Opening Remarks – Rep. Kim Schrier, MD
Panelists

Sonali Kochhar, MD, Clinical Associate Professor, Department of Global Health, University of Washington; Medical Director, Global Healthcare Consulting

Robert Hopkins, MD, HHS National Vaccine Advisory Committee Chair; Professor of Internal Medicine and Pediatrics at the University of Arkansas for Medical Sciences

Chizoba Wonodi, DrPH, MBBS, Associate Scientist, Johns Hopkins Bloomberg School of Public Health
Vaccines Benefit-Risk Assessment

Sonali Kochhar, MD
Clinical Associate Professor, Department of Global Health,
University of Washington, Seattle
Medical Director, Global Healthcare Consulting

February 22, 2023
Benefits of Vaccines - Health

Decreases infectious disease morbidity and mortality
- Vaccines prevent more than 25 life-threatening diseases, prevent 5 million deaths per year
- In the US, among an annual birth cohort vaccinated with 9 vaccines against 14 diseases, nearly 17 million cases of diseases and 31,000 deaths are prevented
- Although vaccines may not always prevent infection, a milder disease course may follow (e.g. varicella, pertussis, rotavirus, COVID-19)

Eradicating infectious diseases

Prevents some cancers
- Chronic hepatitis B infection can lead to liver cirrhosis and hepatocellular cancer
- Hepatitis B vaccine offers 98-100% protection against hepatitis B infection
- HPV infection is responsible for 90% anal and cervical cancers, 70% vaginal and vulvar cancers, 60% penile cancers and 60-70% of oropharynx cancers
- HPV serotypes 16 and 19 carry a high risk for cervical cancer (4th most common cancer globally)
- HPV vaccines lead to a 87-90% decline in incidence of cervical cancer; reduce anal, oral, vulvar, vaginal infection
Benefits of Vaccines - Health

**Induces herd immunity**
- In addition to direct protection for vaccine recipients, when sufficiently high proportion of population is vaccinated, transmission of the infecting agent is halted, protecting those too young or too immunosuppressed to receive vaccines e.g. vaccines against *Neisseria meningitidis, Streptococcus pneumonia, Haemophilus influenzae type B, Rotavirus*

**Reduce secondary infections that complicate vaccine preventable diseases**
- Infections with pathogens, esp. viruses can predispose to acquisition of other bacterial infections e.g. Influenza virus infection is frequently complicated by bacterial pneumonia and acute otitis media, measles eliminates immune memory, leaving measles survivors susceptible to all infectious agents they had developed immunity too, take approx. 3 years for immune recovery to occur, vaccination can prevent complications

**Prevents antibiotic resistance**
- By reducing the need for antibiotics, vaccines may reduce the prevalence and hinder the development of resistant strains e.g. vaccines against typhoid can prevent primary infection and the spread of multidrug-resistant strains
Benefits of Vaccines- Social

Equity of healthcare

- The underprivileged are disproportionately afflicted by infectious diseases due to poor hygiene and sanitation, malnutrition, poverty, overcrowding and poorer access to healthcare
- Vaccines provide the poor with improved health outcome equity, when measured by under-5 mortality

Empowerment of women

- With vaccines, more children will survive to adulthood and lead healthy and productive lives so women can have fewer children and can spend more time on their education and development, and contributing to the workforce
- Vaccination of pregnant women helps protect them, their fetus and infants 6 moths or younger who are too young to be vaccinated e.g. pertussis, influenza, tetanus, COVID-19
- Where women have the information and autonomy to make health-related decisions for their children, childhood immunization rates improve
Benefits of Vaccines- Social

Impact of life expectancy and opportunity

- Vaccines are an important cause for increased life expectancy around the world
- Elderly go through immunosenescence (immune dysfunction associated with age) resulting in increased incidence and severity of infectious diseases
- Older persons offered vaccines to prevent infections with high morbidity and mortality e.g. herpes zoster, influenza, pneumococcal, and pertussis vaccines
- In a globally interconnected world, pre-travel vaccines provide protection
Benefits of Vaccines- Economic

