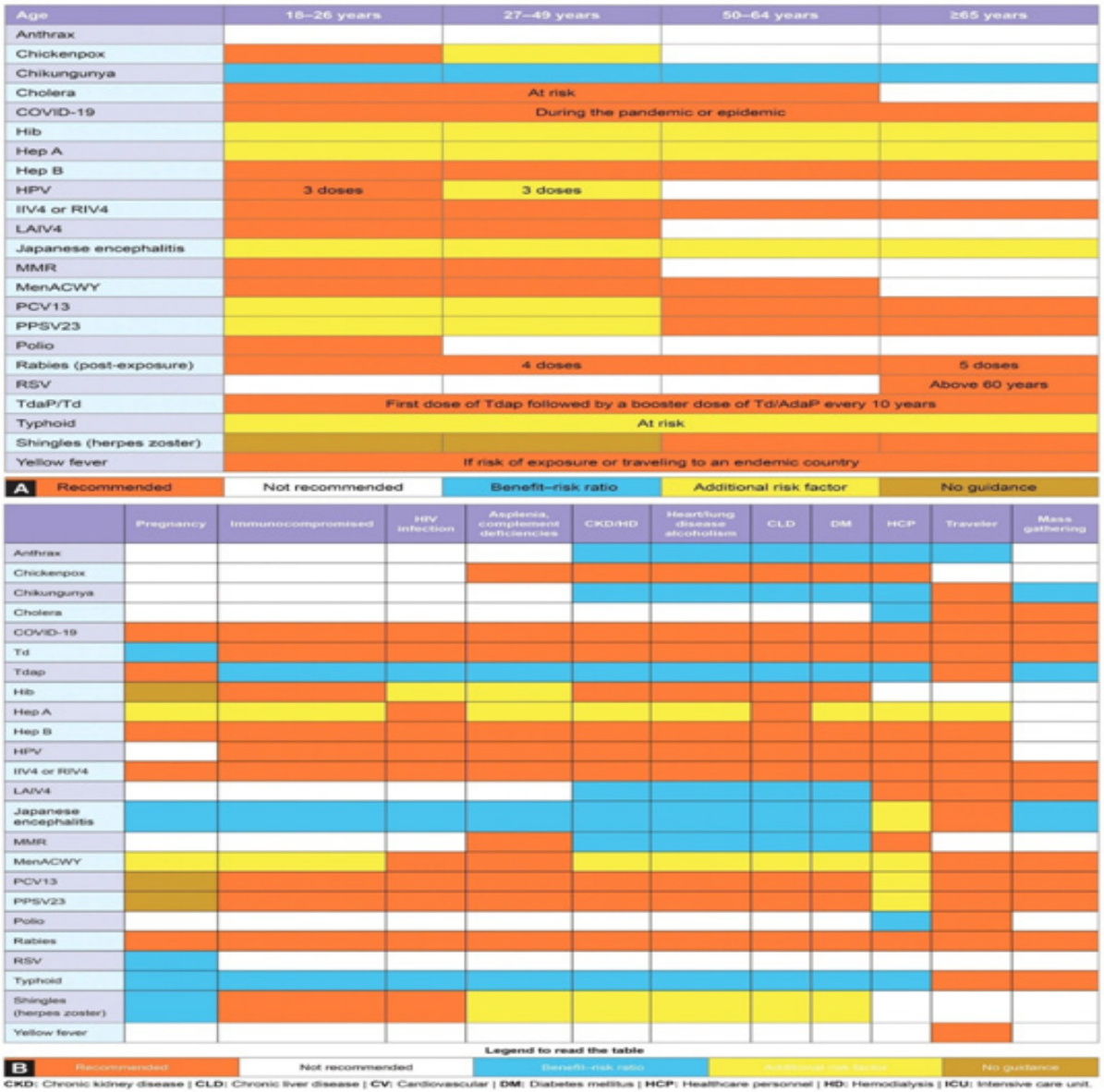
Patient name _____

Birth date _____ Chart number _____

PRACTICE NAME AND ADDRESS

Vaccine	Type of vaccine[1]	Date vaccine given (mo/day/yr)	Funding source (F, S, P)[2]	Site[3]	Vaccine		VIS		Vaccinator[5] (signature or initials and title)
					Lot #	Mfr.	Date on VIS[4]	Date given[4]	
Tetanus, Diphtheria, Pertussis (e.g., Tdap, Td) Give IM.[3]									
Hepatitis A[6] (e.g., HepA, HepA–HepB) Give IM.[3]									
Hepatitis B[6] (e.g., HepB, HepA–HepB) Give IM.[3]									
Human papillomavirus (HPV) Give IM.[3]									
Measles, Mumps, Rubella (MMR) Give MMRII subcutaneously or IM.[3]									
Varicella (VAR) Give subcutaneously or IM.[3]									
Meningococcal ACWY (MenACWY) Give MenACWY IM.[3]									
Meningococcal B (e.g., MenB-4C, MenB-FHbp) Give MenB IM.[3]									
Pneumococcal conjugate (e.g., PCV13, PCV15, PCV20) Give IM.[3]									
Pneumococcal polysaccharide (e.g., PPSV23) Give IM or subcutaneously.[3]									
Influenza (IIV, ccIIV, RIV, LAIV) Give IIV, ccIIV, and RIV IM.[3] Give LAIV NAS.[3]									
Zoster (shingles) Give RZV IM.[3]									
COVID-19 (e.g., COV-mRNA, COV-aPS) Give IM.[3]									
Hib Give IM.[3]									
RSV Give IM.[3]									
Other									

Fig. 7:Sample vaccine administration record for adults [51]



Age	18–26 years	27–49 years	50–64 years	≥65 years
Anthrax				
Chickenpox				
Chikungunya				
Cholera	At risk			
COVID-19	During the pandemic or epidemic			
Hib				
Hep A				
Hep B				
HPV	3 doses	3 doses		
IIV4 or RIV4				
LAIV4				
Japanese encephalitis				
MMR				
MenACWY				
PCV13				
PPSV23				
Polio				
Rabies (post-exposure)	4 doses			5 doses
RSV				Above 60 years
TdaP/Td	First dose of Tdap followed by a booster dose of Td/AdaP every 10 years			
Typhoid	At risk			
Shingles (herpes zoster)				
Yellow fever	If risk of exposure or traveling to an endemic country			

A Recommended | Not recommended | Benefit–risk ratio | Additional risk factor | No guidance

	Pregnancy	Immunocompromised	HIV infection	Asplenia, complement deficiencies	CKD/HD	Heart/lung disease alcoholism	CLD	DM	HCP	Traveler	Mass gathering
Anthrax											
Chickenpox											
Chikungunya											
Cholera											
COVID-19											
Td											
Tdap											
Hib											
Hep A											
Hep B											
HPV											
IIV4 or RIV4											
LAIV4											
Japanese encephalitis											
MMR											
MenACWY											
PCV13											
PPSV23											
Polio											
Rabies											
RSV											
Typhoid											
Shingles (herpes zoster)											
Yellow fever											

Legend to read the table

B Recommended | Not recommended | Benefit–risk ratio | Additional risk factor | No guidance

CKD: Chronic kidney disease | CLD: Chronic liver disease | CV: Cardiovascular | DM: Diabetes mellitus | HCP: Healthcare personnel | HD: Hemodialysis | ICU: Intensive care unit.

Figs 8A and B:

Adult vaccine recommendation based on age and special populations. [35] CKD, chronic kidney disease; CLD, chronic liver disease; CV, cardiovascular; DM, diabetes mellitus; HCP, healthcare personnel; HD, hemodialysis; Hib, *Haemophilus influenzae* type b; HIV, human immunodeficiency virus; HPV, human papillomavirus; ICU, intensive care unit; IIV4, inactivated influenza vaccine (quadrivalent); LAIV4, live attenuated influenza vaccine (quadrivalent); MenACWY, meningococcal conjugate vaccine (serogroups A, C, W, and Y); MMR, measles, mumps, and rubella vaccine; PCV13, pneumococcal conjugate vaccine (13-valent); PPSV23, pneumococcal polysaccharide vaccine (23-valent); Td, tetanus and diphtheria; Tdap, tetanus, diphtheria, and pertussis vaccine

HPV VACCINE(HUMAN PAPILLOMAVIRUS VACCINES)

EPIDEMIOLOGY-

Human papillomavirus (HPV) belongs to the family Papillomaviridae. They are small deoxyribonucleic acid (DNA) viruses. The infections caused by this virus are highly transmissible and primarily transmitted by sexual contact. Most HPV infections are transient, self-regressing and benign. Persistent genital infection with certain viral genotypes can lead to the development of anogenital precancers and cancers.

15–20 serotypes are oncogenic of over 200 serotypes of HPV which have been discovered.In 99.7% of all cervical cancer cases presence of oncogenic HPV-DNA has been demonstrated, the highest attributable fraction so far reported for a specific cause of major human cancer. The lag period between the oncogenic HPV infection and the invasive cervical cancer can be 15–20 years.(17).

In Indian women, HPV-16 and -18 are the most common prevalent genotypes . Over 90% of benign genital infections such as genital warts are due to nononcogenic HPV serotypes-6 and -11. Also, HPV has been implicated in anal, penile, vulvar, vaginal, and oropharyngeal cancers.

CERVICAL CANCER IN INDIA-

Cancer of the cervix uteri is the second most common cancer among women globally and in India.An estimated 604,127 new cases and 341,831 deaths have been reported in 2020. Incidence is highest in developing countries i.e. about 86% of the cases which is 13% of female cancers(18). Globally, age-standardized rate (ASR) of cervical cancer is 13.3 per 100,000, and for Indian women it is 18 per 100,000. It is estimated that 123,907 cases of cervical cancer cases occur in India and of these 77,348 die every year(18) (20). The cumulative risk of cervical cancer at 75 years is 2%.

Human Papillomavirus Prevalence in Men- The prevalence of any HPV type was 18.7% at the penis, 13.1% at the scrotum, 7.9% at the perineal/ perianal region, and 21.0% at any site (21) as concluded by a multicenter clinical trial. The trial studied prevalence of penile, scrotal, and perineal/ perianal HPV infection in heterosexual men.

Natural HPV infections are restricted to the intraepithelial basement layers of the mucosa , therefore do not induce a vigorous immune response.

Human Papillomavirus Vaccines:

There are 2 types of HPV vaccines licensed globally-quadrivalent and nonavalent vaccines (Table 5).

Recombinant DNA technology is used to manufacture both the vaccines. It produces non-infectious virus-like particles (VLPs) comprising the HPV-L1 protein. The serotype which have already caused infection before vaccinationarenot covered by the vaccine.Preadolescents vaccinated through 9–13 years show higher immune response as compared to adolescents and young adults. Excellent protection, in fact nearly completeprotection against precancerous and other anogenital lesions caused by the vaccine related HPV-types has been documented during the 10–14 years of observation so far. Similar results are expected for protection against cervical cancer also.

Quadrivalent vaccine (4vHPV) available in India is a mixture of L1proteins of HPV serotypes 6, 11, 16, and 18 with aluminum containingadjuvant.

Each 0.5 mL dose of this vaccine contains:

- 20 ìg of HPV-6 L1 protein
- 40 ìg of HPV-11 L1 protein
- 40 ìg of HPV-16 L1 protein
- 20 ìg of HPV-18 L1 protein adsorbed onto 225 ìg of the aluminumhydroxide.

Efficacy and The safety-of quadrivalent vaccine was assessed in a large study named FUTURE (Females United to Unilaterally Reduce Endo/Ectocervical Disease.)

Table 5: Human papillomavirus(HPV) vaccines: A comparison[22]

	Gardasil 4	*Gardasil 9*	*Cervavac*
HPV types in vaccine	6, 11, 16, and 18	6, 11, 16, 18, 31, 33, 45, 52, and 58	6, 11, 16, and 18
Adjuvant	225 µg of amorphous aluminum hydroxyphosphate sulfate (AAHS)	500 µg of AAHS	$Al^{+++} \leq 1.25$ mg
Composition	• 20 µg of virus-like particle of 6, and 18 • 40 µg of VLP of 11, and 16	• 20 µg of VLP of 31, 33, 45, 52, and 58 • 30 µg of VLP of 6 • 40 µg of VLP of 11, and 18 • 60 µg of VLP of 16	• 20 µg of VLP of 6, and 18 • 40 µg of VLP of 11, and 16
Age recommendations	Females: 9–45 years	• Females: 9–26 years • Males: 9–14 years	Males and females: 9–26 years

Nine Valent Human Papillomavirus Vaccine -HPV (9vHPV) vaccine contains HPV-6, 11, 16, 18, 31, 33, 45, 52, and 58 VLPs. Studies have found that 9vHPV is an efficacious vaccine. Phase III studies in ~10,000 women aged 16–26 years have demonstrated that 9vHPV is safe and highly efficacious against HPV infection and anogenital precancer lesions in both men and women with a VE of 96.7% (80.9–99.8) against high-grade cervical, vulvar, or vaginal disease. This high efficacy (90–98%) of 9vHPV in preventing certain HPV-related precancers was sustained for >8 years. All participants who received 9vHPV, seroconverted to the additional five HPV types (HPV-31, 33, 45, 52, and 58) 1-month following the last dose. Antibody responses to HPV-6, 11, 16, and 18 were similar to those generated by the qHPV vaccine.18-24 Around 77.5–100% of individuals who received three doses of 9vHPV remained seropositive to all 9vHPV after 5 years.27

4vHPV Vaccine of Serum Institute of India (Cervavac™)

Recently, the 4vHPV vaccine of Serum Institute of India (Cervavac™)has been granted market authorization.

CERVAVAC™ is a quadrivalent HPV vaccine developed by theSerum Institute of India.33

Each dose of 0.5 mL contains:

- HPV type 6 L1 protein e" 20 µg
- HPV type 11 L1 protein e" 40 µg
- HPV type 16 L1 protein e" 40 µg
- HPV type 18 L1 protein e" 20 µg
- Al+++ d" 1.25 mg.

