AstraZeneca and Pfizer Model Manual Calculations – Examples

These examples are for people who had the AstraZeneca COVID-19 vaccine for their first and second doses, and the Pfizer COVID-19 vaccine for their third dose

(Please refer to tables of assumptions for AstraZeneca calculator)

1. For a 30-39 year-old male, what is the chance of developing symptomatic infection if 10 percent of the population is infected over a 2 month period? Assume variant = Omicron

a) Not vaccinated

- Start with 10% risk over 2 months from **Table A2**
- Multiply by the Relative Risk of infection in 30–39-year-old male from **Table A3** 1.24% (compared to 1% in the general population)
- Chance of symptomatic infection = 0.10 x 1.24 = **0.124 (12.4%)**

b) Had one dose of AstraZeneca COVID-19 vaccine (administered 3 weeks ago)

- Start with 10% risk over 2 months from **Table A2**
- Multiply by the Relative Risk of infection in 30–39-year-old male from **Table A3** 1.24% (compared to 1% in the general population)
- Use protection from infection based on one dose of AstraZeneca vaccine 3 weeks ago of 21.8% from **Summary Table**
- Chance of symptomatic infection = 0.10 x 1.24 x (1-0.218) = **0.096968 (9.7%)**

c) Had two doses of AstraZeneca COVID-19 vaccine (last dose 0 to 2 months ago)

- Start with 10% risk over 2 months from **Table A2**
- Multiply by the Relative Risk of infection in 30–39-year-old male from **Table A3 1.24%** (compared to 1% in the general population)
- Use protection from infection based on 2 doses of AstraZeneca vaccine 0 to 2 months ago of 38.3% from **Summary Table**
- Chance of symptomatic infection = 0.10 x 1.24 x (1-0.383) = **0.076508 (7.7%)**

d) Had two doses of AstraZeneca COVID-19 vaccine (last dose 2 to 4 months ago)

- Start with 10% risk over 2 months from **Table A2**
- Multiply by the Relative Risk of infection in 30–39-year-old male from **Table A3 1.24%** (compared to 1% in the general population)
- Use protection from infection based on 2 doses of AstraZeneca vaccine 2 to 4 months ago of 20.8% from **Summary Table**
- Chance of symptomatic infection = 0.10 x 1.24 x (1-0.208) = **0.098208 (9.8%)**

e) Had two doses of AstraZeneca COVID-19 vaccine (last dose 4 to 6 months ago)

- Start with 10% risk over 2 months from **Table A2**
- Multiply by the Relative Risk of infection in 30–39-year-old male from **Table A3 1.24%** (compared to 1% in the general population)
- Use protection from infection based on 2 doses of AstraZeneca vaccine 4 to 6 months ago of 1.9% from **Table Summary Table**
- Chance of symptomatic infection = 0.10 x 1.24 x (1-0.019) = **0.1216 (12.2%)**

f) Had two doses of AstraZeneca COVID-19 vaccine followed by a Pfizer COVID-19 vaccine for the third dose

- Start with 10% risk over 2 months from **Table A2**
- Multiply by the Relative Risk of infection in 30–39-year-old male from **Table A3 1.24%** (compared to 1% in the general population)
- Use protection from infection based on 2 doses of AstraZeneca followed by a Pfizer COVID-19 vaccine for the third dose (less than 2 months ago) of 58.3% from **Summary Table**
- Chance of symptomatic infection = 0.10 x 1.24 x (1-0.583) = **0.051708 (5.2%)**

2. For a 30–39-year-old male with symptomatic COVID-19, what is the chance of dying from COVID-19? Assume variant = Omicron

a) Not vaccinated

- From **Table A1** case fatality rate is 1/20,692
- Chance of dying from COVID = **0.000048237 (0.0048%)**

b) Had one dose of AstraZeneca COVID-19 vaccine (administered 3 weeks ago)

- From **Table A1** case fatality rate is 1/20,692
- Multiply by protection from death based in 1 dose of AstraZeneca 3 weeks ago from **Summary Table** of 47.7%
- Chance of dying from COVID = 0.000048237 x (1-0.477) = **0.000025227 (0.0025%)**

c) Had two doses of AstraZeneca COVID-19 vaccine (last dose 0 to 2 months ago)

- From **Table A1** case fatality rate is 1/20,692
- Multiply by protection from death based in 2 doses 0 to 2 months ago from **Summary Table** of 52.6%
- Chance of dying from COVID = 0.000048237 x (1-0.526) = **0.000022864 (0.002%)**

d) Had two doses of AstraZeneca COVID-19 vaccine (last dose 2 to 4 months ago)

- From **Table A1** case fatality rate is 1/20,692
- Multiply by protection from death based in 2 doses 2 to 4 months ago from **Summary Table** of 52.6%
- Chance of dying from COVID = 0.000048237 x (1-0.526) = **0.000022864 (0.002%)**

e) Had two doses of AstraZeneca COVID-19 vaccine (last dose 4 to 6 months ago)

- From **Table A1** case fatality rate is 1/20,692
- Multiply by protection from death based in 2 doses 4 to 6 months ago from **Summary Table** of 28.9%
- Chance of dying from COVID = 0.000048237 x (1-0.289) = **0.000034296 (0.003%)**

f) Had two doses of AstraZeneca COVID-19 vaccine followed by a Pfizer COVID-19 vaccine for the third dose

- From **Table A1** case fatality rate is 1/20,692
- Multiply by protection from death based in 2 doses of AstraZeneca vaccine followed by a Pfizer vaccine for the third dose from **Summary Table** of 88.3%
- Chance of dying from COVID = 0.000048237 x (1-0.883) = **0.00000564 (0.00056%)**

3. What are the chances that a 60-69 year-old female will:

a) Develop an atypical blood clot if she gets COVID-19?

- From **Summary Table** case rate for CVST and PVT is 54.20 and 318 per million COVID=19 infections respectively
- Chance of developing an atypical blood clot from COVID-19 = (54.2+318)/1,000,000 = **0.0003722 (0.037%)**

b) Die from an atypical blood clot from COVID-19 (once diagnosed)?

- From **Summary Table** case fatality rate for CVST and PVT is 17.4% and 19.9% respectively
- Chances of dying from an atypical blood clot from COVID-19 = (54.2 x 0.174 + 318 x 0.199)/1,000,000 = **0.000072712 (0.0073%)**

c) Develop an atypical blood clot from the first dose of AstraZeneca vaccine?

- From **Summary Table** case rate for TTS after 1st dose of AstraZeneca vaccine for age group is 1.6 per 100,000
- Chances of developing an atypical blood clot from the AstraZeneca vaccine = 1.6/100,000 = **0.000016 (0.002%)**

d) Die from an atypical blood clot from the first dose of AstraZeneca vaccine?

- From **Summary Table** case fatality rate for TTS from AstraZeneca vaccine is 5%
- Chances of dying from an atypical blood clot from the AstraZeneca vaccine = 0.000016 x 0.05 = **0.0000008 (0.00008%)**