Cost saving

- Cost-effectiveness analysis of vaccines show that they are significantly worth the investment, with most programs costing less than $50 per life gained, considerably less than prevention of disease like hypertension
- The return on investment in vaccines is estimated at $54 for $1 spent
- In the US, estimated routine childhood immunization costs ($8.5 billion) offset by $63.6 billion in disease-related averted costs
- In 94 LMICs, investments of $34 billion for immunization programs resulted in savings of $586 billion from direct illness costs and $1.53 trillion for broader economic benefits

Productivity gains

- Healthy children have better attendance and cognitive performance resulting in improved educational attainment in school
- Visual impairment from measles or hearing loss from pneumococcal, mumps or rubella infection or cognitive deficits from infections require substantial remedial input and educational support
- Healthy and economically successful populations can invest more money in their future, e.g. to enhance their education or through savings, impacting economies globally
Minimize impact on the family

- Illness results in loss of productivity and pay for the duration of the illness and the recovery period.
- Childhood illness results in the parents taking time off from work to care for the child. For example, in 7 European countries, one parent or carer required time off work in 39-91% of rotavirus gastroenteritis cases.
# Recommended Adult Immunization by Age Group, USA, 2023

## Table 1

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>19–26 years</th>
<th>27–49 years</th>
<th>50–64 years</th>
<th>≥65 years</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COVID-19</strong></td>
<td></td>
<td></td>
<td>2- or 3-dose primary series and booster (See Notes)</td>
<td></td>
</tr>
<tr>
<td><strong>Influenza inactivated (IIIV4) or influenza recombinant (RIIV4)</strong></td>
<td></td>
<td></td>
<td>1 dose annually</td>
<td></td>
</tr>
<tr>
<td><strong>Influenza live, attenuated (LAIIV4)</strong></td>
<td></td>
<td></td>
<td>1 dose annually</td>
<td></td>
</tr>
<tr>
<td><strong>Tetanus, diphtheria, pertussis</strong> (Tdap or Td)</td>
<td></td>
<td>1 dose Tdap each pregnancy; 1 dose Td/Tdap for wound management (see notes)</td>
<td>1 dose Tdap, then Td or Tdap booster every 10 years</td>
<td></td>
</tr>
<tr>
<td><strong>Measles, mumps, rubella</strong> (MMR)</td>
<td></td>
<td></td>
<td>1 or 2 doses depending on indication (if born in 1957 or later)</td>
<td>For healthcare personnel, see notes</td>
</tr>
<tr>
<td><strong>Varicella</strong> (VAR)</td>
<td></td>
<td></td>
<td>2 doses (if born in 1980 or later)</td>
<td>2 doses</td>
</tr>
<tr>
<td><strong>Zoster recombinant</strong> (RZV)</td>
<td></td>
<td></td>
<td>2 doses for immunocompromising conditions (see notes)</td>
<td></td>
</tr>
<tr>
<td><strong>Human papillomavirus</strong> (HPV)</td>
<td>2 or 3 doses depending on age at initial vaccination or condition</td>
<td>27 through 45 years</td>
<td>2 doses</td>
<td></td>
</tr>
<tr>
<td><strong>Pneumococcal</strong> (PCV15, PCV20, PPSV23)</td>
<td></td>
<td></td>
<td>1 dose PCV15 followed by PPSV23 or 1 dose PCV20 (see notes)</td>
<td>See Notes</td>
</tr>
<tr>
<td><strong>Hepatitis A</strong> (HepA)</td>
<td></td>
<td></td>
<td>2, 3, or 4 doses depending on vaccine</td>
<td></td>
</tr>
<tr>
<td><strong>Hepatitis B</strong> (HepB)</td>
<td></td>
<td></td>
<td>2, 3, or 4 doses depending on vaccine or condition</td>
<td></td>
</tr>
<tr>
<td><strong>Meningococcal A, C, W, Y</strong> (MenACWY)</td>
<td></td>
<td></td>
<td>1 or 2 doses depending on indication, see notes for booster recommendations</td>
<td></td>
</tr>
<tr>
<td><strong>Meningococcal B</strong> (MenB)</td>
<td></td>
<td></td>
<td>2 or 3 doses depending on vaccine and indication, see notes for booster recommendations</td>
<td></td>
</tr>
<tr>
<td><strong>Haemophilus influenzae type b</strong> (Hib)</td>
<td></td>
<td></td>
<td>1 or 3 doses depending on indication</td>
<td></td>
</tr>
</tbody>
</table>