It is produced from Hansenula polymorpha.

In a pivotal, phase 2/3 trial, done in 9–26 years aged population, CERVAVAC™—induced IgG geometric mean titers (GMT)

were >1,000 times higher than the baseline titers against all targetedHPV types. Postvaccination, at 7-month timepoint (1 month afterthe last dose), a 100% seroconversion was reported across all fourvaccine types (Serotypes 6, 11, 16, and 18) in

initially seronegativepopulations.

The vaccine has demonstrated comparable immunogenicity against licensed quadrivalent vaccine when administered to female and male aged 9–26 years.

Safety Profile

Common adverse events noted were injection site pain and headache. They were usually mild and all resolved without sequelae.

Indications

HPV vaccine is indicated for girls and ladies 9 to 26 years of age for the preventionof diseases caused by Human Papilloma Virus:

- Cervical, vulvar, vaginal, anal cancer- HPV-16 and 18
- Genital warts (condyloma acuminata) - HPV 6and 11
- CIN grade 2/3 and cervical AIS, and
- CIN grade 1 -HPV- 6, 11, 16, and 18
- VIN grades 2 and 3
- VaIN grades 2 and 3
- Anal intraepithelial neoplasia (AIN) (All grades I, II, and III).

In males of 9 to 26 years of age group, diseases caused by HPV types coverage included in the vaccine:

- Anal cancer -HPV - 16 and 18
- Genital warts (condyloma acuminata) – HPV-6and 11
- AIN grades I, II, and III– HPV(6, 11, 16, and 18).

Contraindications

Hypersensitivity to the active substances or to any of the excipients of the vaccine is a contraindication for the vccine.Also, severe allergic reactions to yeast (a vaccine component), or after a previous dose of the vaccine.

It should be avoided in pregnancy.

Schedule Individuals- 9–14 years of age (boys and girls): Two-dose schedule (0.5 mL at 0 and 6 months).

RECOMMENDATIONS FOR USE

The HPV vaccines are of public health importance , so WHO states that HPV vaccine should be included in national immunization programs27.India has high disease burden and without screening programe. So, including it in national immunization programme would benefit us a lot. All three licensed HPV vaccines (bivalent, quadrivalent, and nonavalent) have excellent safety, efficacy, and effectiveness profiles.7 However, introduction of vaccine in program needs to take into account public awareness and programmatic feasibility.Since 2016, HPV vaccination was introduced in the immunization programs in Punjab, Sikkim, and Delhi. thought of HPV vaccination in the national immunization program is not too far off (35) if the vaccine rate is reduced and made affordable for the common man.

The ACVIP recommends offering HPV vaccine to all females and boys 9–14 years, in the schedules discussed below. Since protection is seen only when the vaccine is given before infection with HPV, the vaccine should preferably be given prior to sexual debut. Vaccines are not 100% protective against cervical cancer and not a replacement for periodic screening. Hence, screening programs should continue as per recommendations. All the available vaccines are equally efficacious and safe for protection against cervical cancer and precancerous lesions as of currently available data. The quadrivalent and nonavalent vaccine additionally protect against anogenital warts. Currently, only the 9-valent HPV vaccine is licensed in India for use in males.

Storage: The vaccines should be stored at 2–8°C and must not be frozen.

Dose: The dose is 0.5 mL intramuscular in deltoid. Breastfeeding is not a contraindication for HPV vaccination. In April 2022, the WHO Strategic Advisory Group of Experts (SAGE) on immunization recommended updating the dose

schedules for HPV vaccines in national immunization programs(36,37).

The new dose schedules suggested are as follows:

- Single or two-dose schedule for female aged 9–14 years.
- Single or two-dose schedule for young women of age group 15–20 years
- 0,6- Two doses with 6-month interval for female>21 years of age. Immuno-compromised individuals (HIV, etc) should receive three doses and if not, minimum two doses. There is limited evidence regarding the efficacy of a single dose in this group Till date, this recommendation is not endorsed by the Government of India or IAP. IAP Recommendations: Human Papillomavirus Vaccines Routine vaccination in India:
- 4vHPV and 9vHPV are available in India.
- Minimum age: 9 years.
- 9–14 years girls: 4vHPV and 9vHPV are recommended in twodose series with a minimum gap of 6 months between the doses.
- 9–14 years boys: 9vHPV is recommended in a 2-dose series, with a minimum interval of 6 months between the doses (0–6 months).
- 15–45 years girls and women: Three-dose schedule: y 4vHPV: (0, 2, and 6 months) y 9vHPV: (0, 2, and 6 months) till 26 years of age
- For immunocompromised individuals, three-dose series is recommended.
- In a two-dose schedule, the minimum interval between doses should not be vaccine series catch up.

Key Recommendations

1. Policy Integration: Adult vaccines should be included into the national immunization schedule [35].
2. Public Awareness: Use multimedia campaigns and healthcare counseling tocreate awareness and promote education to dispel myths [8].
3. Healthcare Training: Mandate vaccine review during hospital visits [33].
4. Dedicated Clinics: Establish adult vaccination centers in all major hospitals.[48].
5. Digital Records: Develop immunization registries for adults [34].
6. Research and Funding: Support cost-effectiveness and impact studies [6].
7. Public–Private Partnerships: Engage manufacturers and NGOs to expand reach[11].

With these measures, India can align with global standards, ensure equitable access,and realize substantial public-health gains.

Conclusion

Adult vaccination marks the next step in India's preventive healthcare [35].

Extending immunization beyond childhood through national policy, education, and infrastructure will strengthen the country's ability to combat infectious disease.

Indigenous vaccines such as Cervavac™ and standardized adult vaccination clinics canmake immunization a lifelong health priority and decrease morbidity and mortality in the adults.

India's public-health system—bolstered by its vaccine-production capacity andexperience with mass campaigns—has the potential to lead other low- and middleincomenations in adopting comprehensive adult immunization. The time has come toprotect not only our children but our entire population throughout life.

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CERVICAL CANCER-Together we can make it a Disease of Past.

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Consultant Surgeon, Indore
Hon.Professor-IMA Academy of Medical Specialties
Chairman-IMA National Cancer Prevention & Tobacco Control Committee

Kudos to IMA NP Dr. Dilip Bhanushali for his initiative to co-ordinate with FOGSI for empowering our members knowledge about Cervical Cancer Vaccine and thereby motivating so many Doctors in Cervical Cancer Control. And Kudos also to AMS officials to bring out a special issue on this very important topic in their IMA AMS Annals.

Cervical cancer is a preventable disease and also curable if detected early and treated properly.But still,it is a common cancer and one of the major causes of Cancer death in women in the world. Although, the incidence of Cervical Cancer is decreasing in the world due to improved hygiene, awareness about the causative factors, screening and specially due to Cervical Cancer vaccine being given to eligible Girls in appropriate age.

WHO has given a clarion call for Cervical Cancer Elimination by 2030. This global strategy to eliminate cervical cancer proposes:

- a threshold of 4 per 100,000 women,
- 90-70-90 targets that must be met by 2030 by countries for cervical cancer elimination:
- 90% of girls fully vaccinated with HPV vaccine by age 15 years.
- 70% of women are screened with a high-performance test by 35 years of age andagain by 45 years of age.
- 90% of women identified with cervical disease receive full treatment

(90% of women with pre-cancer treated, and 90% of women with invasive cancer managed).

It is projected that by achieving the 90-70-90 targets by 2030,would result in over 62 million cervicalcancer deaths averted by 2120.

As is well known, the main cause of precancerous and cancerous cervical lesions is HPV infection-with a high-risk or oncogenictype . HPVare morethan 100 types, of which at least 14 cause cancer although, HPV 16 and 18, which together are responsible for about 70% of cervical cancerworldwide, are the most oncogenic types. Cervical HPV is the most common sexually transmitted infection.

As per GLOBOCAN 2022 report, India had 1413136 new Cancer Cervix cases ,916827 deaths due to it and five year number of prevalent cases was 3258518.

Although HPV vaccine was first permitted for clinical use in 2006, the use in India started later and cost has also been a limiting factor in its widespread use. However, with an Indian vaccine available now the cost has become affordable, many states have started offering free HPV vaccine to the girls between 9-14 yrs of age and thereby save millions of life in coming years. Two doses of vaccine has to be given in a gap of 6 months.Many countries are also giving HPV vaccine to the boys to prevent Oropharyngeal, Penile, Anal Cancers & Genital Warts. This will also prevent transmission of HPV infection to their female partners. The vaccine has been shown to be very safe, almost no side effects & effective in prevention of Cervical Cancer.

For the first time –World-India-IMA have joined forces to eliminate a CANCER.

Through this cost-effective, evidence-based intervention, human papillomavirus vaccination of girls, regular screening of women, treatment of precancerous lesions, early diagnosis and treatment of invasive cancers, we can eliminate this important, preventable,public health problem and make "Cervical Cancer- a disease of the past".

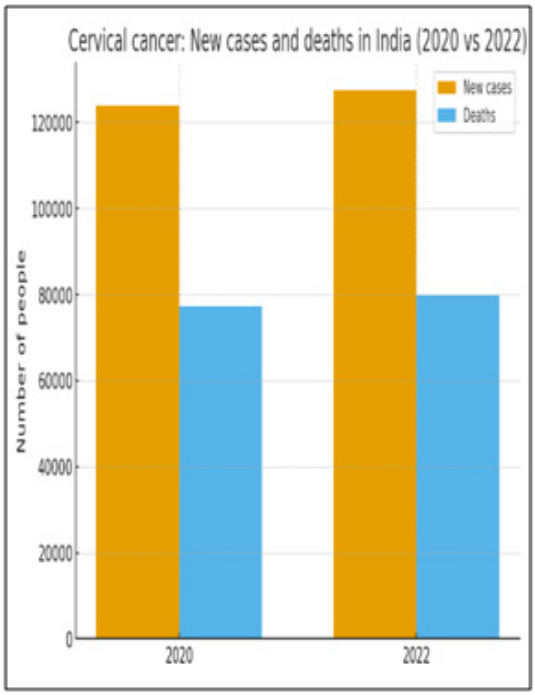


Human Papillomavirus (HPV) Vaccination in India: Evidence, Implementation and Future Directions



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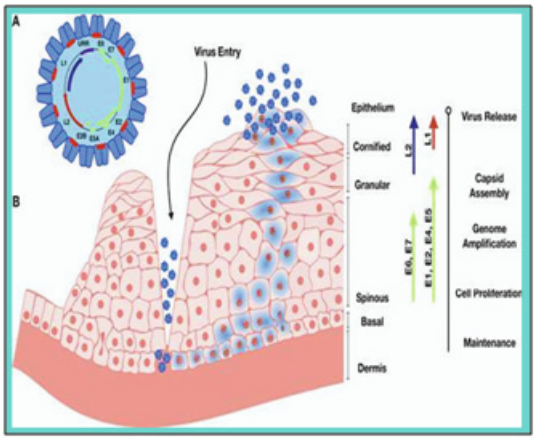
Human papillomaviruses (HPV) are a group of DNA viruses with tropism for squamous epithelium. Persistent infection with oncogenic (high-risk) HPV types — principally **HPV-16 and HPV-18** - is causally associated with cervical intraepithelial neoplasia and invasive cervical cancer (ICC) (Koch's postulates–level causal evidence). Globally, cervical cancer remains a major preventable malignancy through vaccination against HPV and scaling of screening and treatment services. **In India, it is the second most common cancer in women after carcinoma breast in India. According to GLOBOCAN (Global cancer observatory) 2022 estimate – 1,23,907 new cases and 77,348 deaths annually were recorded, which is approximately 20% of the global burden,** roughly one-fifth of new cervical cancer cases and nearly one-quarter of cervical cancer deaths. [1]

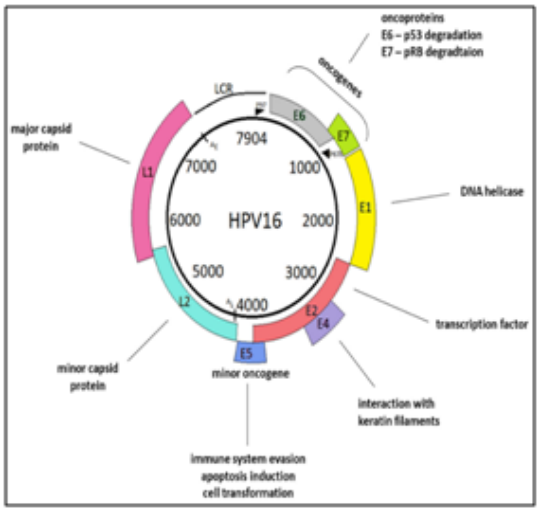




STRUCTURE AND LIFE CYCLE OF HUMAN PAPILLOMA VIRUS

This virus is a small, non-envelopedwith a diameter of 52-55 nm. It comprises a single double-stranded DNA molecule of about 8,000 base pairs, which is encapsulated within a protein capsid madeup of 72 pentameric capsomeres[2].HPV targets cutaneous and mucosal squamous epithelium composed of basal layer of undifferentiated cells. HPV can only establish in actively dividing cells. The virus relies on host cell for its genome replication. E6, E7 are critical for growth, persistence and transformation of host genome, leading to a range of outcomes from benign warts to malignant cancers - cervical, anal and oropharyngeal cancers.





HPV viruses are categorized based on their oncogenic potential into:

- **High-Risk HPV Types** : These are associated with cervical, anal and oropharyngeal cancers. **Notably, HPV types 16 and 18 are responsible for the majority of HPV-related cancers.** Other high-risk types include HPV 31, 33, 35, 39, 45, 51, 52, 56, 58, and 59.
- **Low-Risk HPV Types** : These are primarily associated with benign conditions such as warts and respiratory papillomatosis. **Low-risk types include HPV 6, 11, 42, 43, 44, 54, 61, 70, 72 and 81.(Burd et al,2003).**

Understanding local genotype distribution is relevant when considering bivalent (HPV-16/18), quadrivalent (HPV-6/11/16/18) and nonavalent vaccines (covering 9 types including 31/33/45/52/58), because broader valency expands preventive coverage against more oncogenic types.

