Using Immunization-related Clinical Comments for Advanced Immunization Forecasting

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Outline

- MIIS
- Clinical Comments
- Forecasting Integration
- MIIS Data Capture
- HL7 and Interoperability
- Opportunities and Challenges

Massachusetts Immunization Information System (MIIS)

- Statewide Immunization Registry
- Reporting required by legislative order
- Supports manual entry via the graphical user-interface (GUI) or data exchange via HL-7 (2.5.1) and SOAP
- Uses external web-service (IFM) for validation and forecasting (shared with WIC)

Immunization Forecasting Module (IFM)

- Web-service architecture
- Implemented in 2007
- Vendor: Software Partners
- Product expanded to support clinical comments for MDPH before implementation.
- Vendor's rules expanded and maintained by MDPH

Clinical Comments

- Conditions that can lead to recommendations other than those in the routine schedule
- Contraindications and Immunities generally remove recommendations
- Special indications often expand recommendations
- Precautions, Refusals, and Religious Exemptions are informational

Clinical Comments

- For MIIS, limited to Clinical Conditions with specific ACIP recs
- Sources: ACIP General Recommendations, Immunization Schedules, MMWR, Pink Book
- Try to balance privacy (MIIS is not an EHR) and specificity (need to support specific decisions)

ACIP General Recommendations

- Vaccine administration guidelines
- Contraindication and precautions
- Table 1 Recommended and Minimum Ages and Intervals Between Doses and its footnotes

http://www.cdc.gov/mmwr/pdf/rr/rr6002.pdf

Example: Contraindications and Precautions to DTaP

TABLE 6. Contraindications and precautions* to commonly used vaccines

Vaccine	Contraindications	Precautions
DTaP	Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component Encephalopathy (e.g., coma, decreased level of consciousness, or prolonged seizures), not attributable to another identifiable cause, within 7 days of administration of previous dose of DTP or DTaP	Progressive neurologic disorder, including infantile spasms, uncontrolled epilepsy, progressive encephalopathy; defer DTaP until neurologic status clarified and stabilized Temperature of ≥105°F (≥40.5°C) within 48 hours after vaccination with a previous dose of DTP or DTaP Collapse or shock-like state (i.e., hypotonic hyporesponsive episode) within 48 hours after receiving a previous dose of DTP/DTaP

Table 6. General Recommendations on Immunization: Recommendations of the Advisory Committee on Immunization Practices (ACIP)

Contraindications & Precautions

- **Summary Table published annually by CDC with US adult schedule in MMWR.** (CDC. MMWR 2012; vol.61, No.4)

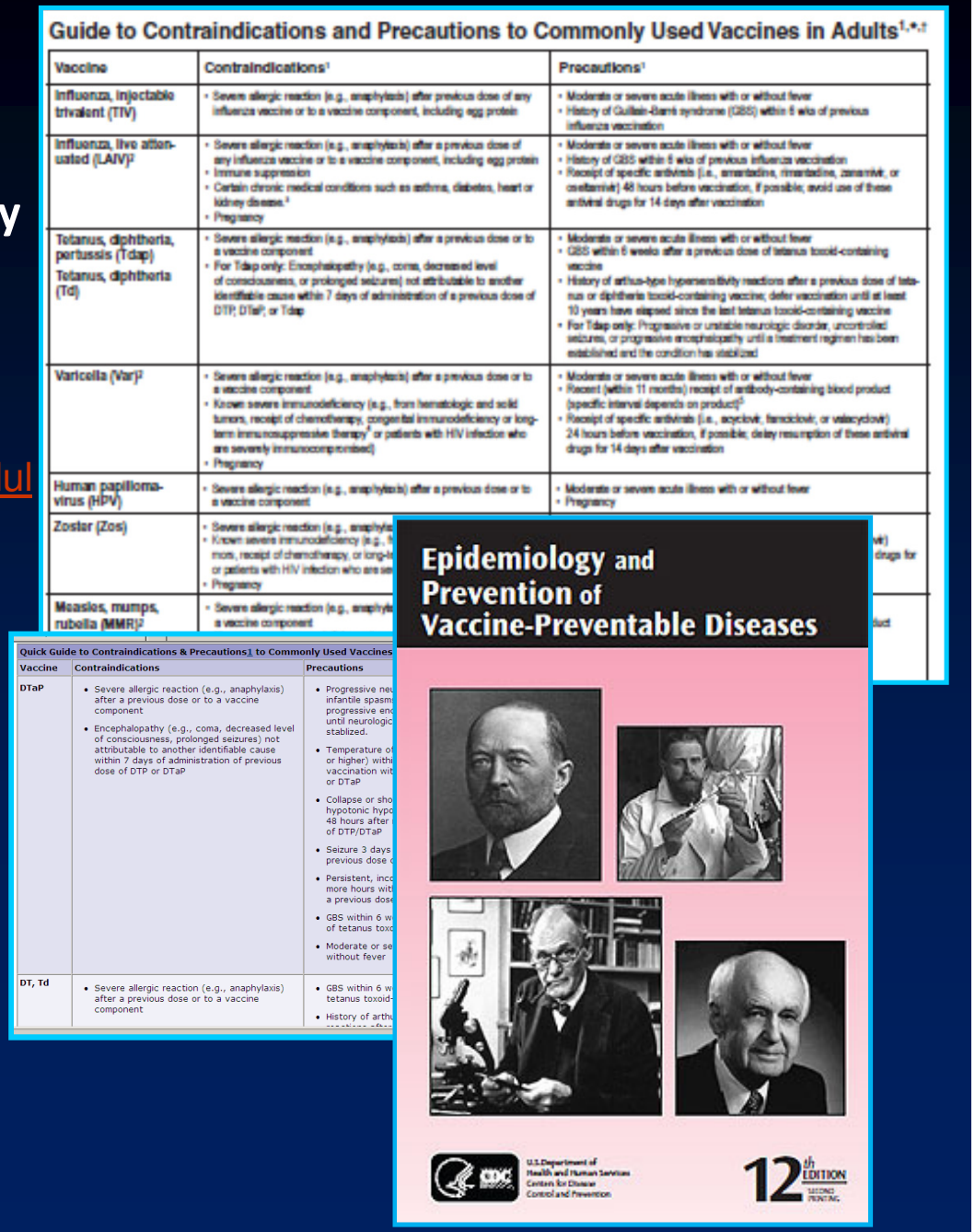
  http://www.cdc.gov/vaccines/recs/schedules/downloads/adult/mmwr-adult-schedule.pdf

- **CDC Quick Guide to Contraindications Precautions**

  http://www.cdc.gov/vaccines/recs/vac-admin/contraindications-vacc.htm

- **CDC's Pink Book**

  http://www.cdc.gov/vaccines/pubs/pinkbook/index.html



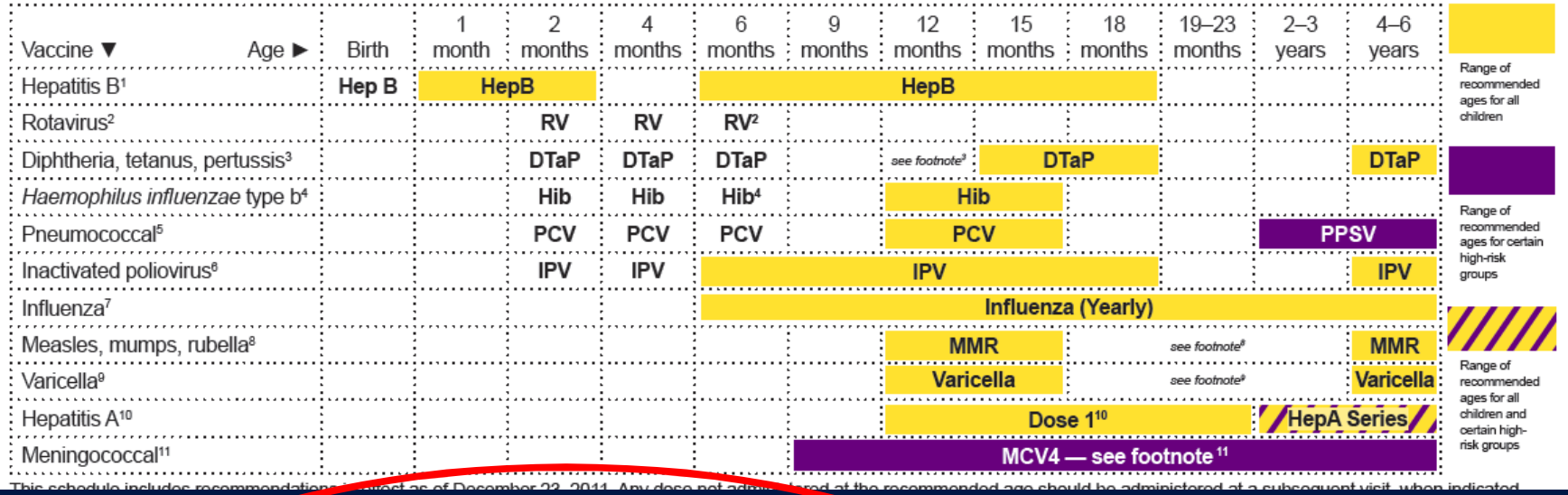
Guide to Contraindications and Precautions to Commonly Used Vaccines in Adults[1,*,†]