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**Notes:**
- Recommended vaccination for adults who meet age requirement, lack documentation of vaccination, or lack evidence of past infection
- Recommended vaccination for adults with an additional risk factor or another indication
- Recommended vaccination based on shared clinical decision-making
- No recommendation/Not applicable
Vaccine Benefit-Risk Assessment

- Vaccines are administered to healthy people for the prevention of disease while drugs used to treat or control disease in sick people. Much higher level of risk is acceptable for a drug compared to a vaccine.
- Data must show that the vaccine’s benefits measurably outweigh any potential risks for people who are recommended to receive the vaccine.
- Benefit-risk profile of each vaccine is assessed constantly during duration of use.
- Only if vaccine has a favorable benefit-risk profile, does the NRA grant a license for the vaccine, allowing it to be used by the public.
- At licensure, post-licensure surveillance activities are put into place to continue monitor vaccine safety and disease epidemiology to supply reliable, up-to-date information.
- Vaccine safety assessment is exhaustive and continuous beginning with non-clinical evaluation of individual components for purity, sterility and stability, continuing throughout the clinical development phase and entire duration of use of the vaccine, including post-approval.
- The balance of benefits and risks is dynamic and may change over time as new data emerge.
Vaccine Safety

- Risk evaluation of vaccines includes probable mechanism and underlying cause of any vaccine reactions, preventability, predictability and reversibility of risk of vaccine reaction occurring, risks associated with alternative vaccines that protect against same disease, risks associated with not vaccinating
- Prescribing information leaflets are regularly updated to inform the healthcare provider and vaccine recipients about the most recent assessment of benefits and AEFI
- An adverse event following immunization (AEFI) is an untoward medical occurrence, does not necessarily have a causal relationship with the vaccine
- An event may occur coincidentally after immunization and be falsely attributed to the vaccine e.g. incidence of sudden infant death syndrome peaks around the age of early childhood immunization
- The evaluation of AEFIs is continuous done by gathering safety data, analysing the data for signals, determining if signals impact the benefit-risk profile of the vaccine and taking actions as appropriate
- Knowledge of background rates of disease and deaths, particularly age-specific disease incidence rates, allows estimation of the expected numbers of coincidental events
- Unfounded vaccine concerns included autism, diabetes, multiple sclerosis caused by vaccines, multiple vaccines overwhelming the immune system, natural infection being better than immunization
<table>
<thead>
<tr>
<th></th>
<th>Measles Infection</th>
<th>Measles vaccine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Otitis</td>
<td>7-9%</td>
<td>0</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>1-6%</td>
<td>0</td>
</tr>
<tr>
<td>Diarrhoea</td>
<td>6%</td>
<td>0</td>
</tr>
<tr>
<td>Post-infectious encephalomyelitis (inflammation of brain &amp; spinal cord)</td>
<td>0.5/1,000</td>
<td>1/1,000,000</td>
</tr>
<tr>
<td>Subacute sclerosing panencephalitis (chronic and progressive brain inflammation)</td>
<td>1/100,000</td>
<td>0</td>
</tr>
<tr>
<td>Anaphylaxis (severe allergic reaction)</td>
<td>0</td>
<td>1/1,000,000</td>
</tr>
<tr>
<td>Thrombocytopenia</td>
<td>Not properly quantified</td>
<td>1/30,000-40,000</td>
</tr>
<tr>
<td>Death</td>
<td>0.1–1/1,000 (up to 5-15%)</td>
<td>0</td>
</tr>
</tbody>
</table>
# Risk of Disease versus Risk following Vaccination – Pneumococcus