Clinical manifestation	Associated HPV types
Cutaneous warts	1, 2, 4
Palmoplantar warts	1, 2, 27, 57
Mucosal warts (condyloma acuminatum or condyloma plana)	6, 11
Respiratory papillomatosis	6, 11
Intraepithelial neoplasia and HPV-related carcinoma	16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 66, 68

TRANSMISSION

HPV transmission **primarily occurs through unprotected penetrative sexual intercourse** that includes vaginal, oral or anal intercourse with an infected individual. Infected individuals may not exhibit signs or symptoms for years, which complicates detection and emphasizes the importance of having an effective screening program to identify and manage HPV infections.

HPV VACCINE

The HPVL1protein, which, when assembled into virus-like particles (VLPs), induces HPV-type-specific neutralising antibodies, forms the basis of all commercial HPV vaccines.VLPs are not infectious because they lack viral DNA. However, they closely resemble the natural virus, and antibodies against VLPs have activity against the natural virus. The VLPs have been found to be strongly immunogenic, which means that they induce high levels of antibody production by the body. This makes the vaccines highly effective.Licensed vaccines include:

1. Bivalent vaccine (targets HPV-16 and HPV-18)
2. Quadrivalent vaccine (targets HPV-6, HPV-11, HPV-16, HPV-18)
3. Nonavalent vaccine (targets HPV-6/11/16/18/31/33/45/52/58)[4-6]

HPV vaccines have been licensed in India since 2009 for females aged 9 to 45 years. In 2018 the nonavalent vaccine was approved by FDA extending the age of vaccination upto 45 years.

In India, these three prophylactic vaccines are available:

1. Bivalent vaccine Cervarix (Glaxo Smith Kline)
2. Quadrivalent vaccine Gardasil (Merck)
3. Nonavalent vaccine Gardasil-9 (Merck).

All 3 vaccines prevent infections with high-risk HPV types 16 and 18. Gardasil-9 prevents infection with five additional high-risk HPV types (31, 33, 45, 52, and 58). In addition, Gardasil and Gardasil-9 prevents infection with non-oncogenic HPV types 6 and 11, which cause 90% of genital warts. In a promising step in the fight against cervical cancer, India recently launched its **first locally produced HPV vaccine, Cervavac, on 1st September 2022, quadrivalent vaccine, which protects against HPV 16,18,6,11 strains**. It is jointly developed by the Serum Institute of India (SII) and Indian Government's Department of Biotechnology (DBT). Following positive data from a large phase 2/3 clinical trial, marketing authorisation was granted by the Drugs Controller General of India (DCGI) on July 12, 2022, for girls and boys aged 9–26 years.The vaccine's local production promises lower procurement costs, improved supply security, and the potential for rapid scale-up under the UIP.

Published in **The Economic Times- April 2025**- The Union Health Ministry is planning to roll out **capacity building activities** for frontline workers involved in administration of Human Papillomavirus (HPV) vaccination, sources said. In her interim budget speech in 2024, **Nirmala Sitharaman** had said that the government will encourage vaccination of girls in the age group of 9-14 years to prevent cervical cancer.

In 2022, the World Health Organisation (WHO) Strategic Advisory Group of Expertson Immunisation (SAGE) concluded that evidence supported that a single-dose HPV vaccine protects against HPV at a level comparable to two-dose schedules. The WHO now recommends the following[7]

1. A one- or two-dose schedule for girls aged 9–14 years.
2. A one- or two-dose schedule for girls and women aged 15–20 years.
3. Two doses with a 6-month interval for women older than 21 years.

WHO (2023):

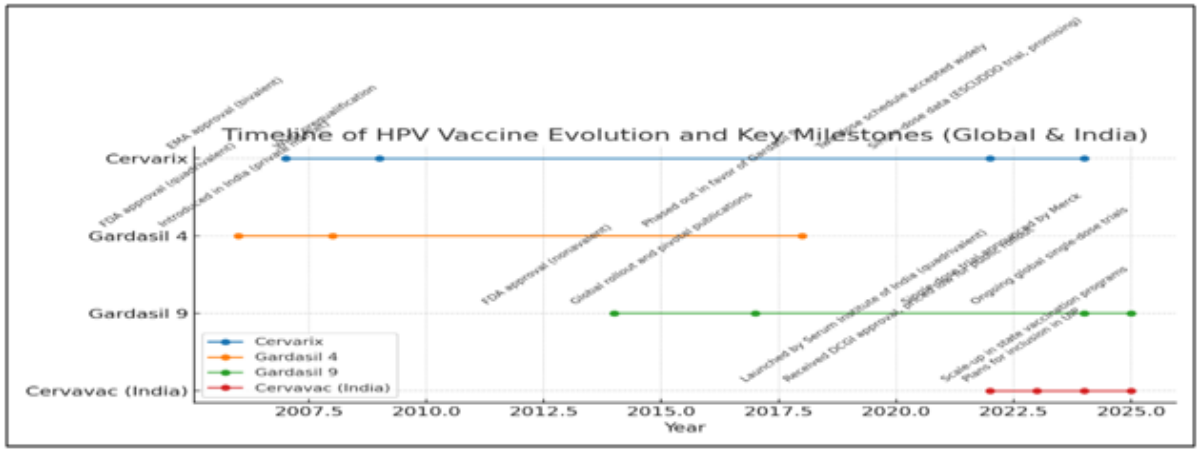
- *Primary target:* Girls aged **9–14 years** (before sexually active).
- *Alternative schedules:* 1 dose (preferred) or 2 doses (0, 6–12 months) for ages 9–20.
- *Catch-up:* Up to **26 years**, particularly in settings with available resources.
- *Gender-neutral programmes* encouraged when affordable and feasible.

Government of India (UIP expansion, 2025):

- Initial focus on **girls aged 9–14 years** via school and community outreach.

Comparison of HPV vaccines available for use in India

	Cervarix®	Gardasil®	Gardasil-9®	Cervavac
Manufacturer	Glaxo Smith Kline	Merck & Co. Inc	Merck & Co. Inc	Serum Institute of India Ltd.
HPV types	16,18	6,11,16,18	6,11,16,18,31,33,45,52,58	6,11,16,18
Substrate	Trichoplusia ni (Hi 5) insect cell line infected with L1 recombinant baculovirus	Saccharomyces cerevisiae expressing L1 (yeast)	Saccharomyces cerevisiae expressing L1 (yeast)	Recombinent Hansenula polymorpha (yeast)
Adjuvant	Aluminium hydroxide (AS04), 3-deacylated monophosphoryl lipid A	Aluminium hydroxyphosphate sulfate	Aluminium hydroxyphosphate sulfate (AAHS)	Aluminium hydroxide
Injection schedule	0,1,6 months	0,2,6 months	0,2,6 months	0,2,6 months



- Plans to gradually expand to **boys** and **out-of-school adolescents**.

People living with HIV and those who are immunocompromised should receive three doses. If this is not possible, then at least two doses, as there is limited evidence regarding the efficacy of a single dose in this group.

Based on fresh evidence on disease burden and a review of international data as well as HPV vaccine trials in India including the **India IARC trial of Gardasil vaccine and the Cervavac vaccine trial**, the National Technical Advisory Group on immunization (NTAGI) recommended the introduction of HPV vaccine in the Universal Immunization Programme (UIP) with "a one- time catch-up for 9–14-year- old adolescent girls followed with routine introduction at 9 years of age".

VACCINE SAFETY- [8]

No serious safety issues till date except rare reports of anaphylaxis.

The Global Advisory Committee for Vaccine Safety(GACVS) is constantly monitoring and has not identified any safety concerns.

Severe allergic reaction to any vaccine component or following a prior dose of HPV vaccine is a contraindication for vaccination.

Among males and females of all ages receiving HPV Vaccine- injection site pain (35-88%), redness(5-40%) and swelling(4-35%) are documented.

Mild systemic adverse events include headache, dizziness, myalgia, athralgia and GI symptoms.

HPV vaccines are safe and well tolerated and can be used in persons who are immunocompromised or HIV infected.

STORAGE – [9]

All HPV Vaccines are stored at **2-8 C**, not frozen but protected from light and should be administered immediately after removal from refrigerator.

DOSAGE – [10]

The vaccine is available as **0.5 ml dose**. It should be given **intramuscularly in deltoid region**. The individual should be seated during vaccination and observed in a separate room for 15 minuted post vaccination.

FAQs related to HPV vaccination

How long does vaccine protection last? - Continued protection and persistent antibody levels have been observed for a minimum of 10 years following vaccination against high-grade cervical, vaginal and vulvar neoplasia. There has been no evidence to suggest that the HPV vaccine loses it's ability to provide protection over time.

Can HPV vaccination be done in older age group women? - HPV incidence decreases with age. For women aged 25 to 45 years,the first priority should be given to cervical cancer screening and prior to vaccinating these women-counselling should be done about reduced efficacy of vaccine in this age group.

Is HPV vaccine safe during pregnancy and lactation?- HPV vaccination is not recommended during pregnancy, but if a woman becomes pregnant after starting the vaccination schedule, termination is not required. Further vaccination should be withheld and remaining dose should be given post-delivery without repeating the initial dose. Lactation is not a contraindication for HPV vaccination.

Should boys be vaccinated? - Both the nonavalent and the indigenous Cervavac have been licensed for use in boys as well, and they will benefit by protection against anal, penile and oropharyngeal cancers as well as genital warts. However, given the global shortage of HPV vaccines, WHO recommends that vaccination of girls should be the first target. Modeling studies also show this to be a more effective strategy.

Barriers to HPV vaccination

1. Lack of awareness about cervical cancer and the role of HPV vaccine in its prevention.
2. Concerns about the vaccine safety.
3. Cost of the vaccines.
4. Delay in provision of financial mechanisms to support countries in obtaining the vaccine and vaccine supply also pose a challenge.

Programmatic Considerations: Delivery, Cold Chain, and Workforce

1. Successful HPV vaccination programs require **demand generation, reliable vaccine supply, cold chain capacity, trained vaccinators, school health partnerships, accurate beneficiary identification, and robust adverse events following immunization (AEFI) surveillance.**
2. **School-based delive**ry is often the most efficient way to reach the target age group (9–14 years) but requires coordination with education departments and parental consent frameworks.
3. **Community outreach and fixed-site provision** complement school delivery for out-of-school girls.
4. An advantage of a **single-dose schedule** is simplified logistics and fewer opportunities for drop-out between doses.
5. **Integration with adolescent health platforms (e.g., adolescent-friendly clinics, school health programs) and catch-up strategies** for older cohorts need careful planning.

Integration with Screening and Treatment Services

HPV vaccine is primary prevention method and has maximal impact on population-level disease after several decades. Therefore, **concurrent scaling up of cervical cancer screening (HPV DNA testing or VIA in resource-limited settings) and prompt treatment of precancerous lesions remains essential for near-term mortality reduction.**

Program design should adopt a tailored approach: **vaccinate pre-adolescents, screen adult women beginning at recommended ages (contextualized to local guidelines) and ensure referral pathways and treatment capacity.**Modeling indicates that combined approaches (vaccination + high coverage screening with treatment) produce synergistic and cost-effective reductions in incidence and mortality.

Policy Recommendations

1. **National rollout with phased scale-up**: Prioritize routine vaccination of girls aged 9–14 with a one-time catch-up for older cohorts where feasible, leveraging school platforms and community outreach. Use the single-dose schedule as recommended by WHO where appropriate, with clear national guidance.
2. **Ensure affordable procurement and sustained supply**: Use domestically produced vaccines (CERVAVAC) at negotiated government prices; maintain

buffer stocks and expand manufacturing capacity.

3. **Integrate with screening & treatment scale-up**: Strengthen screening programs (HPV DNA tests where feasible) and ensure treatment capacity for precancerous lesions to achieve shorter-term mortality reductions.

4. **Robust AEFI surveillance and transparent communication**: Strengthen AEFI tracking, rapid causality assessment, and public communication systems to sustain public trust.

5. **Targeted equity measures**: Develop strategies to reach out-of-school girls, rural populations, and marginalized groups via community outreach and mobile teams.

6. **Implementation research and monitoring**: Invest in sentinel surveillance, linkage between immunization and cancer registries, and operational research on delivery models and cost drivers.

The **WHO global strategy** outlines the following threshold: **to eliminate cervical cancer as a public health problem globally, all countries must work towards an incidence rate of less than 4 cases per 100,000 women-years**.[11]

Achieving that goal rests on **three key pillars** and their corresponding targets:

Vaccination: 90% of girls fully vaccinated with the HPV vaccine by the age of 15 years

Screening: 70% of women screened using a high-performance test by the age of 35, and again by the age of 45 years

Treatment: 90% of women identified to have cervical pre-cancer and invasive cancer adequately treated.

Each country should meet the **90-70-90 targets by 2030** to get on the path to eliminate cervical cancer within the next century.

CONCLUSION

HPV vaccination represents a powerful preventive intervention with the potential to substantially reduce cervical cancer burden in India over coming decades. The indigenous HPV vaccine, favorable WHO guidance on simplified dosing and accumulating economic evidence create a timely opportunity for India to implement a large-scale, equitable HPV vaccination program. Success will hinge on supply sustainability, effective delivery platforms (school and community), strong safety surveillance, robust communication to overcome hesitancy and integration with screening and treatment services. With careful planning and investment, India can substantially advance toward the WHO goal of cervical cancer control and eventual elimination as a public health problem.

Remember, vaccination is not just a personal choice but a community responsibility, protecting the health of future generations and advancing public health goals globally.