Vaccine	Contraindications[1]	Precautions[1]
Influenza, injectable trivalent (TIV)	• Severe allergic reaction (e.g., anaphylaxis) after previous dose of any influenza vaccine or to a vaccine component, including egg protein	• Moderate or severe acute illness with or without fever • History of Guillain-Barré syndrome (GBS) within 6 wks of previous influenza vaccination
Influenza, live attenuated (LAIV)[2]	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose of any influenza vaccine or to a vaccine component, including egg protein • Immune suppression • Certain chronic medical conditions such as asthma, diabetes, heart or kidney disease.[3] • Pregnancy	• Moderate or severe acute illness with or without fever • History of GBS within 6 wks of previous influenza vaccination • Receipt of specific antivirals [i.e., amantadine, rimantadine, zanamivir, or oseltamivir] 48 hours before vaccination, if possible; avoid use of these antiviral drugs for 14 days after vaccination
Tetanus, diphtheria, pertussis (Tdap) Tetanus, diphtheria (Td)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component • For Tdap only: Encephalopathy (e.g., coma, decreased level of consciousness, or prolonged seizures) not attributable to another identifiable cause within 7 days of administration of a previous dose of DTP, DTaP, or Tdap	• Moderate or severe acute illness with or without fever • GBS within 6 weeks after a previous dose of tetanus toxoid-containing vaccine • History of arthus-type hypersensitivity reactions after a previous dose of tetanus or diphtheria toxoid-containing vaccine; defer vaccination until at least 10 years have elapsed since the last tetanus toxoid-containing vaccine • For Tdap only: Progressive or unstable neurologic disorder, uncontrolled seizures, or progressive encephalopathy until a treatment regimen has been established and the condition has stabilized
Varicella (Var)[2]	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component • Known severe immunodeficiency (e.g., from hematologic and solid tumors, receipt of chemotherapy, congenital immunodeficiency or long-term immunosuppressive therapy[4] or patients with HIV infection who are severely immunocompromised) • Pregnancy	• Moderate or severe acute illness with or without fever • Recent (within 11 months) receipt of antibody-containing blood product (specific interval depends on product)[5] • Receipt of specific antivirals [i.e., acyclovir, famciclovir, or valacyclovir] 24 hours before vaccination, if possible; delay resumption of these antiviral drugs for 14 days after vaccination
Human papillomavirus (HPV)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component	• Moderate or severe acute illness with or without fever • Pregnancy
Zoster (Zos)	• Severe allergic reaction (e.g., anaphyla • Known severe immunodeficiency (e.g., h mors, receipt of chemotherapy, or long-te or patients with HIV infection who are se • Pregnancy	drugs for
Measles, mumps, rubella (MMR)[2]	• Severe allergic reaction (e.g., anaphyla a vaccine component	duct

Quick Guide to Contraindications & Precautions[1] to Commonly Used Vaccines

Vaccine	Contraindications	Precautions
DTaP	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component • Encephalopathy (e.g., coma, decreased level of consciousness, prolonged seizures) not attributable to another identifiable cause within 7 days of administration of previous dose of DTP or DTaP	• Progressive neu infantile spasm progressive enc until neurologic stablized. • Temperature of or higher) withi vaccination wit or DTaP • Collapse or sho hypotonic hypo 48 hours after of DTP/DTaP • Seizure 3 days previous dose • Persistent, inco more hours wit a previous dos • GBS within 6 w of tetanus toxo • Moderate or se without fever
DT, Td	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component	• GBS within 6 w tetanus toxoid • History of arthu

FIGURE 1: Recommended immunization schedule for persons aged 0 through 6 years—United States, 2012 (for those who fall behind or start late, see the catch-up schedule [Figure 3])



This schedule includes recommendations in effect as of December 23, 2011. Any dose not administered at the recommended age should be administered at a subsequent visit, when indicated

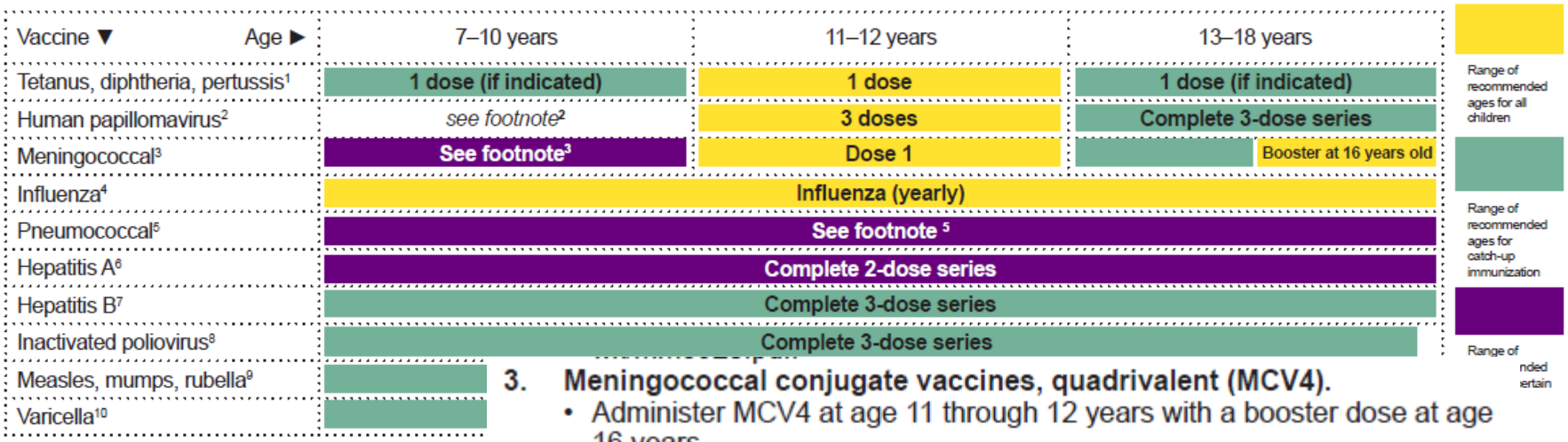
11. Meningococcal conjugate vaccines, quadrivalent (MCV4). (Minimum age: 9 months for Menactra [MCV4-D], 2 years for Menveo [MCV4-CRM])

- For children aged 9 through 23 months 1) with persistent complement component deficiency; 2) who are residents of or travelers to countries with hyperendemic or epidemic disease; or 3) who are present during outbreaks caused by a vaccine serogroup, administer 2 primary doses of MCV4-D, ideally at ages 9 months and 12 months or at least 8 weeks apart.
- For children aged 24 months and older with 1) persistent complement component deficiency who have not been previously vaccinated; or 2) anatomic/functional asplenia, administer 2 primary doses of either MCV4 at least 8 weeks apart.
- For children with anatomic/functional asplenia, if MCV4-D (Menactra) is used, administer at a minimum age of 2 years and at least 4 weeks after completion of all PCV doses.

See *MMWR* 2011;60:72–6, available at http://www.cdc.gov/mmwr/pdf/wk/mm6003. pdf, and Vaccines for Children Program resolution No 6/11-1, available at http://www. cdc.gov/vaccines/programs/vfc/downloads/resolutions/06-11mening-mcv.pdf, and *MMWR* 2011;60:1391–2, available at http://www.cdc.gov/mmwr/pdf/wk/mm6040. pdf, for further guidance, including revaccination guidelines.

Special Indications for Meningococcal Vaccine

FIGURE 2: Recommended immunization schedule for persons aged 7 through 18 years—United States, 2012 (for those who fall behind or start late, see the schedule below and the catch-up schedule [Figure 3])



This schedule includes recommendations in effect as of visit, when indicated and feasible. The use of a combin should consult the relevant Advisory Committee on Im pubs/acip-list.htm. Clinically significant adverse events vaers.hhs.gov) or by telephone (800-822-7967).