<table>
<thead>
<tr>
<th></th>
<th>Pneumococcal (Step pneumoniae) Infection</th>
<th>Pneumococcal vaccine</th>
</tr>
</thead>
</table>
| **Meningitis** (Inflammation of protective coverings of brain and spinal cord) | • Death - 22%  
• Hearing loss - 30% of survivors | 0 |
| **Pneumonia** | • Collection of puss inside body/thoracic cavity (empyema and abscess)  
• Inflammation near to the heart (pericarditis)  
• Collapse or closure of the lung  
• Blockage of respiration (endobronchial obstruction) | • Death - 12 - 30%  
• Lung abscess - 15-20% mortality  
• Pericarditis - mortality rates reach 100% if left untreated | 0 |
| **Sepsis** (severe blood infection that can lead to organ failure and death) | Death - 4 in 100 | 0 |
| Slightly raised temperature | 0 | < 1% of vaccinations |

**Slight enflammation:**

- Slight enflammation
- Slight fever
- Slight headache
- Slight soreness at the injection site

**Possible side effects:**

- Slight fever
- Slight headache
- Slight soreness at the injection site

**Possible severe side effects:**

- Slight fever
- Slight headache
- Slight soreness at the injection site

**Possible long-term side effects:**

- Slight fever
- Slight headache
- Slight soreness at the injection site

**Possible rare side effects:**

- Slight fever
- Slight headache
- Slight soreness at the injection site

**Possible common side effects:**

- Slight fever
- Slight headache
- Slight soreness at the injection site

**Possible rare side effects:**

- Slight fever
- Slight headache
- Slight soreness at the injection site

**Possible common side effects:**

- Slight fever
- Slight headache
- Slight soreness at the injection site

**Possible rare side effects:**

- Slight fever
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**Possible common side effects:**

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**Possible rare side effects:**

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**Possible common side effects:**

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- Slight soreness at the injection site

**Possible rare side effects:**

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- Slight headache
- Slight soreness at the injection site

**Possible common side effects:**

- Slight fever
- Slight headache
- Slight soreness at the injection site
Factors to Consider for Vaccine Decision-Making

• Policy recommendations
• Discussions with healthcare providers
• Vaccine effectiveness, vaccine risk, cost and protection duration
• Individual health conditions which increase vulnerability to infections or severe outcomes - e.g. pregnancy, immunocompromised, age, comorbidities, diabetes, heart or lung disease, chronic liver or kidney disease, profession- healthcare professional, frontline health worker, men who have sex with men, alcoholism

Conclusions
• Vaccines are one of the most effective interventions against infectious diseases, provide cost-effective, long term protection
• Most vaccines are safer than therapeutic drugs
• Data must show that the vaccine’s benefits measurably outweigh any potential risks for people who are recommended to receive the vaccine, to allow for vaccines to be used
Vaccines and Vaccination: Incredible Success with Ongoing Challenges

Robert Hopkins, MD
Professor of Internal Medicine and Pediatrics
University of Arkansas for Medical Sciences

February 22, 2023
• While improved sanitation, vaccination have saved millions of lives
  • One in three deaths worldwide (still) caused by infectious diseases

• We live in a global society:
  • Infectious diseases do not respect borders
  • Immunization of individuals and benefits have local and societal impacts

• Risk from vaccine is FAR lower than the risk of disease
  • Vaccines are not ‘perfect’ but are held to very high safety standards
  • Vaccine safety assessment starts with early stage clinical trials
  • Safety assessment continues after authorization
Goals of Vaccination

• Reduce severe disease

• Reduce disease

• Reduce transmission
Vaccines Work!

CDC statistics demonstrate dramatic declines in vaccine-preventable diseases when compared with the pre-vaccine era