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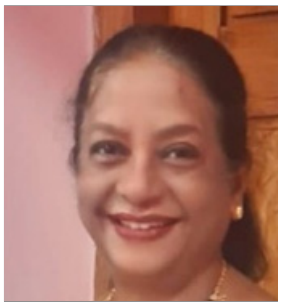
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Guard Them From Puberty Prevent Cervical Cancer

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History of discovery and research

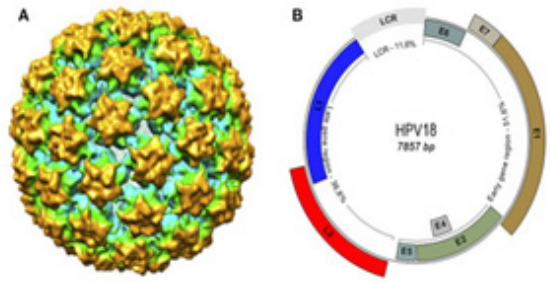
Existence of warts was described in the ancient times by Greek and Roman physicians. The fact that warts spread by contact was known by the 19th century. Joseph Payen (1891, London) reported that he got warts when he used his unprotected hand to scrape off a wart from a boy. Definite proof of spread of warts by contact was given by Jadassohn in 1896. But the presence of VLPs or Virus – Like – Particles of 52 nm, was studied and reported by 1949, by which time electron microscope was available, though the viral etiology for warts was known since 1907. Wart virus was initially called Papova virus, classified later into various Papilloma virus by Joseph L. Melnick in 1962. He and his partner Maurice J Strauss also described nuclear inclusion bodies which caused changes in the cell with multiplication of the virus. (3)

It was an Italian doctor Domencio Rigoni – Stem who hinted about a sexually transmitted cause for cancer of cervix simply because the disease was more seen in sexually active women. Richard Shope identified the Papilloma virus in rabbits and his study proved that it caused warts and cancer in rabbits.

The double strand DNA structure was identified in 1965. German virologist, Nobel prize winner of 2008, Harald Zur Hausen suggested that the causative organism for cancer of cervix could be HPV (1970) but his team worked hard for more than 10 years to clone High Risk HPV types 16 and 18 from cancer biopsies. This research was taken up by many others elsewhere and by 1990, the role of HPV in cancer cervix was confirmed.

A study of the research publications clarifies the historical aspect (1) From 1900 to 1990 there were 29330 publications of HPV related matters, majority of it being published after 1980. Out of the total, 12270 came from USA, and majority of the rest from high income counties like Sweden and Finland, Germany, and France. India which is low-middle income country has 279.78 publications in this period. Research is in high income countries and the disease burden is in low income countries. This can improve only with political willpower, improvement of infra structure and collaboration from high income countries. The departments involved in research and publication are Oncology, Pathology, Obstetrics and Gynecology, Virology and a few from Dermatology.

What is HPV



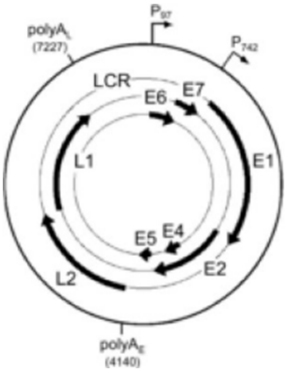
It is a virus seen everywhere, can survive without a host and is resistant to treatment. Papilloma virus is seen widely in nature but we are concerned about the host specific Human Papilloma Virus. It can enter the squamous epithelium through minute breaks and lie dormant for a decade. It invades the basal layer, and has a predilection for the keratinocytes.(4)It then may or may not make changes in the epithelium which when

persists can progress to warts or cancer. It is a nonenveloped epitheliotropic, double stranded DNA virus, with a protein capsid on the outsideand an inner genome with a double stranded DNA. The capsid on the outside consists of 72 capsomeres which are repetitions of five identical pentametric monomer L1 proteins and anchors one L 2 protein. The genes code for 8 (E-E8) proteins, out of which L1, L2 (structural and outside) and E6,E7 have been well reported. The change in the sequence of these proteins determines the specific types. There are about 200 types of HPV that have been identified by 2024, more research is going on. Only Alpha (á), Beta (â), Gamma (ã), Mu (ì) and Nu (í) infect the humans.They are then classified as low risk and high risk types. The low risk types of cause skin infections and high risk group are seen to cause in carcinoma.

HPV infection can be had from fomites, autoinoculation, sexual contact or vertically from mother to neonate (4) The associated disease conditions so far described are skin warts, genital warts, Recurrent Respiratory Papillomatosis (RRP) seen in children and precancer and cancer of cervix, vulva and vagina, anal cancer and oropharyngeal cancers. The possibility of making a vaccine against such a virus had far reaching implications both academically and economically.

Many studies have been published from 1978 to 2012 on HPV in pediatric population. Mostly it was on the presence of HPV in warts on skin and genitalia in the children and some on RRP. (4) But these also include some interesting studies on vertical transmission, on HPV in the breast milk and on the effects on neonates. (15 articles according to one review) The findings of possibility of vertical transmission from mother to the newborn, raises a finger on the manner of sexual transmission in HPV infection though it could be hematological or from the semen at conception. The presence of HPV in the oral cavity of children was not influenced by the mode of delivery whether LSCS or vaginal. Study does not have data of HPV positivity in the mother concerned. The concordance of the HPV type in mother and neonate was 57% to 69% only. So further studies on modes of transmission of this infection is needed.

After 1990, studies concentrated on the natural history of the HPV virus, (5) on cancers caused by some types of this virus, possible use of viral DNA in screening for these cancers and developing a vaccine against it. These viruses are present on the normal skin. They show a tendency to penetrate the genital mucosa and later cause proliferation of the layer. That is why these were proven to be associated with cervical, anal and oropharyngeal cancers. HPVs has also been found in skin cancers, such as Epidermodysplasia Verruciform (EV) as well as in non - melanoma skin cancers. As molecular studies and DNA sequencing became available in late 1990s and early 2000s, clear structure and various types were classified with proper nomenclatures. A non enveloped icosahedral capsid and a double stranded DNA genome encoding 8 open reading frames (ORFs) are the identification of HPV. The life cycle of these viruses involves the ORFs. The capsid has proteins L1 (55 kDa in size and contributing to 80% of the total viral protein) and protein L2(70kDa). VLPs can be produced by L1 alone or with L1 and L2. They help in the virion assembly. The first functional part (E1-E7) are involved with viral replication. The non coding part, the long control region (LCR) are necessary for replication and transcription of viral DNA.



The genome of high risk HPV 31, (copied from Fehrmann and Laimins 2003)

Epidemiology

HPV is the commonest Sexually Transmitted Infection (STI) Every sexually active man and woman will get infected with HPV once in their

life time. But this does not mean that they have any ill effect, or changes in their cellular structure. Often the infection has no viraemia or immune reaction from body goes unnoticed. The virus is cleared by natural immunity. HPV was tested for in women with normal cervical cytology (NCC) [7,8] the prevalence of presence of HPV DNA was 10.7% in 2007, which is on the rise, showing an incidence of 11.7% in 2010. An adjusted calculation gave the value as 9.9% by 2019. This could have been due to the vaccination schedules in most of the countries.

The country wise prevalence was estimated to be as follows. Oceania – 21.8%, Africa – 21.1%, Europe – 14.2%, America – 11.5% and Asia -9.4% The age of maximum incidence was below 25 years (tested age 18 and above) A rebound infection incidence rise was noticed around 45 years. This goes well with the natural history of HPV in the tissues. In males the presence was studied in rectal swabs and the prevalence of presence of HPV DNA was similar to as seen in women. This was taken as a carrier state. A study in 2014 (10) showed that among 4065 healthy men belonging to all 4 participating continents, 9% had carrier status. It was seen more in HIV infected and in those with homosexual behavior (9) the number of sexual partners determined the higher risk. Age had no significance. It was lower in Asia and higher in Africa as also the incidence and prevalence of other STIs.

A study published in 2016, (11) discusses that natural immunity is better developed by women than men. Men continue to be reservoirs or vector based niches for HPV giving repeated exposure to younger women and men.

Cutaneous warts from HPV also showed a similar pattern of more incidence in male and less in children. It is much more (90%) in immunocompromised people. The risk of developing non melanoma skin cancer is more in them.

The commonest manifestation of lowrisk HPV 6 and 11 are anogenital warts. (AGW) The morbidity associated with this is less, but its presence brings down the quality of life and because of recurrences it has high transmission rate. (12) AGW is seen in 80 to 85% of anal cancers and 50% of oropharyngeal cancers. (Table)

Distribution and prevalence of HPV genotypes by regions around the world in both women with normal cervical cytology (NCC) and women with invasive cervical cancer (ICC) (14, 15).

HPV TYPES	L.AMERICA		N. AMERIC		ASIA		AFRICA	
	NCC	ICC	NCC	ICC	NCC	ICC	NCC	ICC
HPV 6	0.5%	0.1%	0.5%	0.1%	0.9%	<01%	2.0%	--
HPV 11	0.2%	<0.1%	0/3%	--	0.7%	<0.1%	---	---
HPV 16	3.2%	61%	4.8%	65.5%	3.3%	59.2%	5.8%	71.9%
HPV 18	1.4%	10.2%	0.9%	7.3%	1.2%	9.1%	2.3%	6.9%
HPV 31	0.8%	3.7%	2.3%	3.4%	1.2%	4.9%	1.0%	3.1%
HPV 33	0.5%	3.8%	0.6%	5.7%	0.8%	3.5%	--	3.1%
HPV 35	0.5%	1.9%	0.2%	2.2%	0.7%	2.1%	--	--
HPV 39	0.6%	1.6%	0.8%	1.3%	0.4%	2.2%	1.2%	1.3%
HPV 45	0.5%	5.8%	0.4%	3.9%	0.7%	6.85	1.0%	5.6%
HPV 51	0.6%	1.3%	0.4%	1.9%	0.5%	1.6%	1.5%	1.3%
HPV 52	0.9%	2.8%	0.4%	1.9%	0.7%	2.7%	2.1%	3.1%
HPV 56	0.6%	0.8%	0.3%	1.6%	0.4%	0.6%	1.O%	0.6%
HPV 58	0.7%	2.3%	0.4%	1.3%	1.0%	2.0%	1.5%	1.9%
HPV 59	0.3%	1.1%	0.2%	0.7%	0.4%	1.2%	1.2%	----
TOTAL	7.2%	84.9%	9.7%	87.1%	17.2%	81.6%	4.8%	90.9%

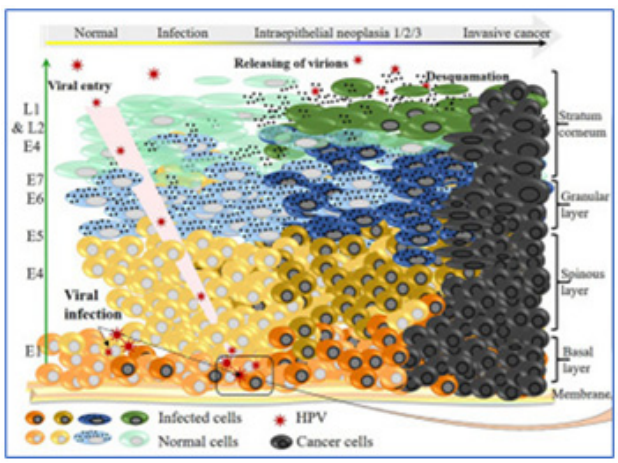
This epidemiological study clearly shows that in invasive cancer of cervix the presence of high risk HPV is of very high prevalence. Later research has proven the same point and HPV as a causative agent for malignancy is confirmed.

Each year 13.1/100,000 new cases of cancer cervix are diagnosed. It accounts for 3.3% of deaths due to cancer, 85% of which is in developing countries. HPV is causative in almost 100% of cervical cancer, to lesser extent in other cancers anal (88%), vulvar (43%),vaginal (70%), penile (50%) and Oropharyngeal (37%).

MSM and women have the highest risk of developing anal and oropharyngeal cancers, because anal intercourse and HPV. Immunosuppressed people and women whose partners are uncircumcised, are at a higher risk for HPV infection and persistence as the HPV clearance is less in these. Persistence of HPV infection leads to cancers. Irrespective of low viral load, the hyper expression of HR HPV oncoproteins E7 in tissues is the final pathway for cancer.

Pathogenesis of HPV related cancers.

The major capsid protein L1 is variably different for each type of HPV, and carries the function of membrane receptor binding such as L1L2 interactions. This is responsible for type specific virulence, capacity for persistence as well as production of type specific neutralizing monoclonal antibodies.All HPVs infect in a similar manner, infecting only undifferentiated basal epithelium of skin and mucus membrane.

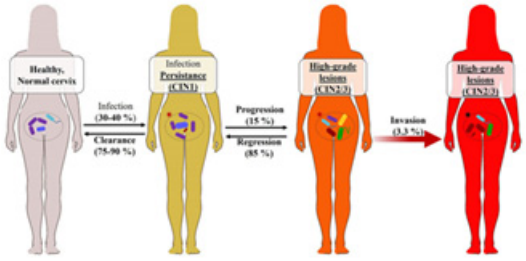


The virus reaches the target cells below through breaks (Microlesions) in the surface occurring during intimate contacts.

