Linda et al.,

I serve as one of two AAP liaisons to the CDC Advisory Committee on Immunization Practices, and in that role I prepare the AAP minutes of the ACIP meetings.  Here are the [notes](https://www.alaap.org/s/Coronavirus-Disease-2019-presentations-to-ACIP-on-June-23-2021.pdf) that I took on June 23 at the ACIP meeting on myocarditis and booster doses.  In addition, I pulled out of this document the following key points:

Myocarditis/pericarditis per million doses administered in VSD and VAERS using a 21-day window (VSD) and no restriction (VAERS) are summarized as follows:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |

|  |
| --- |
| All (chart confirmed in VSD) |

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| --- |
| Females (ICD10 in VSD) |

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|  |
| --- |
| Females (crude in VAERS) |

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| --- |
| Males (ICD10 in VSD) |

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|  |
| --- |
| Males (crude in VAERS) |

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| Dose 1 | 4.4 | 1.9 | 0.8 -1.5 | 4.7 | 2.0 -9.8 |
| Dose 2 | 12.6 | 4.7 | 1.8 -9.1 | 32.0 | 10.0 -66.7  |

Baseline rates of myocarditis are 1 to 10 cases per 100,000 persons per year.  Data available to date suggest a likely association of myocarditis with mRNA vaccination in adolescents and young adults.

A summary of the clinical features of myocarditis following mRNA vaccines are that it occurs most commonly in males < 30 years of age, and symptom onset clusters in the week following vaccination.  Early data of acute outcomes have been good.  Many cases have been hospitalized, but usually for short durations of time.  No long-term data available yet.  COVID-19 incidence, hospitalization, and mortality rates are decreasing overall.  Variants continue to spread, and scenarios exist in which cases increase in fall.  Adolescents are a growing proportion of cases given vaccine coverage among adults.  Post-COVID-19 conditions also impact adolescents and young adults, with 4,018 MIS-C cases have been reported to national surveillance.  Myocarditis is a disease marked by inflammation of the heart muscle, risk factors for which include younger age and male sex.  It can occur with SARS-CoV-2 infection.  Myocarditis after mRNA vaccines has been noted with highest frequency in males aged 12–29 years following a second vaccine dose.  Early outcomes have been encouraging, but no long-term data are available yet.

Multiple real-world effectiveness studies from the United States and other countries demonstrate that a two-dose mRNA COVID-19 vaccination series in age groups for which the vaccine is recommended is effective.  Against SARS-CoV-2 infection, efficacy ranges from 64–99%, and against COVID-19-associated hospitalization it is 87–97%.  With the current U.S. exposure risk calculated over 120 days, for every million doses of mRNA vaccine the hospitalizations prevented versus cases of myocarditis are graphed visually as follows:



Predicted cases prevented versus myocarditis cases for every million second dose vaccinations over 120 days are as follows:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | COVID-19 cases prevented | Hospitalizations prevented | ICU admissions prevented | Deaths prevented | Myocarditis cases |
| Females 12-17 years of age | 8,500 | 183 | 38 | 1 | 8-10 |
| Males 12-17 years of age | 5,700 | 215 | 71 | 2 | 56-69 |
| Females 18-24 years of age | 14,000 | 1,127 | 93 | 13 | 4-5 |
| Males 18-24 years of age | 12,000 | 530 | 127 | 3 | 45-56 |
| Females 24-29 years of age | 15,000 | 1,459 | 87 | 4 | 2 |
| Males 24-29 years of age | 15,000 | 936 | 215 | 13 | 15-18 |

Benefit-risk interpretations and limitations were discussed next.  Direct benefit-risk assessment shows a positive balance for all age and sex groups.  Benefits are likely an underestimate since the analysis was performed using reported rates of cases and hospitalizations but this likely represent only a fraction of the true cases that have occurred in the population.  There is some uncertainty about the rates of myocarditis after mRNA vaccines; not all cases are verified, and crude rates were used.  The balance of benefits and risks could change with increasing or decreasing incidence.  There currently are limited data on the risk of myocarditis in the 12–15 year old population due to the timing of recommendations and the limited number of second doses given to date.

Given the rarity of the occurrence of myocarditis following COVID vaccination and the favorable outcomes when it occurs, the ACIP and the AAP both continue to strongly support COVID vaccination in eligible people.  Here is the [AAP public statement](https://contentsharing.net/actions/email_web_version.cfm?ep=i6MMu18PmAmjwhkyqSinWpNcU9lSLczNBR-_GpVPwIp04c2A5c93Uc6fP8cEsNb8JEKapQ68G9zNisV1A1TDOG5zJ_OaHvYFhhbgmPHFkK0QmWtsEY8Kp7xc7SzVEYtpELJzyonqRoSVQ-BPJjIfRA~~) that was released on June 23. In addition, here is the [Advance Release MMWR](https://www.cdc.gov/mmwr/volumes/70/wr/pdfs/mm7027e2-H.pdf), which came out three days ago.

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