<table>
<thead>
<tr>
<th>DISEASE</th>
<th>PRE-VACCINE ERA ESTIMATED ANNUAL MORBIDITY</th>
<th>MOST RECENT REPORTS OR ESTIMATES OF U.S. CASES</th>
<th>PERCENT DECREASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diphtheria</td>
<td>21,053</td>
<td>2</td>
<td>&gt;99%</td>
</tr>
<tr>
<td><em>H. influenzae</em> serotype B (invasive, &lt;5 years of age)</td>
<td>20,000</td>
<td>18</td>
<td>&gt;99%</td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>117,333</td>
<td>(est) 37,700</td>
<td>68%</td>
</tr>
<tr>
<td>Hepatitis B (acute)</td>
<td>66,232</td>
<td>(est) 20,700</td>
<td>69%</td>
</tr>
<tr>
<td>Measles</td>
<td>530,217</td>
<td>1,275</td>
<td>&gt;99%</td>
</tr>
<tr>
<td>Meningococcal disease (all serotypes)</td>
<td>2,886</td>
<td>371</td>
<td>87%</td>
</tr>
<tr>
<td>Mumps</td>
<td>162,344</td>
<td>3,780</td>
<td>98%</td>
</tr>
<tr>
<td>Pertussis</td>
<td>200,752</td>
<td>18,617</td>
<td>91%</td>
</tr>
<tr>
<td>Pneumococcal disease (invasive, &lt;5 years of age)</td>
<td>16,069</td>
<td>1,700</td>
<td>89%</td>
</tr>
<tr>
<td>Polio (paralytic)</td>
<td>16,316</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Rotavirus (hospitalizations, &lt;3 years of age)</td>
<td>62,500</td>
<td>30,625</td>
<td>51%</td>
</tr>
<tr>
<td>Rubella</td>
<td>47,745</td>
<td>6</td>
<td>&gt;99%</td>
</tr>
<tr>
<td>Congenital Rubella Syndrome</td>
<td>152</td>
<td>1</td>
<td>&gt;99%</td>
</tr>
<tr>
<td>Smallpox</td>
<td>29,005</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Tetanus</td>
<td>580</td>
<td>26</td>
<td>96%</td>
</tr>
<tr>
<td>Varicella</td>
<td>4,085,120</td>
<td>8,297</td>
<td>&gt;99%</td>
</tr>
</tbody>
</table>

1. CDC, JAMA November 14, 2007; 398(18): 2155-63.
5. CDC. Active Bacterial Core Surveillance (ABCs) Report, Emerging Infections Program Network. Data from 2018.
Vaccines/Vaccination

• Individuals do not make decisions in a vacuum
• Core preventive strategy against many diseases
  • Immune response to vaccine depends on human substrate
  • Booster doses often important to sustain benefits
  • Immune suppressed may remain at higher risk despite vaccination
• Many individuals do not understand their own personal risk
• Challenge posed by widespread anti-science [anti-vaccine] misinformation

https://www.ncbi.nlm.nih.gov/books/NBK220057/
https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2784592
Vaccine Coverage...

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9042357/pdf/mm7116a1.pdf
https://www.cdc.gov/mmwr/volumes/70/ss/ss7003a1.htm
Economic Impact of Vaccination

• Annual economic Burden of Adult VPD [Pre-pandemic]
  • $9 billion [2015 dollars]
  • $7.1 billion of that for care of unvaccinated individuals

• Vaccines for children born 1994-2018 prevented
  • 419 million illnesses
  • Net savings $406 billion (direct costs) and $1.9 trillion in social costs

• Investigation/Management of Outbreaks is Costly
  • ~$2200/case [2008 dollars] for Pertussis outbreak
  • Median total cost/measles outbreak $152,000, ~$33,000/case

*VPD= Vaccine Preventable Disease
Vaccine Benefits Beyond Infection Reduction

• Immune suppression [Increased risk for other infections after infection]
  • Measles, Influenza, COVID-19

• Stroke
  • Influenza, Pneumonia, Shingles, COVID-19

• Dementia
  • Influenza

• Prolonged morbidity
  • Influenza, COVID-19

• Cancer prevention
  • Hepatitis B (Hepatocellular Carcinoma), HPV (Oropharyngeal, Genital cancers)
Vaccines: Current and Future

- Influenza
  - Vaccine efficacy depends on individual characteristics + match between vaccine and circulating strains
  - ‘Universal’ flu vaccines, new immunization technologies under study
- COVID-19
  - Current vaccines much more effective in reduction of severe disease than infection
  - Ongoing research: new, better vaccines
- Pneumococcal
  - Newer conjugate vaccines are FAR more effective than older generation polysaccharide vaccine
- Conclusion:
  - We need to continue to invest/develop vaccines against additional infectious diseases
  - We also need to invest in better vaccines for current diseases, better tools for immunization, ongoing safety research to understand vaccine adverse effects and better systems to allow us to get vaccines to every person in need.
Declines in Vaccination and Impacts