Both the viral antigens and the host receptors are involved in the further movement into the deeper undifferentiated layers. Binding occurs between L1 protein and the HSPG (heparan – sulphate proteoglycan) as well as non HSPG receptors releasing the L2 protein. The loss of affinity in this first interaction promotes viral movement to the keratinocytes and viral internalization. The virus is transported to the nucleus in a small vesicle through the ER and the Golgi where the capsule is shed and viral genome enters the host nucleus through the pores. With in the nucleus, multiplication happens at a later stage until which time viral protein synthesis is kept up. (15, 16)

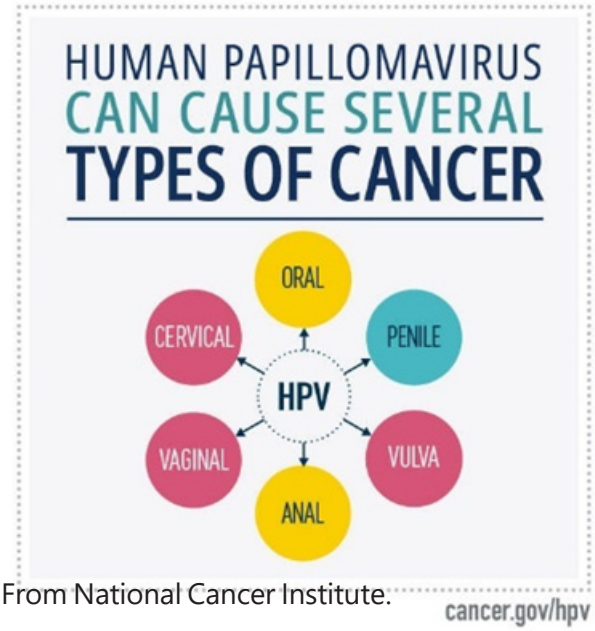
In a normal cell cycle, the cells of the basal layerdivide and cause the apical epithelium to be renewed, under a limitation. HR-HPV infection causes continuation of this cell division without limitation to finally cause warts or cancer. Integration of the viral genome into the nucleus of the host cell causes hyper- expression of E6 and E7 oncoproteins, and loss of expression of E2. In the absence of E2, p97 freely induce further expression of E6 and E7.

The viral entry causes no viremia hence remains unknown to the host. (18) For a 98% exposure to HPV, there is only transient infection in 70 to 90%. About 30% to 40% may have persistence causing overt disease such as Genital Warts, low grade cervical intra epithelial neoplasia (CIN1) and penile intra epithelial neoplasia (PIN1). The latency of viral clearance depends on the HPV type and the immune competency of the host. In those where the infection persists, CIN1 and PIN1 will progress to CIN2/3, and PIN2/3. Nearly 3% of these will develop ICC.



pmc.ncbi.nlm.nih.gov/articles/PMC7855 HPV infection progression is also dependent on the sexual practices, smoking, contraceptives and presence of other infections such as HIV, Chlamydia. Lately Cytomegalo Virus (CMV) has been implicated in the pathology of HPV viral infection. Further study is needed to prove the causal factor.

Cancer Site	Estimated Percentage Caused by HPV
Cervical Cancer	Virtually all cases (over 90%)
Anal Cancer	Over 90%
Oropharyngeal Cancer	About 70%
Vaginal Cancer	About 75%
Vulvar Cancer	About 69%
Penile Cancer	About 63%



From National Cancer Institute.

Screening

Since 1971, Papanicolaou testing of cervical cytology has been the main stay of screening. This alone has brought down the incidence of cervical cancer by identifying the CIN status of the cervix and treating the condition there and then (See and Treat) In countries with health insurance, it was made compulsory from 3 years after the first sexual intercourse.

Pap-smears and LBC(19) PAP smear involves scraping the cells from transformation zone of the cervix to do a cytological evaluation to look for any atypical changes which are then categorized as CIN or SIL. It has to be timed when there is no other discharges or bleeding, or recent intercourse. The cells have to be evenly spread on the slide and immediately fixed for cytology to prevent drying. The specificity and sensitivity studies give a range of 98%-99% and 50%-75%. Hence liquid based method became more popular after 1996. First generation LBC technology to get FDA approval are Thin Prep and Sure Path which are more expensive due to the need for sophisticated machines. Second generation LBC system,LiquiPrep and EziPrep which are less expensive is a better option for screening in low resource countries. LBC and PAP smears give comparable (98% concordance) in cytologybut LBC can be done even with some discharge, which is important for the patient convenience. Because of centrifuging and preparation of slide in the lab, a better cytological evaluation is possible independent of the person retrieving the sample. Besides this, the greatest advantage is the possibility of studying HPV DNA in the same sample, where as in conventional PAP smear, only presence of keratinocytes gave an indirect presence of HPV.

The screening protocols have been changed several times according to the published scientific papers and other review articles. (20)21 to 65 years every 3 years was the initial WHO guidelines. This has changed in the last 20 years with the possibility of molecular testing for HPV and Co-testing with LBC. This increases the sensitivity to nearly 100%. HPV DNA(approved by FDA in 2003) is not tested till 30 years. So 21 to 29years, it is only cytology. After 30 years, HPV tested at 5 year interval and if negative, one can stop screening for Cervical cancer at 50 years. This when followed by colposcopy had a specificity of 76.1% n 3769, compared to cytology screening alone of 47.1% n 1934.

In 2014 HPV DNA alone as a screening was

approved. If the test was positive, HPV genotyping for HR HPV 16 and 18 would be done. This could be followed by direct colposcopy exam. If negative Cytology and Colposcopy for abnormal results had to be done. HPV testing needs to be repeated in 5 years only unlike PAP smear. Self sampling was made possible while doing HPV testing. The specificity (81% and 90%) and sensitivity (74% and 88%) for self sampling and clinical sampling was found to be comparable. Cost is a factor, the new Hybrid Capture II HPV DNA is promising lower costs. It can handle 90 samples in 3 hours, same day VIA and Digital colposcopy for taking care of the lesion if present can be done. This is the latest WHO model for cancer cervix screening.

In poor resource countries women continue to die of cervical cancer, just because there is no screening or early cancer detection and treatment available free of cost. In India VIA (Visual Inspection Under Acetic acid) alone was tried and popularized so as to do cost effective screening. The affected area turns white, and this can be seen with naked eye in a light source by a trained health worker. Those triaged in this manner need a Digital Colposcopy and treatment of lesions.

Vaccines based on VLPs

Vaccination is the first line of defense against HPV infection. Vaccines are developed from L1 protien which are changed to VLPs. They act by preventing the uptake of the genome into the cell nucleus. Therefore they have no therapeutic role, only prophylaxis. The vaccines available so far are: Bivalent (Cervarixagainst HPV 16, and 18 [by GSK], quadrivalent Gardasil against HPV 6,11, 16, and 18 [by Merck] , 9-valent vaccine against HPV 6,11,16,18,31,33,45,52,and 58 [by Merck]and quadrivalent Cervavac against HPV 6,11,16 and 18 [by Serum Institute of India] They were approved for use by FDA in 2006,2009, 20014 and 2022respectively. Response to this vaccine has been studied in countries where it was given as schedulevaccination to both boys and girls aged 9 to 20. It is reported that there is significant reduction in GW and HPV related precancers.

However, the antigenic protection limits of current vaccines need to be analysed because many more HR HPV types are being described. These are not fully efficient across all countries because the specific types of HPV seem to be slightly different in different parts of the world (13) HPV 16 is more associated with infection progression, persistence and oncogenicity, and though they are less prevalent in countries like Africa, the effect of diseases caused by these have higher mortality and morbidity.

HPV vaccine was approved by FDA in 2006 as a bivalent vaccine , and in 2008 as a quadrivalent vaccine for prevention of cervical cancer. Its use was extended to prevent anal cancer by 2014. By 2020, FDA extended its use for prevention of head and neck cancers too.

To begin with it was recommended as a 3 dosed vaccine(0,2,6) in girls aged 15 to 26. It was recommended to receive the vaccine before the first sexual exposure. India received the license for using the vaccine in 2008. By 2009, it was available in public health services as a demonstration project, where a 2 dose schedule of 0, 6 months was followed in 9-14 aged girls. Many countries adopted the vaccine for boys and girls by 2011. The quadrivalent vaccine was approved for use in boys below 20 years in 2014 globally, though many countries as in Australia had established this as national vaccination schedule. By then the causation of anal cancer was also connected to HPV virus. The schedule is 0,6 in boys and girls 9 to 14 years. Those who accept the vaccination after 15 years will continue as 3 doses, 0,2,and 6.

Catch up vaccination: this is for the ladies upto age 26, who have not been adequately vaccinated in the teenage years. Adults from 27 to 45 can also take the vaccine (as 3 dose schedule) after consultation and counseling about the prior exposure, because of which, lesser benefit only should be expected. The vaccine is against 6,11,16 and 18, and if infected already, it has no therapeutic action. They should be recommended to accept the Nano valent vaccine against 7 HR-HPV plus 6 and 11.

HPV vaccine is made from the surface proteins / VLPs and contains no viral DNA. Therefore it cannot cause infection by any means, making it a safe vaccine. If given in pregnancy by chance, the next dose should not be administered. The schedule can be restarted later after delivery.

This is because the vaccine is not yet studied in adequate number of pregnant women for its effect on the fetus. Those who are HIV positive , should be given all 3 doses.

During the early years, some cases of possible allergic reactions were reported. It is now known that fear of injections alone can cause a fainting spell and fall. It is recommended to give the vaccine to a lying or sitting posture, and allowed to rest for 15 min. There can be minor reactions as pyrexia and rashes on the injection sites, which can be taken care of by analgesics and local care. Major reactions could happen if the person is having known allergy to the contents of the vaccine solution.

Safe sex, proper life style and continuing to undergo screening for cancers has to be practiced to effectively prevent the HPV related cancers. As cervical Cancer Elimination by 2030 has been declared by WHO, we need to give HPV vaccine to 90 percent of the eligible persons, Screen at least 70percent of those in age 30 to 65, and treat 90percent of those with tissue changes of CIN or SIL. This is a stupendous task as the vaccination has not been taken up at government level except in a few states, and screening still needs invitations and incentives from GO and NGO sources. To facilitate wider use of vaccine, WHO has come out with a suggestion for a single dose to be given to those in 9-to 26 years.

Latest research

The human immune system has a natural ability to clear HPV infection. The immune cells change over a period, and more antibodies are produced thus reducing the viral load. Acute infection continues as a chronic infection. There is rise in incidence of HPV related oropharyngeal cancer in the West. Hence the vaccination schedule needs to be gender neutral and cover males as well. The fact that community- based HPV vaccination has created a Herd Immunity, protecting those not yet exposed or vaccinated, has lowered the transfer of the virus across the population. Search is on for a therapeutic vaccine that can help those already exposed to HPV. this could attempt to clear the virus and thus preventing further cellular damage.

More cancers like prostate and breast cancer are under research for connecting them to HPV infection.The screening for HPV DNA is very expensive; hence it is not yet a universal modality of screening. Further research could make the test simpler and affordable and accessible to all. Vaccination schedules have been revised after research which shows a 'herd immunity' developing in certain areas. Hence we must keep up awareness building and educating the people regarding the importance of HPV vaccination as well as its benefits and safety.

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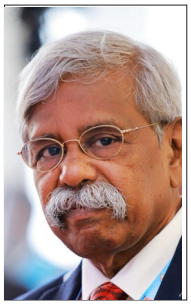
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Echocardiographic Pre-assessment for Adult Immunization



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Abstract

The evidence for vaccination in those with heart disease is based on the following facts[1,2&3]. 1. Patients with heart disease have higher risk of hospitalization, death and morbidity following Human Papilloma Virus infection and respiratory virus infection. 2. Randomized trials have shown to reduce the severity of infection. 3. Observational studies also conform this. 4. Adverse health effects of vaccination are exceedingly rare. The advantages of Echocardiography in the evaluation of Pre-vaccination patients include:

1. The evaluation of cardiac chamber volumes and mass, which avoids geometric assumptions.
2. The assessment of regional left ventricular (LV) wall motion and quantification of systolic dyssynchrony.
3. Presentation and ease calculation of Left Atrial (LA) volume and Strain curves.
4. Evaluation of cardiac valves and volumetric evaluation of Regurgitant lesions with 3DE colour Doppler imaging and
5. Echocardiographic stress imaging.

Evaluation of all Pre- Vaccination patients with echocardiography leads to detection of early and preventable changes. Thus, the treatment approaches may be changed in these conditions to include the cardio protective drugs, for an example ACEI, ARBs and statins.

Introduction

Adult immunization is a cornerstone of preventive healthcare, reducing morbidity and mortality from infectious diseases such as influenza, pneumococcus, and COVID-19. While vaccines are considered safe and effective, rare but significant cardiovascular adverse events (CAEs), including myocarditis, pericarditis, and worsening of pre-existing cardiac dysfunction, have been reported in adults following vaccination [1,2]. Echocardiography, a widely available and non-invasive imaging tool, provides important insights into cardiac function and structure. Its role as a pre-assessment modality is particularly relevant for high-risk populations, helping clinicians establish baseline cardiac status and enhance safety in adult immunization programs [3,4].

Rationale for Echocardiographic Pre-assessment

Echocardiographic evaluation prior to vaccination can provide multiple benefits:

1. **Detection of underlying disease** – Identification of left ventricular dysfunction, cardiomyopathy, or valvular abnormalities that could predispose to adverse outcomes [5].
2. **Baseline cardiac profiling** – Allowing differentiation between vaccine-related cardiac effects and pre-existing abnormalities [6].
3. **Risk stratification** – Informing vaccine scheduling, choice, or monitoring strategies for high-risk adults [7].

4. **Diagnostic adjunct** – Advanced echocardiographic techniques, such as global longitudinal strain (GLS), can detect subclinical myocardial injury even when ejection fraction is preserved [8].

Evidence from Studies and Guidelines

Myocarditis and Pericarditis After Vaccination

Systematic reviews have documented myocarditis and pericarditis cases following vaccines, most commonly after mRNA COVID-19 vaccines, though incidence remains low [1]. Myocarditis has been observed most frequently in young males after the second vaccine dose, but outcomes are usually favourable with appropriate treatment [2].

Role of Echocardiography

Echocardiography is recommended as part of the diagnostic work-up for suspected vaccine-related cardiac events. The **European Society of Cardiology (ESC) 2025 Guidelines** recommend transthoracic echocardiography (TTE) with strain imaging to detect ventricular dysfunction or pericardial effusion in suspected myocarditis [9].