3. Meningococcal conjugate vaccines, quadrivalent (MCV4).

- Administer MCV4 at age 11 through 12 years with a booster dose at age 16 years.
- Administer MCV4 at age 13 through 18 years if patient is not previously vaccinated.
- If the first dose is administered at age 13 through 15 years, a booster dose should be administered at age 16 through 18 years with a minimum interval of at least 8 weeks after the preceding dose.
- If the first dose is administered at age 16 years or older, a booster dose is not needed.
- Administer 2 primary doses at least 8 weeks apart to previously unvaccinated persons with persistent complement component deficiency or anatomic/functional asplenia, and 1 dose every 5 years thereafter.
- Adolescents aged 11 through 18 years with human immunodeficiency virus (HIV) infection should receive a 2-dose primary series of MCV4, at least 8 weeks apart.
- See *MMWR* 2011;60:72–76, available at http://www.cdc.gov/mmwr/pdf/wk/mm6003.pdf, and Vaccines for Children Program resolution No. 6/11-1, available at http://www.cdc.gov/vaccines/programs/vfc/downloads/resolutions/06-11mening-mcv.pdf, for further guidelines.

Recommended Adult Immunization Schedule—United States - 2012

Note: These recommendations must be read with the footnotes that follow containing number of doses, intervals between doses, and other important information.

Figure 1. Recommended adult immunization schedule, by vaccine and age group[1]

VACCINE ▼ AGE GROUP ►	19-21 years	22-26 years	27-49 years	50-59 years	60-64 years	≥ 65 years
Influenza [2]	1 dose annually					
Tetanus, diphtheria, pertussis (Td/Tdap) [3,*]	Substitute 1-time dose of Tdap for Td booster; then boost with Td every 10 yrs					Td/Tdap[3]
Varicella [4,*]	2 Doses					
Human papillomavirus (HPV) Female [5,*]	3 doses					
Human papillomavirus (HPV) Male [5,*]	3 doses					
Zoster [6]					1 dose	
Measles, mumps, rubella (MMR) [7,*]	1 or 2 doses			1 dose		
Pneumococcal (polysacc						
Meningococcal [10,*]						
Hepatitis A [11,*]						
Hepatitis B [12,*]						

*Covered by the Vaccine Injury Co

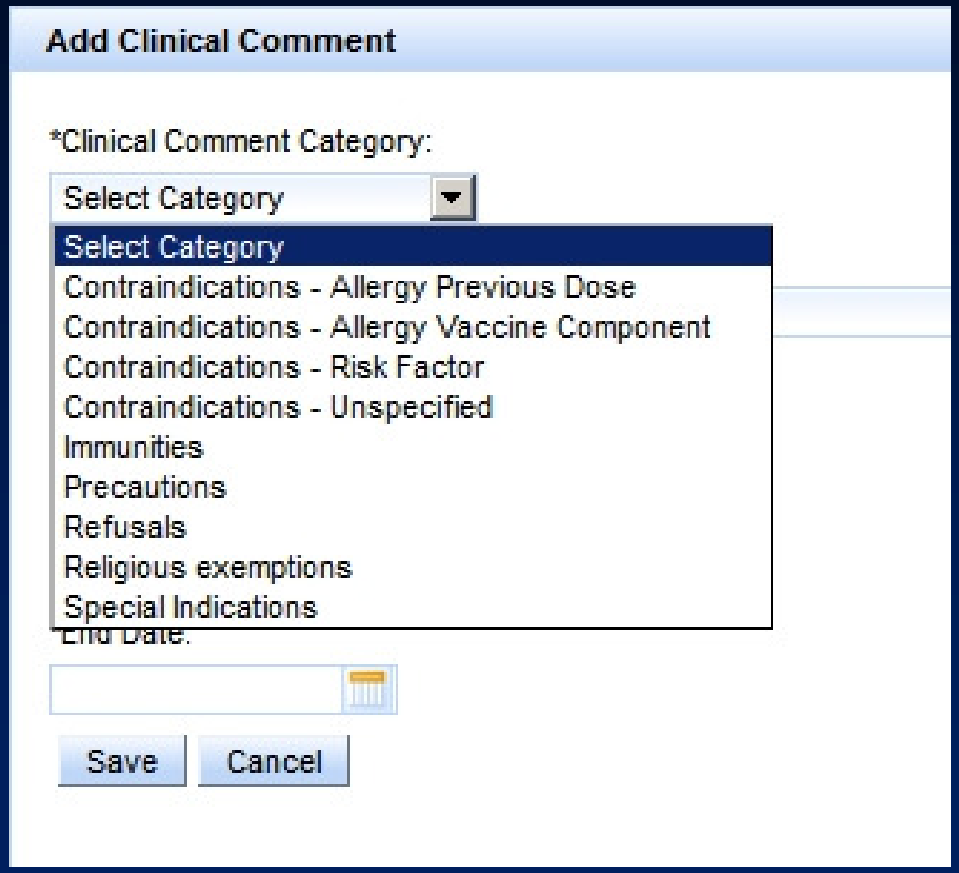
For all persons in th meet the age requir lack documentation or have no evidenc infection

10. Meningococcal vaccination

- Administer 2 doses of meningococcal conjugate vaccine quadrivalent (MCV4) at least 2 months apart to adults with functional asplenia or persistent complement component deficiencies.
- HIV-infected persons who are vaccinated should also receive 2 doses.
- Administer a single dose of meningococcal vaccine to microbiologists routinely exposed to isolates of *Neisseria meningitidis*, military recruits, and persons who travel to or live in countries in which meningococcal disease is hyperendemic or epidemic.
- First-year college students up through age 21 years who are living in residence halls should be vaccinated if they have not received a dose on or after their 16th birthday.
- MCV4 is preferred for adults with any of the preceding indications who are 55 years old and younger; meningococcal polysaccharide vaccine (MPSV4) is preferred for adults 56 years and older.
- Revaccination with MCV4 every 5 years is recommended for adults previously vaccinated with MCV4 or MPSV4 who remain at increased risk for infection (e.g., adults with anatomic or functional asplenia or persistent complement component deficiencies).