• Worldwide phenomenon
  • Increasing anti-science posts/claims on social media, internet, media
  • Many did not seek preventive services/vaccines d/t pandemic concerns
  • Hesitancy, lack of confidence

• Childhood and adult immunization rates have fallen  Outbreaks
  • Measles: Ohio, Minnesota
  • Polio: New York

• Ongoing ‘less visible’ impacts of under-vaccination
  • COVID-19
  • Influenza
  • Pertussis, Hepatitis A & B, HPV-associated cancers, Shingles...
Conclusions

• Immunization against VPD remains critical for a healthy American society
  • Declines in vaccination rates have led to outbreaks, increases in disease/death
  • Rural/urban, coverage-related and racial/ethnic disparities in immunization rates remain in the US [greater issue in adults]
• The anti-science/antivaccine movement is a threat to all of our health
• Investment in our future remains critical
  • To close the remaining gaps in vaccinating all Americans
  • To support worldwide immunization partnerships [pathogens don’t respect borders]
  • To develop new vaccines against additional infectious diseases
  • To improve current vaccines
  • To advance vaccine-related technologies
LOW AND UNEQUAL ADULT VACCINE COVERAGE IN THE USA: HOW CAN IT BE ADDRESSED?

Dr. Chizoba Wonodi
Associate Scientist,
Johns Hopkins Bloomberg School of Public Health

National Convener:
Women Advocates for Vaccine Access (WAVA)
OUTLINE

1. Importance of adult vaccination
2. Adult vaccination coverage rates in the US
3. Barriers to adult vaccination in the US
4. Strategies to increase adult vaccination.
5. Conclusion
VACCINATION IN ADULT IS AN IMPORTANT ASPECT OF MAINTAINING WELL BEING ALONG THE LIFE-COURSE

• Adult vaccination provides benefits that span the health, social, economic and national security domains
• The US CDC, ACIP, currently recommends age and condition-specific vaccines for adults 19 years and above
• Recommended adult vaccines protect against 15 diseases
• Specific vaccine recommendation for health care providers in the US benefits patients, colleagues and the community
• The US CDC publishes required, recommended, or routine vaccination for international travel that go beyond the ACIP recommendation for the general adult population. E.g. Yellow fever vaccination for travel to some countries in Africa and Asia
AMERICAN ADULTS ARE INADEQUATELY VACCINATED
ONLY 22% OF ADULTS ≥19 YEARS HAD RECEIVED ALL
AGE-APPROPRIATE VACCINES, WITH DISPARITIES BY RACE AND AGE

*** Vaccination coverage estimates using an age-appropriate composite* adult vaccination quality measure and individual component measures

National Health Interview Survey, United States, 2019
Content source: National Center for Immunization and Respiratory Diseases
Biggest improvement in vaccine coverage over time is in herpes zoster vaccination

Inadequate protection against, pneumococcal disease, influenza, hepatitis B, tetanus, and diphtheria/pertussis, herpes zoster is a cause for concern

Tens of millions of Americans remain susceptible to potentially deadly vaccine-preventable infections

Content source: National Center for Immunization and Respiratory Diseases
REASONS FOR LOW ADULT VACCINATION RATES IN THE US
SUPPLY-SIDE BARRIERS TO RESPONSIVE SERVICE DELIVERY

INFORMATION BARRIERS AMONG HCPS

• Lack of awareness of ACIP adult immunization recommendation
• Knowledge gaps concerning vaccine indications and contraindications

OPERATIONAL BARRIERS

• Limited screening for immunization status -
• Missed opportunity for vaccination
• Insufficient time spent communicating the benefits and risks of vaccines to patients
• Lack of current, easily accessed immunization records

SYSTEMIC CHALLENGES

• Vaccine storage difficulties for vaccines with stringent storage requirements – e.g. live attenuated influenza
• Vaccine shortages
• Non stocking of all routine adult vaccines by family physicians and internist
REASONS FOR LOW ADULT VACCINATION RATES IN THE US
DEMAND-SIDE BARRIERS TO ACCESS

**KNOWLEDGE BARRIERS**
- Knowledge gaps about adult vaccine benefits and schedules
- Knowledge gaps about where and when to access free public vaccination programs
- No recommendation or reminder by HCP