Several studies highlight its clinical utility:

- A prospective study of 102 adults vaccinated with AstraZeneca, Pfizer, or Sinopharm vaccines demonstrated preserved ejection fraction post-vaccination, though subtle GLS changes were observed [3].
- A cohort of 121 adults presenting with post-vaccine cardiac discomfort showed reduced GLS and global circumferential strain despite preserved LVEF, indicating the sensitivity of strain imaging [8].
- In adolescents with congenital heart disease, serial echocardiographic assessment before and after COVID-19 vaccination revealed no significant deterioration in strain or ejection fraction [10].

Guideline Recommendations

The **ACC Expert Consensus** on cardiovascular sequelae of COVID-19 does not recommend routine echocardiography before vaccination in asymptomatic individuals but strongly supports its use in symptomatic patients or those with abnormal cardiac biomarkers [7]. Similarly, ESC guidelines emphasize echocardiography for suspected myocarditis or pericarditis rather than universal pre-immunization screening [9].

Clinical Benefits of Echocardiographic Pre-assessment

- Provides **baseline safety data** for patients with existing cardiovascular disease.
- Enhances **differentiation between vaccine-related effects and chronic disease progression**.
- Enables **early recognition of subclinical myocardial dysfunction** using strain imaging.
- Strengthens **confidence in vaccination programs**, particularly for patients concerned about cardiac risks.

Special Benefits of HPV Vaccination

In addition to vaccines that prevent infectious respiratory disease, HPV vaccination has unique long-term benefits in adults:

1. **Cancer Prevention** – HPV vaccines prevent infection with oncogenic strains of the virus, reducing the incidence of cervical, anal, oropharyngeal, penile, and vulvar cancers [10].
2. **Reduction of Cardiovascular Risk Indirectly** – Emerging studies suggest that chronic HPV infection is associated with systemic inflammation and atherosclerotic changes; HPV vaccination may therefore indirectly reduce long-term cardiovascular risk by lowering chronic inflammatory burden [11].
3. **Public Health Impact** – Widespread adult HPV immunization significantly decreases transmission rates and contributes to herd immunity, lowering population-level cancer incidence [10].

4. **Quality of Life and Healthcare Savings** – By preventing HPV-related cancers and precancerous lesions, HPV vaccination reduces the burden of invasive procedures, treatment costs, and long-term morbidity.

Table1. Vaccines recommended for Heart patients (Modified from 2025 ACC/AHA Concise Clinical Guidance)

Disease/Virus	Frequency
Influenza	Annual for persons aged e"6 mo
Pneumococcal	1-time vaccination with PCV20 or PCV21 for adults aged e"19 y
COVID-19	Initial and 2024-2025 vaccine for persons aged e"6 mo
RSV	1-time vaccination for adults aged e"60 y
Zoster	2 doses of recombinant zoster vaccine 2-6 mo apart for those adults aged e"50 y
HPV	Three dose regimen (0, 1-2 and 6 months) for aged above 15y. Two dose regimen (0, 1-2) for younger individuals not previously vaccinated

HPV Vaccination

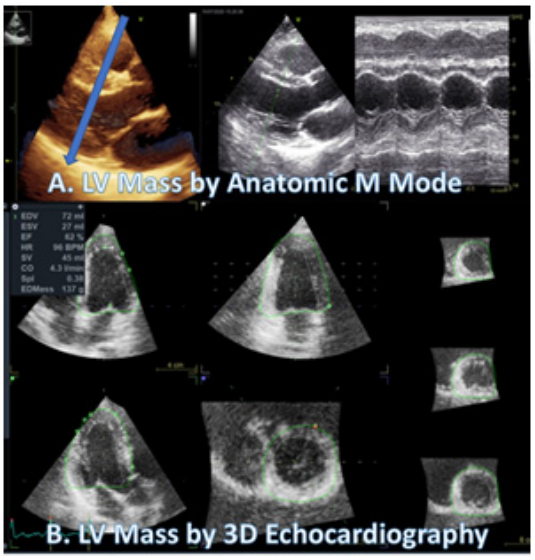


Fig 1: A. Calculation of LV Mass by using Anatomical M Mode. B: 3D Calculation of LV Mass

3D Echocardiography

The advantages of 3D/4D Echocardiography in the evaluation of Pre Assessment patients include the following and have been widely studied and recommended.

1. The evaluation of cardiac chamber hypertrophy, volumes and mass, without geometric assumptions.
2. The assessment of left ventricular strain and quantification of systolic dyssynchrony.

Table 2. Evidence for Vaccine benefit (Modified from 2025 ACC/AHA Concise Clinical Guidance)

Vaccine Benefit	Study Design	Ref. #
Reduced COVID-19 infection and reduced severe infection	RCT	22-25
Reduced COVID-19 infection, late 2024	Case control	26
Reduced death from COVID-19	Observational	27
Reduced MI from COVID-19	Observational	28-29
Reduced pericarditis/myocarditis from COVID-19	Observational	30
Reduced stroke and AF from COVID-19	Observational	31
Reduction in long-COVID symptoms	Observational	32
HPV infection is a risk factor for CVD	Meta Analysis	33
HPV Vaccination prevents CVD	Retrospective	15

3. The ease of calculation of 3D left atrial volume and strain
4. Realistic view of valves of the heart and volumetric evaluation of Regurgitant lesions
5. Three-dimensional Echocardiographic stress imaging.

EchocardiographicAssessment of Left Ventricular Hypertrophy and LV Mass

Calculation of LV Mass by M Mode (cube formula) and two-dimensional echocardiography (Area length or Truncated Ellipse) are cumbersome geometrical assessments that are not applicable when there is left ventricular distortion or fore shortening, asymmetric left ventricular hypertrophy, dilated cardiomyopathy and in patients with regional wall motion abnormalities. The left ventricular mass calculation is based on converting volume to mass using multiplication of volume by myocardial density of 1.05 g/ml and is normalized for the body surface area as LV mass index. Left ventricular hypertrophy is defined as left ventricular mass index of >115g/m^2 for men and >95g/m^2 for women. 3D Echocardiographic quantification of LV Mass correlates better with CMR measurements. The methodology of 3D LV mass Assessment by using anatomical M Mode is shown in Fig 1A and 3D Echocardiography in Fig 1B.

Assessment of Diastolic function

Abnormal E/A and Deceleration time: Abnormal relaxation characterised by decreased E/A ratio and prolonged Deceleration time and Restrictive pattern with increased E/A ratio and decreased Deceleration time are well described in early studies. (Fig 2)

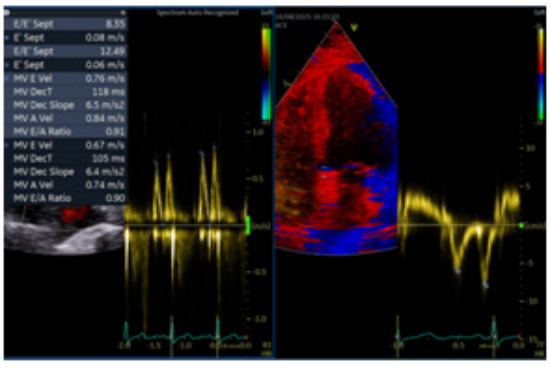


Fig 2: Showing Mitral Forward flow Doppler E/A, Deceleration Time and Tissue doppler e'

Abnormal E/e' Ratio: The ratio of early diastolic flow velocity of mitral inflow (E) to early diastolic mitral annular velocity (E/e2) has been shown to be the most accurate non-invasive marker of elevated LV filling pressure. Echocardiographic indices of elevated LV filling pressure are clearly associated with poor cardiac functional and clinical outcome. E/e2 > 15 is the strongest predictor of cardiac death and readmission for heart failure. (Fig 2)

Echo Evaluation of Left Atrium: Left atrial size is a powerfulmarker of prognosis in systemic hypertension under a variety of clinical situations and is a strong predictor of mortality and morbidity.

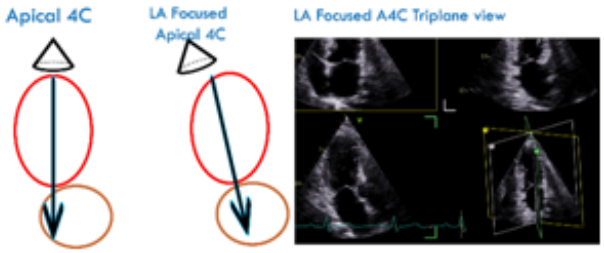


Fig 3A: Showing how to obtain LA Focused Apical 4 Chamber view and Triplane view

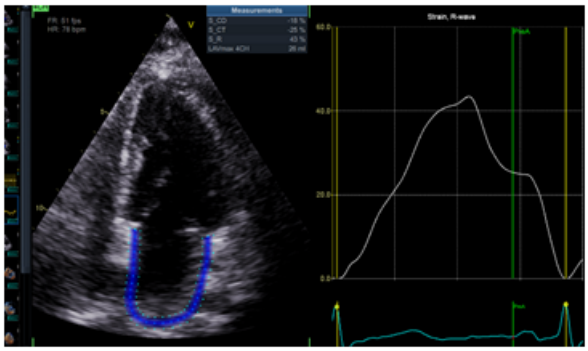


Fig. 3B: The Left Atrial Strain Curve

Fig 4. Algorithm for Echocardiographic Pre-assessment in Adult Immunization

Step 1: Patient Presentation Before Immunization

- No cardiac symptoms, no history of cardiovascular disease (CVD) '! Routine vaccination, no echo required.
- History of structural heart disease, cardiomyopathy, or previous myocarditis/ pericarditis '!
- Unexplained cardiac symptoms (dyspnea, chest pain, palpitations, syncope) '! *Proceed to Step 2*.

Step 2: Echocardiographic Evaluation

- Assess systolic function (LVEF, FS).
- Assess diastolic function (E/A, E2 , E/E2 , LAVI).
- Assess GLS if available.

Step 3: Decision Pathway

- Normal function (LVEF e" 50%, GLS d" –18%, no significant diastolic dysfunction) '! *Safe to proceed with vaccination*.
- Borderline findings (LVEF 40–49%, mild diastolic dysfunction, mildly reduced GLS) '! *Vaccination may proceed with closer follow-up (consider cardiology input)*.
- Abnormal findings (LVEF < 40%, moderate–severe diastolic dysfunction, GLS > –16%) '! *Vaccination should be deferred pending cardiology evaluation and optimization of cardiac status*.

Step 4: Post-vaccination Monitoring (if symptomatic)

- Repeat echocardiography if chest pain, new dyspnea, or arrhythmia develops.
- Look for new wall motion abnormalities, pericardial effusion, or GLS decline.

Because, 3D volume calculation of left atrium is devoid of geometrical assumptions, it correlates better with Cardiac Magnetic Resonance Imaging. Normal left atrial maximal volume and total emptying fraction have been published. Regional assessment of left atrial function by Speckle tracking echocardiography has also evolved to be a novel echocardiographic technique. The steps which are performed to evaluate three-dimensional left atrial volume and strain are explained in Figures 3A and 3B.

The American Society of Echocardiography has defined left atrial enlargement when left atrial volume is 28 + 6ml/m2 whereas for defining LV diastolic dysfunction the left atrial volume cut off point is >34 ml/m^2. The presence LA volume by 3D >40 ml/m^2 and LA reservoir strain (LASr) < 20% in a patient with normal ejection fraction indicates the presence of heart failure with preserved ejection fraction. (HFpEF)

Echocardiographic assessment of systolic dysfunction

LV Ejection fraction: The cornerstone of the prognostication and treatment schedule for echocardiographic evaluation of systemic hypertension starts with evaluation of left ventricular ejection fraction. The evidence base for modern cardiology is so heavily based on this simple measurement that it is unlikely to disappear. ÿþThe problems in calculating EF as the ratio between stroke volume and end-diastolic volume are geometry dependence, load dependence, the effect of high and low heart rate due to heart blocks, tachycardias(especially Atrial Fibrillation) and insensitivity to minor change when close to 50%. 3D imaging is now available with echocardiography and its results are comparable to Cardiac MRI[26]. Table 3

Table 3. Key Echocardiographic Parameters for Pre-immunization Assessment

Parameter	Normal Range	Clinical Utility in Pre-vaccination Setting
LVEF (2D Simpson's biplane)	e" 50–55%	Baseline systolic function; identifies patients at risk if <50%
E/A Ratio (Mitral Inflow)	0.8–2.0	<0.8 suggests impaired relaxation; >2.0 may suggest restrictive filling
Tissue Doppler E2 (septal/lateral)	Septal e" 7 cm/s; Lateral e" 10 cm/s	Reduced values indicate impaired relaxation
E/E2 Ratio	< 14 (normal filling pressures)	>14 suggests elevated LV filling pressures
Left Atrial Volume Index (LAVI)	< 34 mL/m²	Chronic marker of diastolic burden
GLS (Speckle Tracking)	d" –18% (more negative is normal)	Sensitive indicator of subclinical systolic dysfunction, useful for vaccine-related myocarditis detection

The main attraction and advantage of 3D imaging is to avoid geometric assumptions when calculations of LV volumes, and reduction of errors created by cutting a 3D structure in two dimensions. The current software for 3D evaluation of LVEF is much easier and can be performed within minutes in the setting of emergency room. The sphericity index derived from 3D echocardiography (LVEDV divided by the volume of a sphere whose diameter is the LV end-diastolic long axis) is an added by product and is the best predictor for LV dilatation Strain Imaging in decision making in Systemic Hypertension

Global Longitudinal strain (GLS): Global longitudinal strain (GLS) has evolved as one of the most robust parameters, and this has been shown to identify subclinical LV dysfunction. GLS is calculated using a variety of proprietary software (EchoPAC, GE Medical Systems, Milwaukee, Wisconsin, USA; Syngo velocity vector imaging, Siemens, Mountain View, California, USA; LV analysis, TomTec GmbH, Unterschlessheim, Germany). GLS is well validated as a marker for the measurement of LV longitudinal deformation, which has emerged as a sensitive and specificmarker to detect early and subtle myocardial dysfunction. In one of the recent meta-analysis, Kalam et al, have shown the independent prognostic significance of GLS in patients with mild LV global impairment. The prognostic value of this information seems likely to be superior to that provided by LVEF.