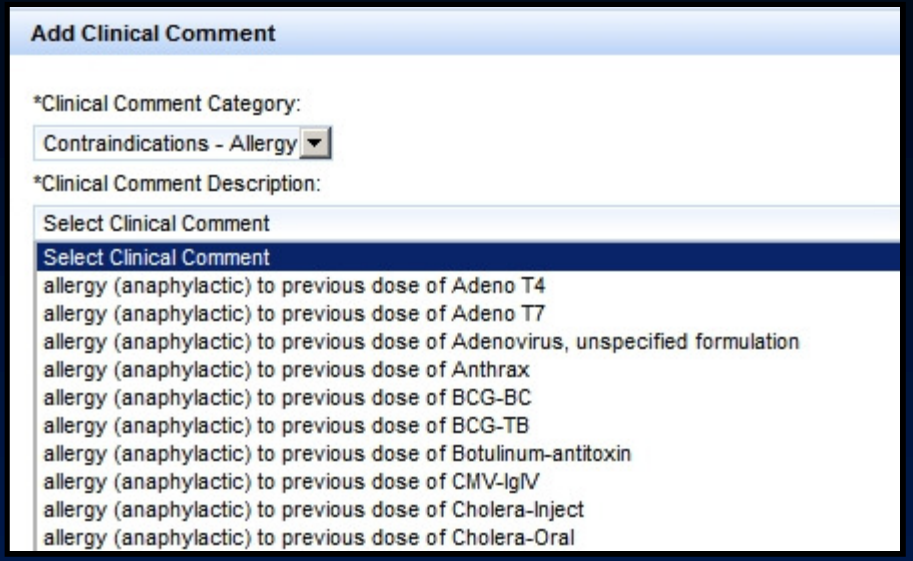
11. Hepatitis A vaccination

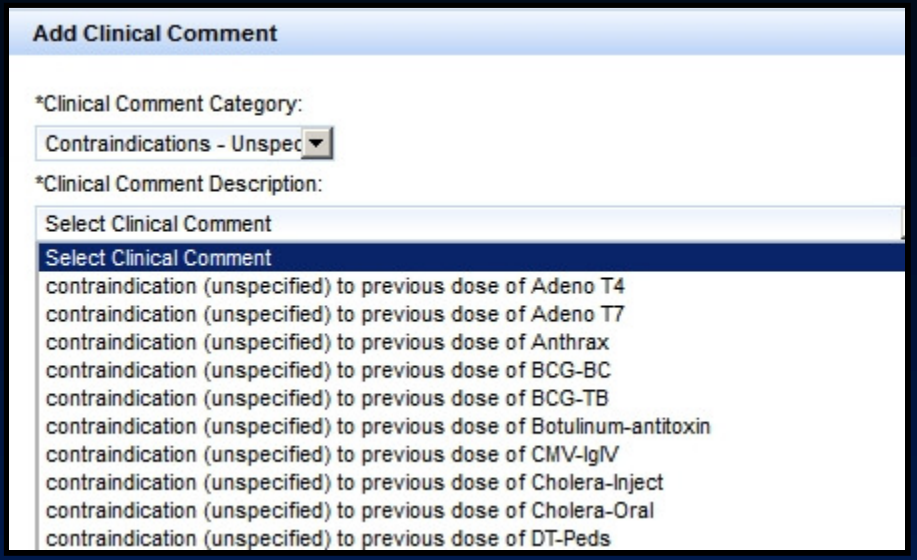
MIIS Client Comment Ontology

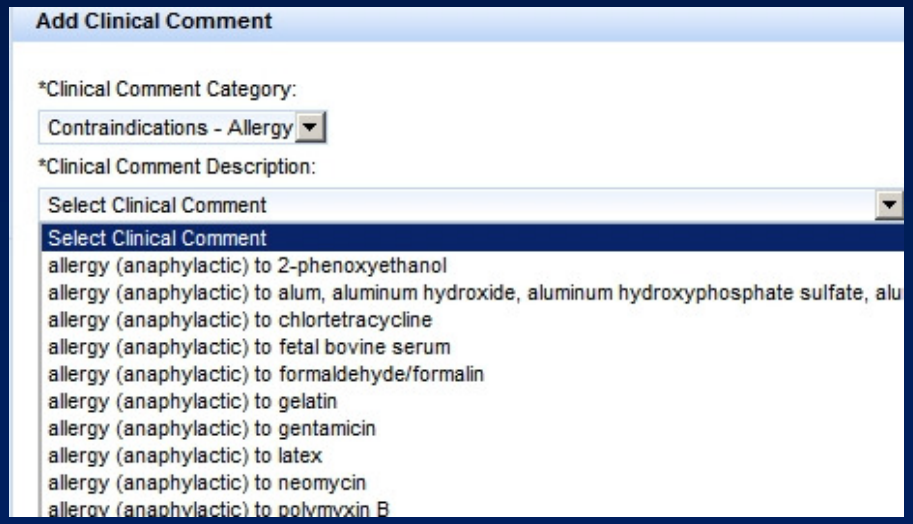


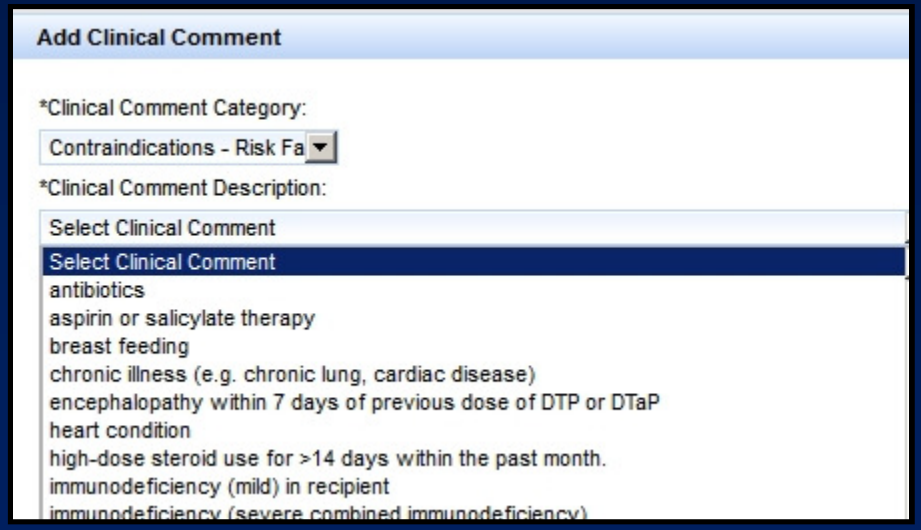
MIIS Comment Category	Count
Contraindications - Allergy Previous Dose	89
Contraindications - Allergy Vaccine Component	15
Contraindications - Risk Factor	20
Contraindications - Unspecified	89
Immunities	11
Precautions	25
Refusals	35
Religious exemptions	35
Special Indications	22
Total	337

Contraindications









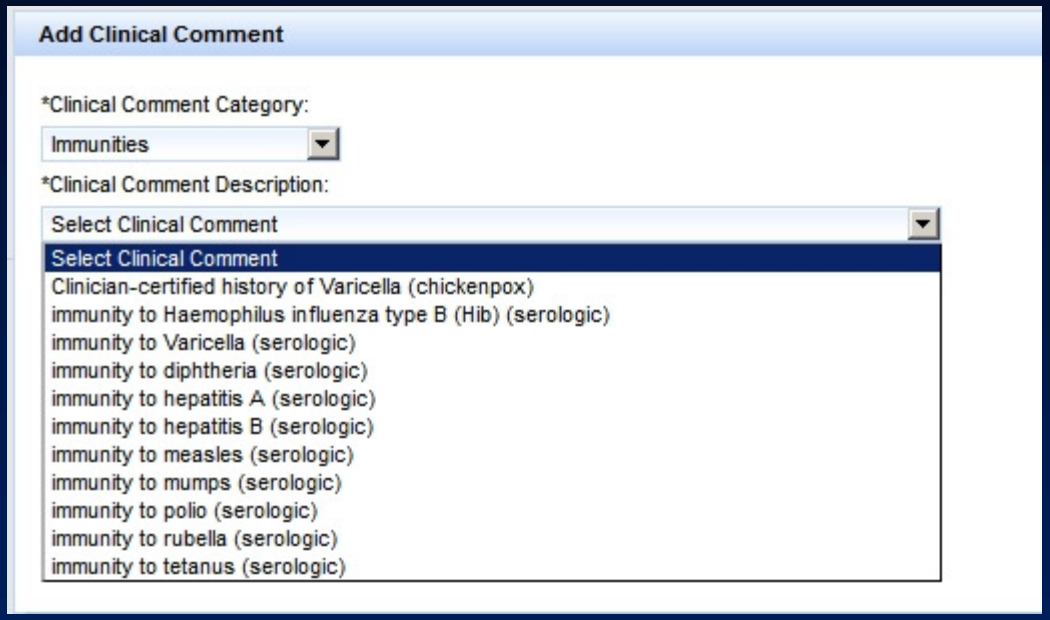
Contraindication Comment Logic

Client Comments

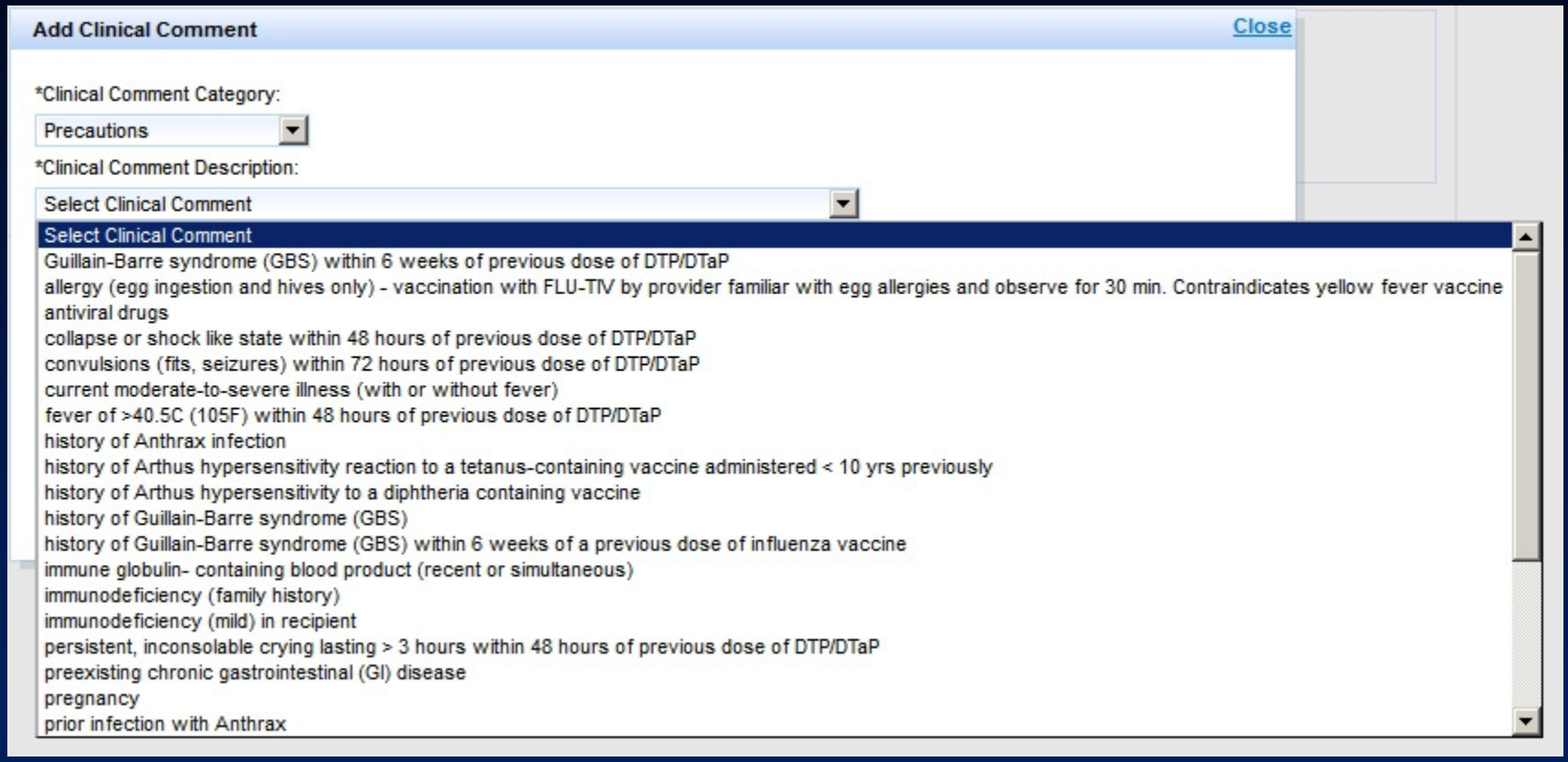
ID	Category	Descriptive Text	Action	Groups	CVX
48	Contraindications - Allergy Previous Dose	allergy (anaphylactic) to previous dose of DTaP-Hib	Do not forecast	7 (DTAP),40 (TDAP),6 (TD),36 (MNCN),13 (HIB), 31 (TT)	