**PERCEPTIONS & BELIEFS**
- Belief that vaccines are only important for children
- Myths, misconceptions and mis-information above vaccines
- Fear of side-effect/ fear of needles
- Distrust of health system, HCP, government and the vaccine
- Vaccine hesitancy or opposition

**PRACTICAL BARRIERS**
- Distance to vaccination site
- Language/ literacy/ internet barriers to schedule appointments
- Direct cost of vaccination for low-income un-insured families
- Transportation costs and difficulties
- Mobility difficulties
- Incomplete records
- Work and child-care issues
INTERVENTIONS TO IMPROVE ADULT VACCINATION IN THE US

ENHANCING PROVIDER ACTION

• Routinize patient reminder/recall activities
• Use standing orders/protocols/job aids to remind and guide HCPs on vaccine recommendations for patients
• Use electronic medical records for documentation
• Make a strong referral for vaccination if not currently stocked on-site.
• Promote the use of NVAC Standards for Adult immunization Practice

IMPROVING SERVICE ACCESS

• Increase the use of community vaccinators and pharmacists
• Implementing worksite interventions with on-site vaccination
• Hold vaccination clinic at convenient hours
• Reducing patient out-of-pocket costs
• Federal funds for purchasing vaccines for uninsured adults
• Shift in payment models from fee-for-service payment outcomes of care

RAISING VACCINE DEMAND AND UPTAKE

• Implement vaccine community and public education programs and campaigns using trusted messengers
• Provide financial incentives to improve vaccination uptake
SOLUTION TO ADDRESS VACCINE CONFIDENCE AND ACCESS AMONG MINORITIES IN THE US

<table>
<thead>
<tr>
<th>Confidence</th>
<th>Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Acknowledge the role of <strong>systemic racism</strong> in producing mistrust to establish trust.</td>
<td>• Add medical (e.g., clinics, primary care providers) and nonmedical (i.e., community-based) vaccination sites in <strong>underserved communities</strong>.</td>
</tr>
<tr>
<td>• <strong>Co-create</strong> clear, layperson-oriented, <strong>messages tailored</strong> to the community concerns</td>
<td>• Build on <strong>existing resources in communities</strong>, such as trusted community-based organizations that already provide resources and human resources who are already trained in health-related fields.</td>
</tr>
<tr>
<td>• Messages should be <strong>transparent</strong> about what we know and don’t know about the vaccines</td>
<td>• <strong>Simplify and streamline access</strong> (e.g., provide transportation, do not require appointments, allow appointments to be made by phone, meet people where they live and work).</td>
</tr>
<tr>
<td>• Provide opportunities for <strong>open dialogue</strong> with scientists and health care providers who can answer questions.</td>
<td>• Collect and <strong>publicly release good data</strong> on COVID-19 risk, vaccination, and vaccine efficacy by subgroup</td>
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<tr>
<td>• Identify <strong>trusted messengers</strong> by community, including trusted public health officials and Black doctors, who can work with local leaders to disseminate information together.</td>
<td>• Create <strong>authentic partnerships</strong> between communities and public and medical officials.</td>
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<tr>
<td>• Leverage the <strong>power of social networks</strong>, including friends and family who have been vaccinated, who can discuss their vaccination experiences and reasons for getting vaccinated with their peers.</td>
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</table>
CONCLUSION

• Adult vaccination provides health, social, economic and national security benefits
• Unfortunately, only about one in five adult 19 years or older in the US is up to date with age-appropriate vaccination
• While adult vaccination rates are low overall, racial disparities in vaccination uptake worsen the problem with blacks and Hispanics having lower vaccination rates than whites
• There has been slow progress on improving adult vaccination rates over the last decade
• Consequently, tens of millions of Americans remain susceptible every year to potentially deadly vaccine-preventable infections
• Barriers to adult vaccination range from information barriers among HCPs, operational barriers and systemic challenges. From the client end, there are knowledge barriers, perceptions and beliefs and practical barriers
• Promising practices include enhancing provider action, improving service access and raising vaccine demand and uptake
• Strong policy and funding actions are needed to facilitate efforts to improve adult vaccination in the US
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THANK YOU!
QUESTIONS?
Please type questions in the Q&A Box
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