Conclusion

Echocardiographic pre-assessment before adult immunization is not necessary for the general population, but it is valuable in selected high-risk individuals with known cardiac disease or unexplained symptoms. It provides baseline data, aids in diagnosis, and improves patient safety. Importantly, adult immunization extends beyond infectious disease prevention, as illustrated by HPV vaccination, which offers unique benefits in cancer prevention, reduction of transmission, and possibly lowering long-term systemic inflammation. Table 3 shows the currently recommended Echocardiographic parameters to be recorded in the evaluation of Pre Vaccination patient. Figure 4 shows the Algorithm for decision making in the Pre Vaccination patient.A tailored approach—using echocardiography selectively for high-risk patients while maximizing broad public health benefits of vaccines like HPV—represents the most effective and evidence-based strategy.

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Adult Vaccination for Travellers

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One of the most economical public health measures now accessible is vaccination. Vaccines help protect the community by halting the transmission of infectious diseases, in addition to preventing the vaccinated person from contracting a potentially serious illness. Immunization is a tried and tested method of managing and eradicating infectious diseases that can be fatal. Furthermore, vaccination is estimated to help avert between 2 and 3 million deaths annually.(1) It is one of the health initiatives with the highest return on investment, and it can reach even the most vulnerable populations. India has had a well-defined pediatric immunization schedule active since 1978. It is one of the biggest vaccination campaigns in the world and is called the 'Universal Immunization Program' (UIP). Every year, the UIP aims to immunize about 2.7 crore newborns wit primary doses and an additional 10 crore children between the ages of one and five with booster doses. Additionally, TT vaccinations are given to almost 3 crore expectant mothers annually. The beneficiaries are immunized as part of 90 lakh vaccination sessions annually. The Government of India (GoI) observes 16 March as National Vaccination Day to celebrate the efforts towards paediatric vaccination. Considerable work is done in this field to protect our children from Vaccine-Preventable Diseases (VPD). That said, adult vaccination is an area that is greatly neglected. The prevalence of diabetes and other metabolic Non-communicable Diseases (NCDs) in India is significantly higher than previously believed. Although the diabetes epidemic appears to be stabilizing in the more developed states of the country, it continues to rise in most other states.2 NCDs are associated with increased risk of infection and related hospitalizations and deaths. This situation has serious implications for the nation, highlighting the need to evaluate the need for adult vaccination. The need for adult immunization is crucial to protect individuals from vaccine-preventable diseases and reduce the burden of illness in the adult population. Here are some **key reasons highlighting the importance of adult immunization:**

1. Vaccines are effective in preventing various infectious diseases, including but not limited to influenza, pneumonia, Shingles (Herpes Zoster), hepatitis, and tetanus.
2. VPDs can lead to serious health complications, hospitalizations, and even death, particularly in older adults or those with underlying health conditions.
3. When a significant portion of the population is immunized, it creates herd immunity, which provides indirect protection to those who are unable to receive vaccines due to medical conditions or age.
4. Vaccines not only protect individuals but also help in reducing the transmission of infectious diseases.
5. Adult immunization plays a crucial role in maintaining a healthy workforce and preventing disease outbreaks in community settings.
6. As individuals age, their immune systems

may weaken, making them more susceptible to infections.

7. As life expectancy increases and healthcare becomes more accessible, the percentage of the population that is elderly also increases. Given that vaccine-preventable diseases are more likely to be contracted as a result of this demographic shift, immunization campaigns are crucial for reducing the risks infectious pathogens pose to the public health.

International travel exposes individuals to different infectious diseases prevalent in other countries. There is a pressing need to address the issue of adult immunization in India. While several aspects concerning the effectiveness, safety, and financial implications of implementing adult vaccines at a national scale remain unresolved, raising awareness among health planners and healthcare providers about this important issue is important. Most major health societies in India have rolled out their respective adult vaccine programs, however, a standardized schedule for adults is lacking. This is an attempt to have a standardized schedule that one may refer to for adult immunization and a call to the Government of India (GoI) for inclusion of adult immunization in the 'UIP' with focus on specific high-risk subgroups in increased need of immunization; also, inclusion under reimbursement and insurance (both public and private sector) schemes can play an important role as a milestone in making this dream a reality in the foreseeable future. Since the field of medicine is constantly evolving, physicians are advised to consult the most recent locally approved summary of product characteristics (SmPC) or prescribing information before administering any vaccine. While every effort was made to provide the most stringent guidance to a clinician for appropriate use of vaccines, local or regional outbreaks similar to the one experienced during the COVID-19 pandemic can take us all by surprise, so one is always advised to refer to the local, regional or national guidance for managing loco-regional outbreaks.

Harmonization of Adult Immunization in India

The synchronization of vaccination guidelines in India from different medical societies marks a significant step towards developing a rational and systematic approach to vaccination. By aligning recommendations and protocols from different medical societies, the aim is to formulate consistent and clear guidance for healthcare professionals and the public. Representatives from multiple medical societies in India were invited to brainstorm and collaborate to come out with a harmonized guidance document that one may refer to in times of need. Medical societies invited include Indian Medical Association (IMA), Research Society for the Study of Diabetes in India (RSSDI), Geriatric Society of India (GSI), Indian Society of Nephrology (ISN), Indian Society of Critical Care Medicine (ISCCM), Indian Chest Society (ICS), Indian Rheumatology Association (IRA), Heart Failure Association of India (HFAI), Cardiological Society of India (CSI), The Federation of Obstetric and Gynaecological Societies of India (FOGSI), Clinical Infectious Diseases Society (CIDS), Indian Society of Oncology (ISO) and Indian Association of Preventive and Social Medicine (IAPSM). This concerted initiative does not merely streamline vaccine distribution, administration and monitoring, but also amplifies India's potential to aptly deal with public health challenges, creating a platform for open communication and knowledge sharing between medical societies. The establishment of a central coordination body with representatives from different societies optimized the synthesis of this guidance document. Government involvement is esstial in administration and monitoring, but also amplifies India's potential to aptly deal with public health challenges, creating a platform for open communication and knowledge sharing between medical societies. The establishment of a central coordination body with representatives from different societies optimized the synthesis of this guidance document. Government involvement is essential

to create a regulatory framework that promotes collaboration and standardization. All reasonable efforts will be made to obtain endorsement for adult vaccination as a standard procedure, allowing its integration into national and state-level policies for the efficient application of protocols.

High Risk Group

In the adult population, a subgroup with a high risk of vaccine-preventable diseases, are individuals with compromised immune systems, such as those suffering from conditions like Human Immunodeficiency Virus (HIV) | Acquired Immunodeficiency Syndrome (AIDS), neoplastic disorders, or post-transplantation states .Additionally, adults harbouring chronic medical disorders, including cardiovascular, hepatic, metabolic or respiratory disorders, are at an increased risk of serious outcomes following an infection. Advancing years, particularly beyond 65, increases vulnerabilities to certain diseases. Chronic alcoholics (referred to as alcoholism in the tables below) are at risk of a weakening immune system and developing hepatic disorders, making them susceptible to infectious diseases. Healthcare professionals, due to their occupational exposure, and travelers to regions where particular diseases are endemic, also fall within this high-risk group, warranting specialized vaccination strategies. For all these reasons, vaccination is crucial for protecting from illnesses that may have serious consequences on an individual's health.

VACCINES FOR FOLLOWING DISEASES ARE VERY IMPORTANT:

1. CHICKEN POX
2. HEPATITIS A
3. HEPATITIS B
4. HUMAN PAPILLOMA VIRUS
5. INFLUENZA
6. MENINGOCOCCAL MENINGITIS
7. PNEUMOCOCCAL VACCINE
8. POLIOMYELITIS
9. RABIES
10. YELLOW FEVER

Recommendation for travellers:

List of recommended vaccines when travelling to India

Routine: 1.MMR,2. DTP,3. Varicella (chickenpox),4. Polio,5. Covid-19,6. Pneumococcal and 7. influenza vaccine status is up-to-date ,8.Hepatitis A: Risk of contracting hepatitis A through contaminated food or water is high.,9. Typhoid: Recommended for Travelers at risk of exposure ,10.Hepatitis B (if needed): If one might have intimate contact with locals or require medical treatment during your stay,11. Japanese Encephalitis: If one plans to spend an extended period (>1 month) in rural or agricultural areas, especially during the monsoon season ,12.Rabies: Plan or risk of animal exposure, pre-exposure vaccine may be given (3 doses at 0,7 and 28 days) ,13.Cholera: Plan to visit or stay in outbreak-prone areas, 14. Polio: OPV is mandatory for people coming from these countries Afghanistan, Ethiopia, Israel, Kenya, Nigeria, Pakistan and Somalia at least 6 weeks before planned travel to India and is valid for 1 year 15.Meningococcal Meningitis: 1 dose is recommended 10-14 days before planned travel date ,16.Yellow Fever: It is mandatory for Travelers coming from Africa and South America. 1 dose in a life time is sufficient.

Students travelling from India to international destinations:

It is recommended to visit individual country's immunization recommendations well in advance before travel to check for latest recommendations.

Routine Vaccines:1. Diphtheria2. Tetanus and Pertussis(DPT) 3 Hepatitis B 4.Haemophilus influenzae type B 5.Human papillomavirus 6 Influenza (seasonal) 7 MMR-Measles, mumps and rubella 8.Meningococcal 9.Pneumococcal 10.Polio 11 Rotavirus 12 Tuberculosis 13 Varicella

MMR: Either evidence of protective antibodies or MMR vaccination is mandatory for

adolescents seeking college admissions in Europe and US,

Hepatitis A: Recommended for Travelers to areas with poor sanitation and limited access to clean water and food safety

Typhoid: Recommended for Travelers visiting regions with an increased risk of typhoid fever

Yellow Fever: Mandatory for Travelers visiting certain countries with yellow fever transmission and may require an International Certificate of Vaccination or Prophylaxis (ICVP) for entry

Rabies: Considered for Travelers with potential exposure to animals or remote areas with limited access to medical care (Pre-exposure 3 dose schedule should be followed at 0, 7 and 28 days)

Japanese Encephalitis: Recommended for Travelers to areas with Japanese Encephalitis transmission, especially during the transmission season

Meningococcal Meningitis: Recommended for Travelers visiting regions with a risk of meningococcal disease, especially during mass gatherings or outbreaks.

Polio (Inactivated Polio Vaccine - IPV): Recommended for Travelers to areas with ongoing polio transmission

Cholera: The oral cholera vaccine may be considered for Travelers visiting areas with active cholera outbreaks

COVID-19 Vaccine: Given the ongoing global pandemic, COVID-19 vaccination is essential for international travel and may be required by most countries.

Recommendation for Pilgrims

Mandatory vaccines for **mass gathering within India (e.g., Kumbh mela) For everyone**

1. Typhoid,2. Hepatitis A,3. Influenza, **Prolonged Stay 4.** Hepatitis B,5. Japanese Encephalitis 6.Pneumococcal

Mandatory vaccines for **mass gathering outside India (e.g., Hajj, Umrah etc.)**

For everyone 1. Quadrivalent Meningococcal Vaccine,2. Influenza,3. Polio,4.Prolonged Stay Pneumococcal

These are all an over view about the Adult Vaccination.



Vaccines for Cancer prevention & Treatment:

Dr. Sairam Chinthamadaka
MBBS, (OMC), DMRT (MDRT), KMIO FIAMS
Director & Senior Consultant Oncologist
Senior Cancer Specialist
Hony. Secretary IMA AMS Hqrs (2024-2026)

Vaccinations play a vital role in preventing more than 20 diseases. Vaccines provide protection against a wide range of illnesses.





Indian vaccines are used in most of the world since we are leading manufactures of vaccines in the world.

BCG vaccines are used for very early Urinary bladder cancer treatment

BCG variants also used for lung cancer treatment



Soon vaccines would be launched for treatment of many more cancers whose trials are very encouraging

Hepatitis vaccination protects in prevention of liver cancers

Potential Protective Effect of Hepatitis B Immunity Against Diabetes Mellitus: A Retrospective Propensity-**Matched co**

HPV vaccines prevent not only cervical cancer but also vaginal, vulval, Anal & oral cancers which are caused by HPV

HIV vaccines trials would prevent AIDS defining malignancies

COVID causing cancer cell line activation might have been benefited by Covid vaccination.



A surprise bonus from COVID-19 vaccines: bolstering cancer treatment

Patients who got shots of mRNA before starting a type of cancer immunotherapy lived much longer

20 OCT 2025 · 6:10 PM ET · BY PHIE JACOBS

Multiple Myeloma treating vaccination trials are also encouraging

H pylori infection relationship to gastric cancers & it's preventive vaccines would be able to prevent Gastro oesophageal cancers

Influenza vaccines would prevent cancer treatment related morbidity & mortality in cancer patients apart from Ebstan bar virus related lymphoma's

Other developments in vaccinology would be very useful.



A woman vaccinates herself with FluMist AstraZeneca



Cancer vaccines activate anti-tumour reaction Castrate resistant Prostate cancer with cancer vaccine Sipulance-T in 2,242 patients had objective response in 77 (3.4%). Mucin glycoprotein vaccine found to produce highly immunogenic response in advanced colonic Adenomas. HPV infection in 70% to 90 % gets eliminated in 12 - 24 months.HPV vaccines reduce at least 85% risk of cervical cancers.



HPV vaccines to prevent cervical cancer unaffordable for most women

RENUKA KALPANA @ Hyderabad

EVEN though cervical cancer is the second most common type of cancer among women, after breast cancer, in Telangana, vaccines against Human papillomavirus (HPV), which causes it are still inaccessible to a lot of women.