Grid Display Text	Certificate Display Text
Diphtheria containing vaccines, Tetanus containing vaccines, Pertussis containing vaccines, Hib containing vaccines	medical exemption to DTP, DT, DTaP, Td, TT, Tdap, Hib

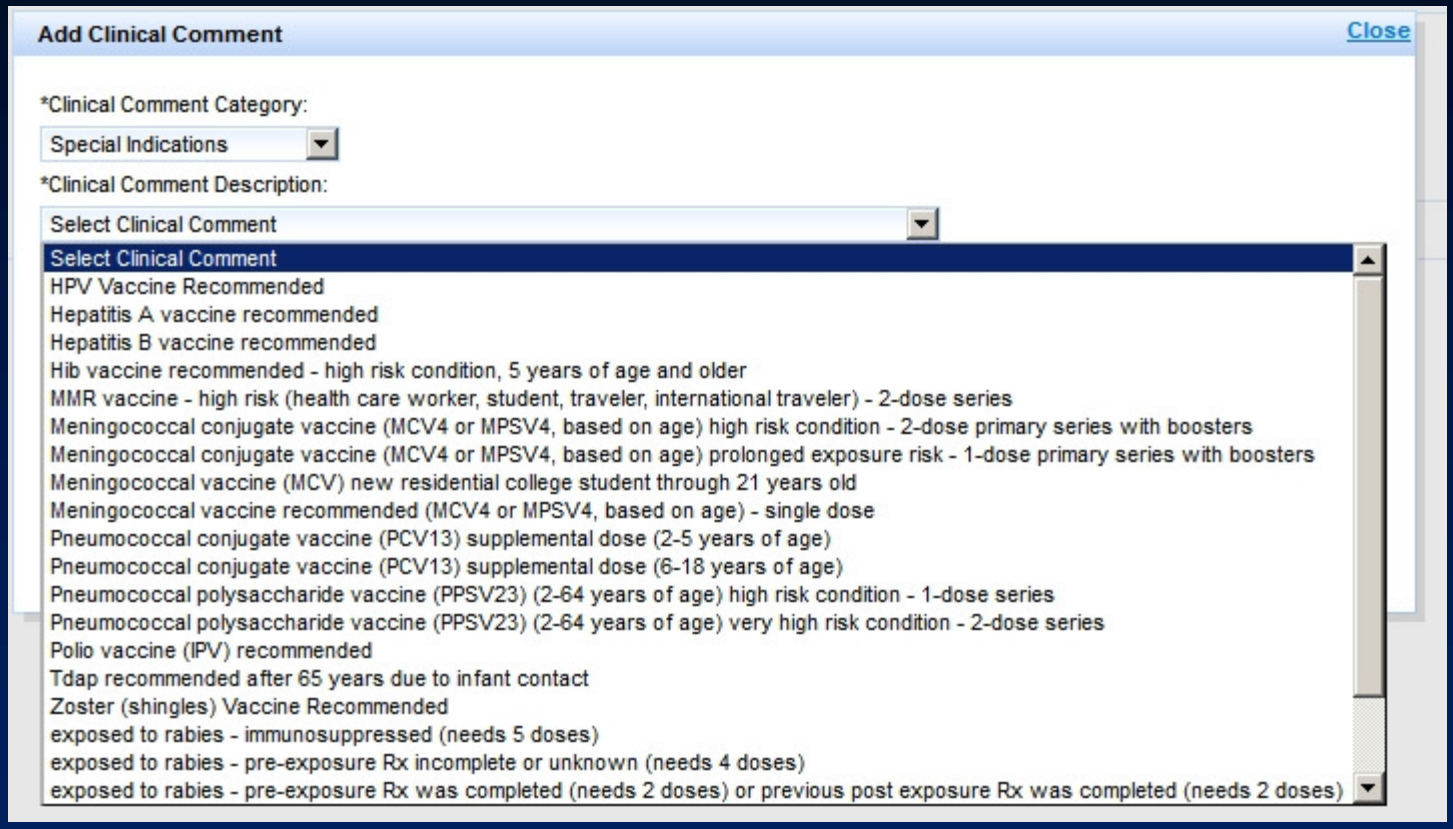
Immunities


Add Clinical Comment
*Clinical Comment Category:
Immunities
*Clinical Comment Description:
Select Clinical Comment
Select Clinical Comment
Clinician-certified history of Varicella (chickenpox)
immunity to Haemophilus influenza type B (Hib) (serologic)
immunity to Varicella (serologic)
immunity to diphtheria (serologic)
immunity to hepatitis A (serologic)
immunity to hepatitis B (serologic)
immunity to measles (serologic)
immunity to mumps (serologic)
immunity to polio (serologic)
immunity to rubella (serologic)
immunity to tetanus (serologic)

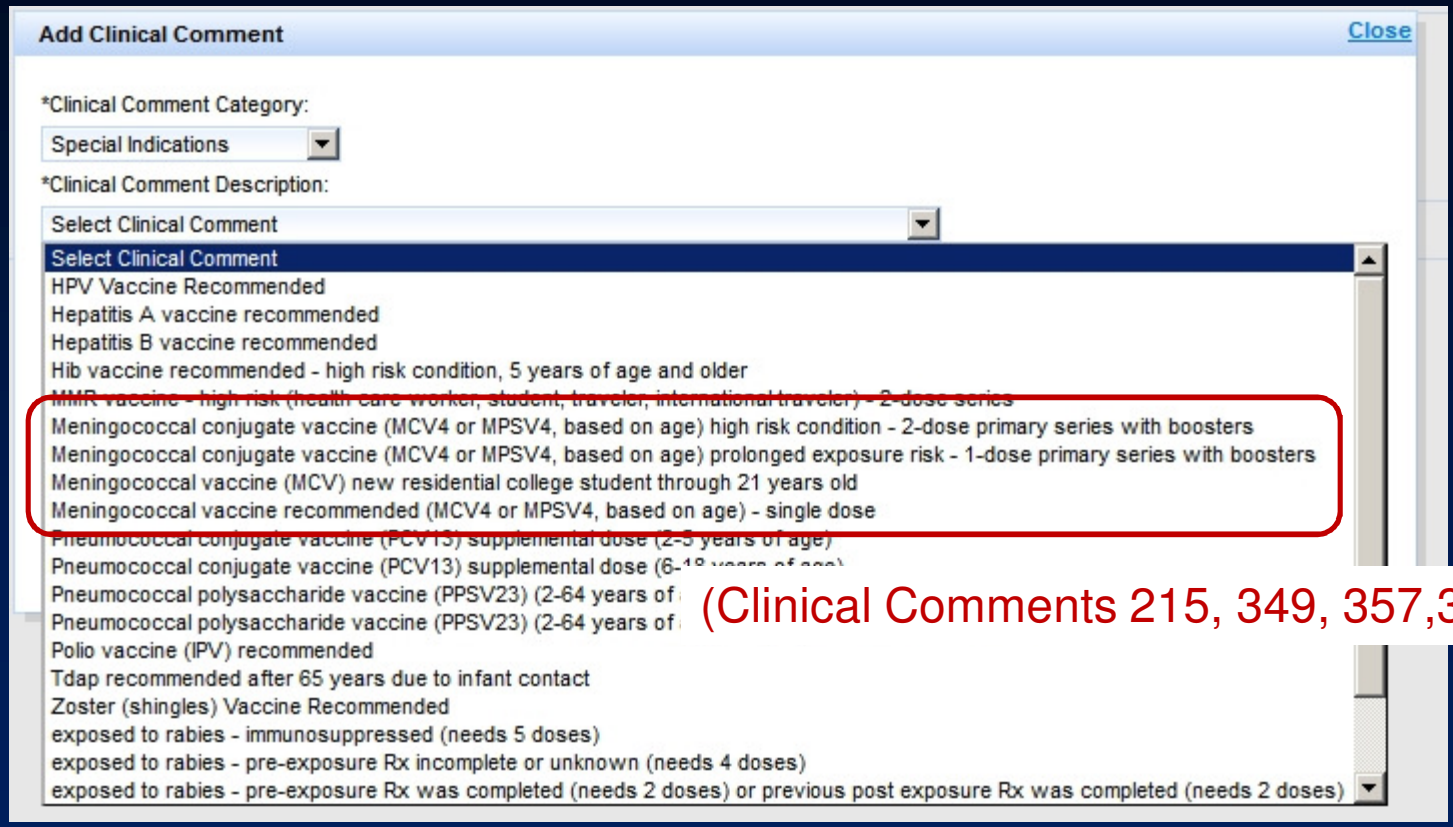
Precautions



Special Indications

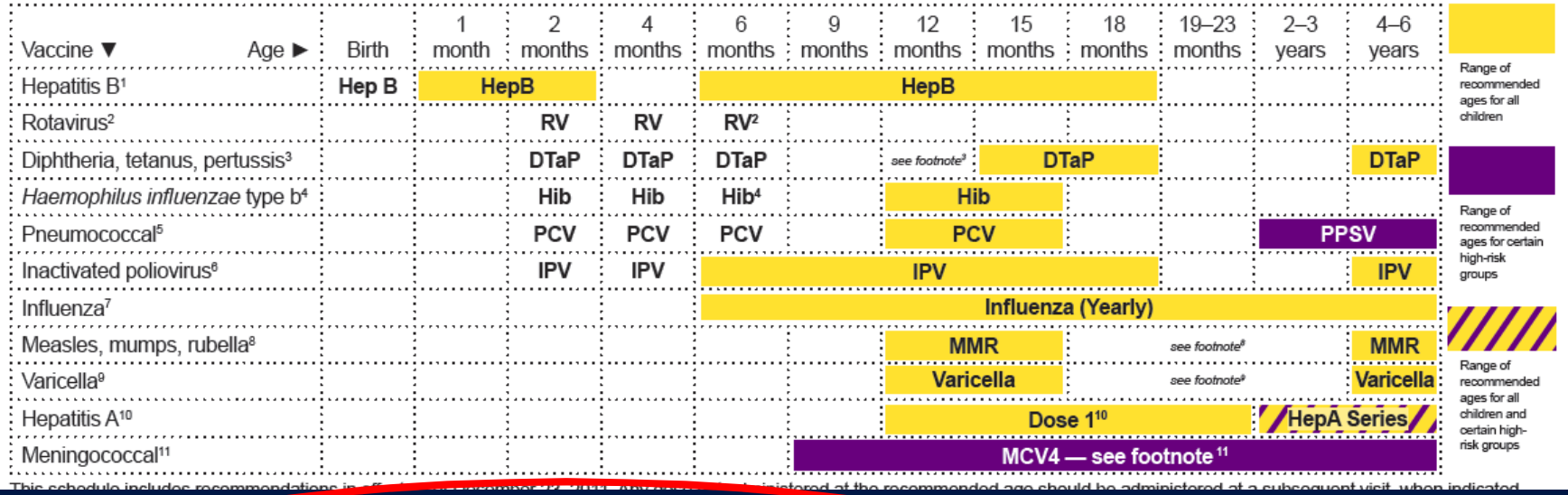


Special Indications



(Clinical Comments 215, 349, 357,358)

FIGURE 1: Recommended immunization schedule for persons aged 0 through 6 years—United States, 2012 (for those who fall behind or start late, see the catch-up schedule [Figure 3])



11. **Meningococcal conjugate vaccines, quadrivalent (MCV4).** (Minimum age: 9 months for Menactra [MCV4-D], 2 years for Menveo [MCV4-CRM])
    - For children aged 9 through 23 months 1) with persistent complement component deficiency; 2) who are residents of or travelers to countries with hyperendemic or epidemic disease; or 3) who are present during outbreaks caused by a vaccine serogroup, administer 2 primary doses of MCV4-D, ideally at ages 9 months and 12 months or at least 8 weeks apart.
    - For children aged 24 months and older with 1) persistent complement component deficiency who have not been previously vaccinated; or 2) anatomic/functional asplenia, administer 2 primary doses of either MCV4 at least 8 weeks apart.
    - For children with anatomic/functional asplenia, if MCV4-D (Menactra) is used, administer at a minimum age of 2 years and at least 4 weeks after completion of all PCV doses.
    - See *MMWR* 2011;60:72–6, available at http://www.cdc.gov/mmwr/pdf/wk/mm6003. pdf, and Vaccines for Children Program resolution No. 6/11-1, available at http://www. cdc.gov/vaccines/programs/vfc/downloads/resolutions/06-11mening-mcv.pdf, and *MMWR* 2011;60:1391–2, available at http://www.cdc.gov/mmwr/pdf/wk/mm6040. pdf, for further guidance, including revaccination guidelines.

MCV4 Vaccine for High Risk Individuals

Forecasting MCV4 Vaccine for High Risk Individuals

16.3 Rule Logic

Dose Number	Validation Age(≥)	Validation Interval	Forecast Min Age(≥)	Forecast Age	Forecast Overdue Age	Forecast Max Age	Forecast Earliest Interval	Forecast Regular Interval	Fore Non Pote Inte
1	If CVX114 or CVX108 9m-4d Else 2yr-4d	If previous invalid dose on or before 9m-4d and brand is Manactra, then interval is 0d, If previous invalid dose on or before 2y-4d and brand not Manactra, then interval is 0d, Else 8w-4d	9m	if comment 215 (single dose recommended) or clinical comment 349 (prolonged exposure 1-dose with booster) or 357 (high risk 2-dose)then 9m else 11yr	If comment 215 (single dose recommended) or clinical comment 349 (prolonged exposure 1-dose with booster) or 357 (high risk 2-dose) then rec+1m else Greater of 12yrs or rec +1m	If clinical comment 215 (single dose recommended) or 349 (prolonged exposure 1-dose with booster) or 357 (high risk 2-dose), then 120y If 358 (new residential college student), then 22y-1d Else 20yr-1d[11]	Same as regular	If previous invalid dose on or before 9m-4d and brand is Manactra, then interval is 0d, If previous invalid dose on or before 2y-4d and brand not Manactra, then interval is 0d, else 8wks	If pr inva dos or b 9m- and is Mar ther inte 0d, If pr inva dos or b 2y-4 bra Mar ther inte 0d, else
2	If CVX114	8w-4d	9m	if clinical	If clinical	If clinical	8w	If patient age	4wk

Recommended Adult Immunization Schedule—United States - 2012

Note: These recommendations must be read with the footnotes that follow containing number of doses, intervals between doses, and other important information.

Figure 1. Recommended adult immunization schedule, by vaccine and age group[1]

VACCINE ▼ AGE GROUP ►	19-21 years	22-26 years	27-49 years	50-59 years	60-64 years	≥ 65 years
Influenza [2]	1 dose annually					
Tetanus, diphtheria, pertussis (Td/Tdap) [3,*]	Substitute 1-time dose of Tdap for Td booster; then boost with Td every 10 yrs					Td/Tdap[3]
Varicella [4,*]	2 Doses					
Human papillomavirus (HPV) Female [5,*]	3 doses					
Human papillomavirus (HPV) Male [5,*]	3 doses					
Zoster [6]					1 dose	
Measles, mumps, rubella (MMR) [7,*]	1 or 2 doses			1 dose		
Pneumococcal (polysaccharide) [8,9]	1 or 2 doses					1 dose
Meningococcal [10,*]	1 or more doses					
Hepatitis A [11,*]	2 doses					
Hepatitis B [12,*]	3 doses					

*Covered by the Vaccine Injury Compensation Program

- For all persons in this category who meet the age requirements and who lack documentation of vaccination or have no evidence of previous infection
- Recommended if some other risk factor is present (e.g., on the basis of medical, occupational, lifestyle, or other indications)
- Tdap recommended for ≥65 if contact with <12 month old child. Either Td or Tdap can be used if no infant contact
- No recommendation

Report all clinically significant postvaccination reactions to the Vaccine Adverse Event Reporting System (VAERS). Reporting forms and instructions on filing a VAERS report are available at www.vaers