This may be due to a lack of awareness and the high price of the vaccine, say experts. They also suggest the inclusion of the HPV vaccine in the universal vaccination programme.

The World Health Organisation (WHO) observes January as cervical cancer awareness month. According to 'Profile of Cancer and Related Factors - Telangana 2021', a study conducted by the Indian Council of Medical Research (ICMR), 8.7% of total cancer cases are cervical cancer.

Cervical cancer starts in the cells of the cervix, the lower, narrow end of the uterus. Symptoms include bleeding in between periods and after sexual intercourse, foul-smelling white discharge, and low back pain. In some cases, there may be no symptoms.

The HPV vaccine can protect women from various types of infections, including cancer. The vaccine is available at all gynaecological clinics, paediatric clinics, and cancer care centres across the State.

The high cost of these vaccines makes them unaffordable for a large section of women. "A generic form of HPV vaccine is shortly to be launched by the government, which will cost ₹350," said Dr. Chinthamadaka Sairam, consultant oncologist at Udai Omni Hospital and MNJ Hospital.

We also lack a proper screening system, he added.

The ICMR report estimates that Telangana will have around 28,708 cancer cases among women and 24,857 cases among men by 2025. Dr. Sairam said that government needs to pay attention to non-communicable diseases like cancer and cardiovascular illnesses.

Monoclonal antibody vaccines in Rituximab refractory follicular lymphoma progression free response of 11.9 months with relative response in 55%

HIV Patients would have 25% cancer's which are AIDs defining conditions.

In future HIV Vaccine will prevent such 25% AIDS defining cancers in HIV patients.

Doctors urge government to bring down the price of rabies vaccine

Siddharth Kumar Singh
HYDERABAD

As incidents of dog bites are on the rise in Telangana, doctors recommend that the prices of rabies vaccine should be brought down by the government so that it is accessible to everybody and does not burn a hole in the pocket of poor families.

Speaking to *The Hindu*, Dr. B.N. Rao, president of IMA Telangana State, said: "One vial of vaccine costs ₹400 and if a patient has been bitten by a dog then a total of 5 vials have to be taken. In cases of prophylaxis (for prevention of disease), three vials given to a person are enough. The prices of these vaccines are under the purview of the Drug Control Administration of the State. The government is not yet providing rabies vaccines for prophylaxis."



A woman and her son walking through a pack of dogs resting on the roadside in Gachibowli, Hyderabad. NAGARA GOPAL

Dr. Rao says that the price of the vaccine should be brought down by the government so that the vaccine can be given before a dog bite as a measure of prevention as well.

Earlier, the vaccines were more expensive but since the Drug Control has taken over, the prices have reduced a little but more needs to be done.

The IMA Telangana State will be taking the issue forward for reduction of price, he added.

According to the World Health Organization (WHO), India is endemic for rabies and accounts for 36% of the world's rabies deaths.

Rabies deaths in humans are 100% preventable through prompt and appropriate medical care. Vaccinating dogs is the most cost-effective strategy for preventing rabies in people, he said.

The vaccine has to be given to the patient immediately after a dog bite, it cannot be sutured and there should be cleaning of the wound by a iodine solution.

Dr. C. SairaOm, senior Oncologist at MNJ Cancer Hospital, Hyderabad, said: "If the bite is very close to the neck and brain, then the patient needs to be given immune globulin injections also, which is much more expensive than the vaccine itself. Another thing people forget is that rabies not only includes dog bites but also bites from bats, cats, monkeys and a few other animals."

alf of THG PUBLISHING PVT LTD., Chennai-600002. Editor: Suresh Nambath (Responsible for selection of news under the PRB Act).

Flow Chart for Vaccination Schedule of Animal Bite

CATEGORY I
- Touching or feeding of animals
- Licks on intact skin

CATEGORY II
- Nibbling of uncovered skin
- Minor scratches or abrasions without bleeding

CATEGORY III
- Single or multiple transdermal bites or scratches
- Licks on broken skin
- Contamination of mucous membrane with saliva

Post-Exposure Prophylaxis

Intra Dermal → **0.1 ml per site on both deltoid** → **Day 0, 3, 7 and 28**

Intra Muscular → **1 entire vaccine vial** → **Day 0, 3, 7, 14 and 28**

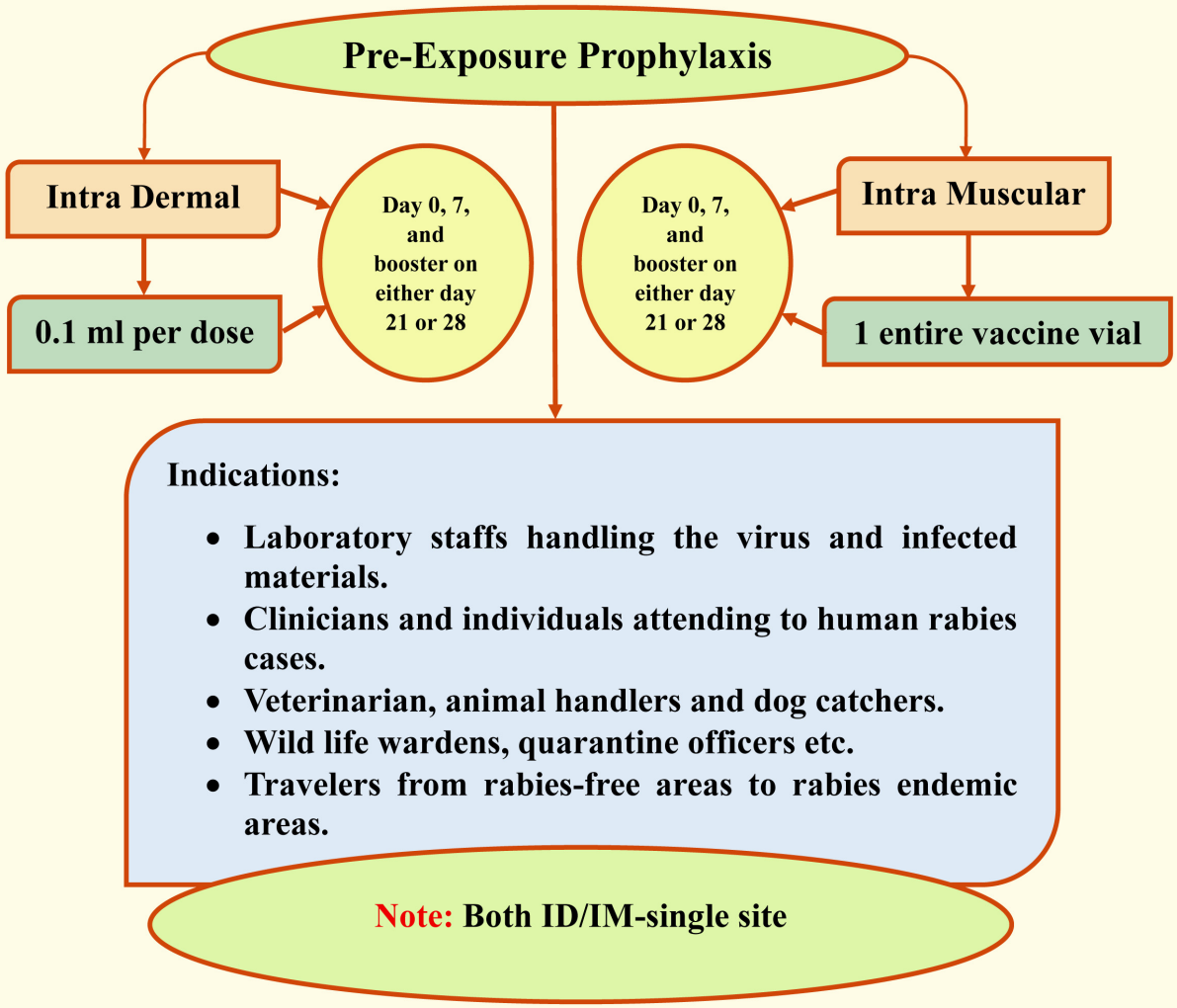
Indications: Bite from all warm-blooded animals like
- Dogs, Cats, Monkeys, All wild animals, Rodent bites in forest area, etc

In Immune Compromised Individuals:
- Proper Wound Wash Management.
- Administration of RIG in both Cat II and Cat III animal bite.
- Route of administration of ARV is IM.
- Preferably Anti-Rabies Antibody titre estimation after 14 days of completion of course of vaccination to assess the need for additional dose of vaccine.

Note: Administer both ARV and RIG in Cat-II and Cat-III bite from wild animals

National Rabies Control Programme, SSU-CMD
IDSP Division, Arogya Soudha, Bengaluru-560023

Flow Chart for Vaccination Schedule of Animal Bite



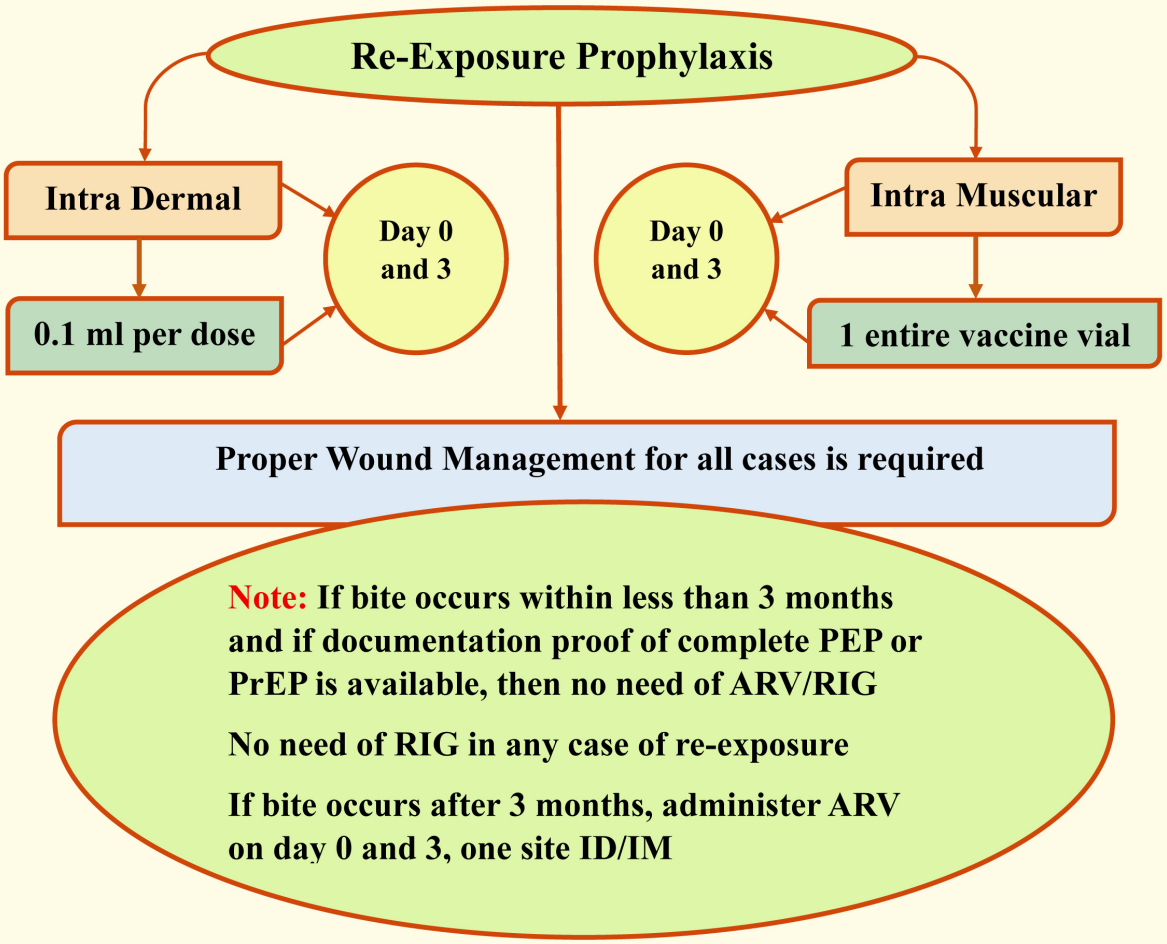
Indications:

- Laboratory staffs handling the virus and infected materials.
- Clinicians and individuals attending to human rabies cases.
- Veterinarian, animal handlers and dog catchers.
- Wild life wardens, quarantine officers etc.
- Travelers from rabies-free areas to rabies endemic areas.

Note: Both ID/IM-single site

National Rabies Control Programme, SSU-CMD
IDSP Division, Arogya Soudha, Bengaluru-560023

Flow Chart for Vaccination Schedule of Animal Bite



National Rabies Control Programme, SSU-CMD
IDSP Division, Arogya Soudha, Bengaluru-560023

Summary of Vaccination Schedule

Type of Prophylaxis	Route of Administration	Dose of Vaccine	Day of Dose	No of Injections	Site of Injections
Post Exposure Prophylaxis	Intra Dermal	0.1 ml per dose	Day 0,3,7 and 28	2	**Adults:** Deltoid Muscle **Infants and Small Children:** Anterolateral part of Thigh
	Intra Muscular	1 entire vaccine vial	Day 0,3,7,14 and 28	1	
Pre Exposure Prophylaxis	Intra Dermal	0.1 ml per dose	Day 0,7 and booster on either day 21 or 28	1	
	Intra Muscular	1 entire vaccine vial	Day 0,7 and booster on either day 21 or 28	1	
Re-exposure	Intra Dermal	0.1 ml per dose	Day 0 and 3	1	
	Intra Muscular	1 entire vaccine vial	Day 0 and 3	1	

National Rabies Control Programme, SSU-CMD
IDSP Division, Arogya Soudha, Bengaluru-560023

References:

Devita, Hellman, and Rosenberg's Cancer Principles & Practice of Oncology

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