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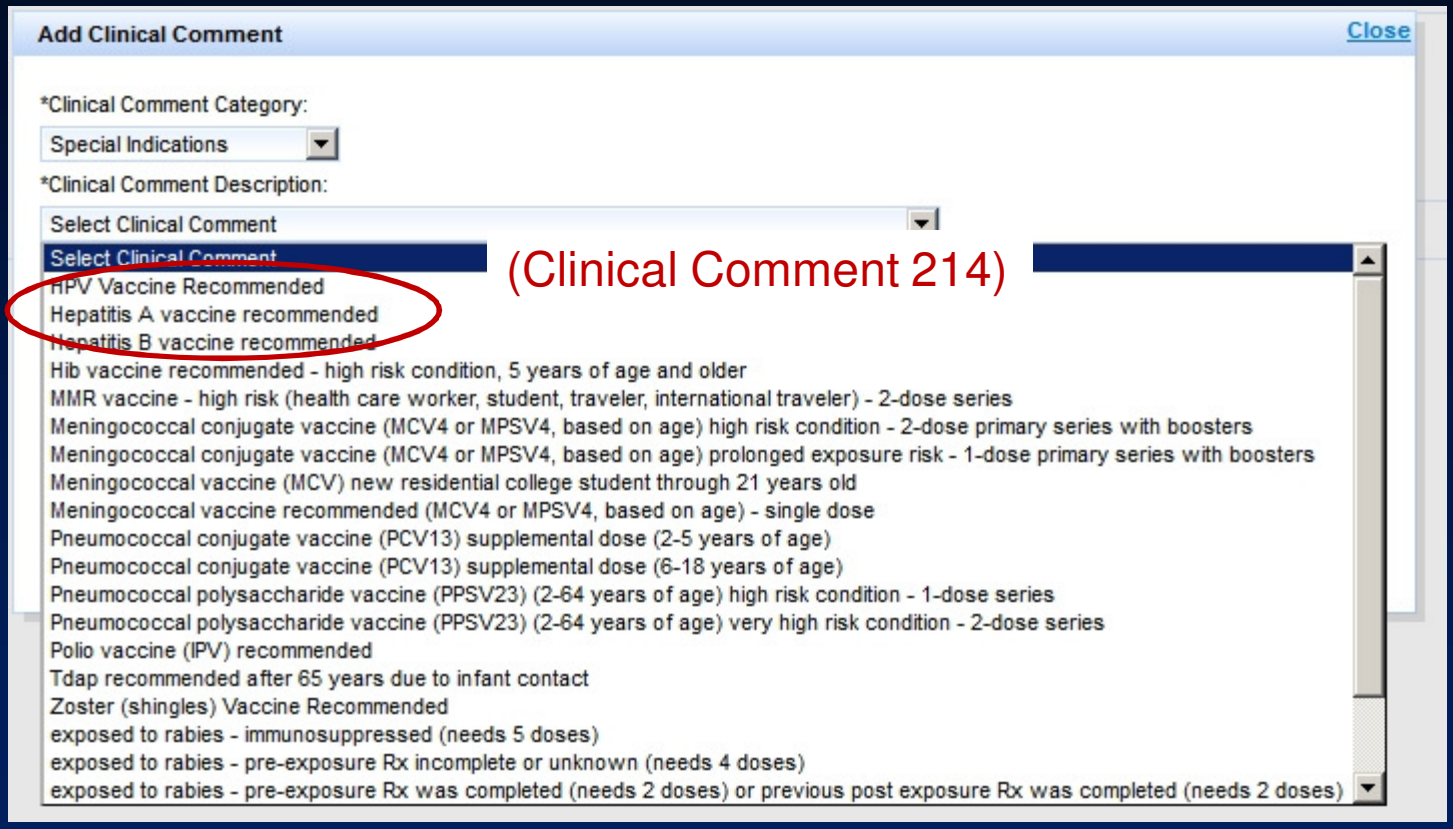
Rec: HepA Vaccine for High Risk Adults

11. Hepatitis A vaccination

- Vaccinate any person seeking protection from hepatitis A virus (HAV) infection and persons with any of the following indications:
  - men who have sex with men and persons who use injection drugs;
  - persons working with HAV-infected primates or with HAV in a research laboratory setting;
  - persons with chronic liver disease and persons who receive clotting factor concentrates;
  - persons traveling to or working in countries that have high or intermediate endemicity of hepatitis A; and
  - unvaccinated persons who anticipate close personal contact (e.g., household or regular babysitting) with an international adoptee during the first 60 days after arrival in the United States from a country with high or intermediate endemicity. (See footnote 1 for more information on travel recommendations). The first dose of the 2-dose hepatitis A vaccine series should be administered as soon as adoption is planned, ideally 2 or more weeks before the arrival of the adoptee.

Special Indications



Forecasting HepA Vaccine for High Risk Adults

9.3 Rule Logic

The rules within this section apply to the CVX Codes 31, 83, 84, 85, 52:

Dose Number	Validation Age(≥)	Validation Interval	Forecast Min Age(≥)	Forecast Age	Forecast Overdue Age	Forecast Max Age	Forecast Earliest Interval	Forecast Regular Interval	Forec Non-Poter Inter
1	1yr – 4d **For CVX104,** 18y-4d	If previous invalid dose on or before 1y-4d, then interval is 0d, else 4wks - 4d[2]	1yr	12m	Later of 24m or Rec.+1m	19yr-1d If clinical comment 214, then 120y	Same as regular	If previous invalid dose on or before 1y-4d, then interval is 0d, else 4w	If previ invali dose or be 1y-4d then interv is 0d, else 4
2	1 yr 6m – 4d **For**	≥6m – 4d **For CVX104,** If	1yr 6m	18m	Dose 1 +18m	120y	Same as regular	6m	4w

Client Comment Interoperability

- Recently challenged to implement existing client comments with HL7 2.5.1
- HL7 supports comments in two ways – patient-related (comments about a person (immunities, contraindications, etc) and dose related (events related to specific doses)
- MIIS re-design provided opportunity to meet requirements

HL7 – Person-based Comments

Value Set Name – Vaccination Contraindications (Used in OBX- 5)

Value Set OID - 2.16.840.1.114222.4.11.3288

Value Set Code:: PHVS_VaccinationContraindication_IIS

Value set definition: Indicates a contraindication to vaccination.

Code Set OID:

SNOMED: 2.16.840.1.113883.6.96

CDCPHINVS: 2.16.840.1.114222.4.5.274

Concept Code	Concept Name	Definition	HL7 Table 0396 Code	V 2.3.1 Value NIP004
VXC30	allergy (anaphylactic) to proteins of rodent or neural origin	allergy (anaphylactic) to proteins of rodent or neural origin	CDCPHINVS	
VXC17	allergy (anaphylactic) to 2-phenoxyethanol	allergy (anaphylactic) to 2-phenoxyethanol	CDCPHINVS	
VXC18	allergy to baker's yeast (anaphylactic)	allergy to baker's yeast (anaphylactic)	CDCPHINVS	03
91930004	Allergy to eggs (disorder)	allergy to egg ingestion (anaphylactic)	SCT	04
294847001	Gelatin allergy (disorder)	allergy to gelatin (anaphylactic)	SCT	05
294468006	Neomycin allergy (disorder)	allergy to neomycin (anaphylactic)	SCT	06
		allergy to streptomycin		07

HL7 – Person-based Comments

Value Set Name – Evidence of Immunity - IIS (Used in OBX- 5)
Value Set OID - 2.16.840.1.114222.4.11.3293
Value Set Code:: PHVS_EvidenceOfImmunity_IIS
Value set definition: **Evidence of immunity indicates that a person has plausible evidence that they have already developed immunity to a particular disease. The definition of plausible evidence is a local decision, but best practice would suggest that serological evidence of immunity is the strongest indicator of immunity.**

Code Set OID:
SNOMED: 2.16.840.1.113883.6.96

Concept Code	Concept Name	Definition	HL7 Table 0396 Code	V 2.3.1 Value NIP004
409498004	Anthrax (disorder)	History of anthrax infection.	SCT	
397428000	Diphtheria (disorder)	History of diphteria infection.	SCT	24
76902006	Tetanus (disorder)	History of tetanus infection.	SCT	32
27836007	Pertussis (disorder)	History of pertussis infection.	SCT	29
40468003	Viral hepatitis, type A (disorder)	History of Hepatitis A infection.	SCT	
66071002	Type B viral hepatitis (disorder)	History of Hepatitis B infection.	SCT	26

Definition:
Evidence of immunity indicates that a person has plausible evidence that they have already developed immunity to a particular disease. The definition of plausible evidence is a local decision, but best practice would suggest that serological evidence of immunity is the strongest indicator of immunity.

The example below shows that no dose of Hep B vaccine was given because the person had evidence of previous infection with Hep B.

```
ORC|RE||197027^DCS|||||||^Clerk^Myron| <CR>

RXA|0|1|20090412|20090412|998^No vaccine administered^CVX|999|||NA<CR>

OBX|1|CE|59784-9^Disease with presumed immunity ^LN|1|66071002^HISTORY
OF HEP B INFECTION^SCT||||||F<CR>
```

Definition:
A contraindication is any physical condition, current medication or other factor that indicates that a person should not receive an immunization that may be associated with the contraindication. This contraindication may be temporary or permanent.
LOINC: 30945-0

Examples:

```
OBX|1|CE|30945-0^Vaccination contraindication^LN|1|91930004^allergy
to eggs^SCT||||||F|||20090415<CR>
```

HL7 – Dose-based Comments

Value Set Name – Vaccination Reaction - IIS (Used in OBX- 5)

Value Set OID - 2.16.840.1.114222.4.11.3289

Value Set Code:: PHVS_VaccinationReaction_IIS

Value set definition: indicates a reaction or adverse event associate in time with an immunization.

Code Set OID:

SNOMED: 2.16.840.1.113883.6.96

CDCPHINVS: 2.16.840.1.114222.4.5.274

Concept Code	Concept Name	Definition	HL7 Table 0396 Code	V 2.3.1 Value NIP004
39579001	Anaphylaxis (disorder)	Anaphylaxis	SCT	
81308009	Disorder of brain (disorder)	Encephalopathy	SCT	
VXC9	persistent, inconsolable crying lasting > 3 hours within 48 hours of dose	persistent, inconsolable crying lasting > 3 hours within 48 hours of dose	CDCPHINVS	
VXC10	collapse or shock-like state within 48 hours of dose	collapse or shock-like state within 48 hours of dose	CDCPHINVS	
	convulsions (fits, seizures) within 72 hours of dose	convulsions (fits, seizures) within 72		

Adverse Reaction Associated with Hib PRP-T (CVX 48)

Definition:

An adverse reaction is a negative physical condition that occurs shortly after one or more immunizations have been received.

```
ORC|RE||197027^DCS|||||||^Clerk^Myron||^Pediatric^MARY^^^^^^^L^^^^^^
^^^^^MD<CR>

RXA|0|1|20090412|20090412|48^HIB PRP-T^CVX|999|||00^new immunization
record^NIP0001|^Sticker^Nurse|^^^DCS_DC|||33k2a||PMC^sanofi^MVX|||C
P<CR>

RXR|C28161^IM^NCIT^IM^IM^HL70162|<CR>

OBX|1|CE|31044-1^reaction^LN|1|VXC12^fever > 40.5
C^CDCPHINVS||||||F|||20090415<CR>

OBX|1|CE|31044-1^reaction^LN|1|81308009^encephalopathy, disorder of
brain^SCT||||||F|||20090415<CR>
```

Value Set Name – Vaccination Special Indications - IIS (Used in OBX- 5)

Value Set OID - 2.16.840.1.114222.4.11.3290

Value Set Code:: PHVS_VaccinationSpecialIndications_IIS

Value set definition: Describes a factor about the client which may impact forecasting of next dose of vaccine needed.

Code Set OID:

CDCPHINVS: 2.16.840.1.114222.4.5.274

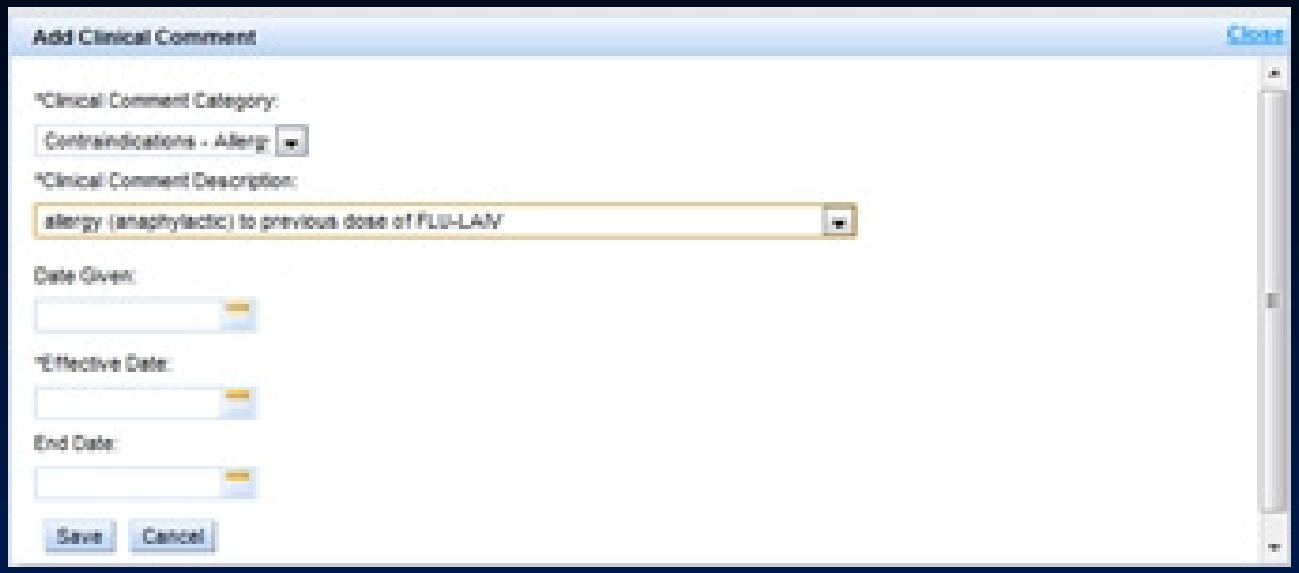
Concept Code	Concept Name	Definition	HL7 Table 0396 Code	V 2.3.1 Value
VXC7	Rabies exposure within previous 10 days.	Rabies exposure within previous 10 days.	CDCPHINVS	
VXC8	Member of special group	Member of special group	CDCPHINVS	

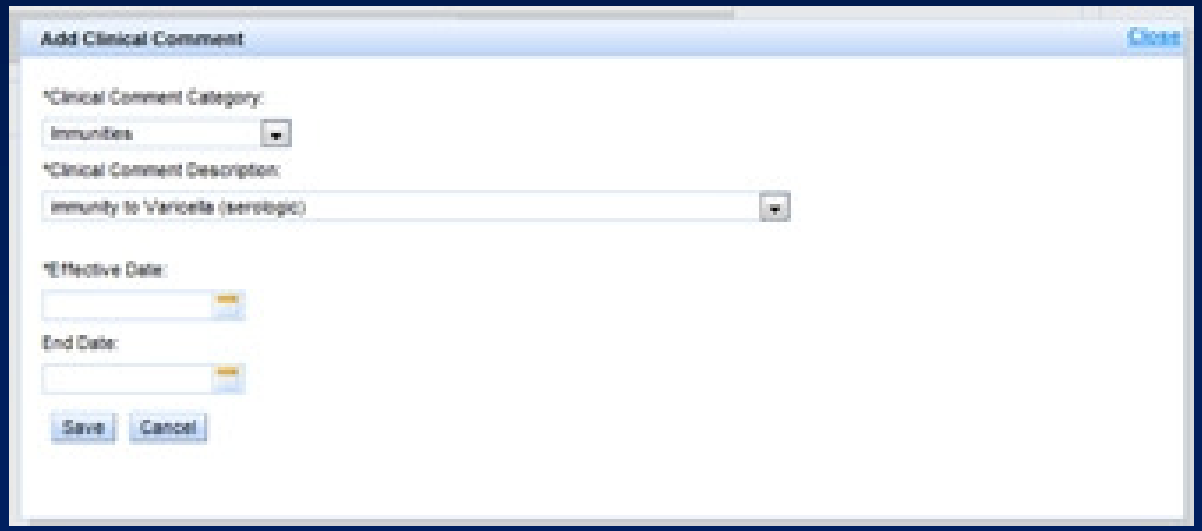
Example:

|VXC7^Rabies exposure^CDCPHINVS|

MIIS Comment Category	HL7 2.5.1 VaccinationTable(s)
Contraindications - Allergy Previous Dose	Contraindications, Reactions
Contraindications - Allergy Vaccine Component	Contraindications
Contraindications - Risk Factor	Contraindications, Reactions
Contraindications - Unspecified	Contraindications
Immunities	Evidence of Immunity
Precautions	Contraindications, Reactions
Refusals	
Religious exemptions	
Special Indications	Special Indications

Sample Clinical Comments – MIIS 3.0





Opportunities and Challenges

- Opportunities:
  - Better forecasts for sub-populations at greatest risk at point-of-care and reminder recall
  - Enhanced safety
  - Potential to leverage EHR clinical data
- Challenges:
  - Rules management
  - Mapping/coding
  - Lack of standardardized vocabularies from ACIP/CDC
  - Under-specification in HL7 (disease vs. serologic immunity)

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