DIRECT Standardization

Mnemonic device for DIRECT Standardization:

Directly Observed Rates

For DIRECT stdzn you will need to know:
1. # of people in each stratum in the observed population
2. # of events in each stratum in the observed population
3. # of people in each stratum in the standard population

To do it:

For stratum 1 calculate the rate that occured in that stratum:

① (# events in stratum 1 / # of people in stratum 1)

That is the observed rate for stratum 1.

Next you have a standard population - take the # of people in stratum 1 for the standard population. What if they had the same experience as the observed population? How many would we expect to have the outcome?:

② (Observed rate for stratum 1 * # of people in stratum 1 in the standard population)

This is the number of events we expect in stratum 1 if the standard population had the same experience as the observed population.

③ Repeat this for each stratum.

Now you have the number of events you expect in each stratum if the standard population had the same experience as the observed population.

④ Add them up.

Now you have the total number of events you expect in the whole standard population if the standard population had the same experience as the observed population.

YOU ARE NOT FINISHED!!

You are trying to end up with a rate!! So take the expected number of events for the whole population (what you got in ④) and divide it by the total # in the standard population:

⑤ (④ / # in the standard population)

Et viola!

You now have the rate of these events for the observed population adjusted according to the standard population, express this per 1,000 or as instructed.

INDIRECT Standardization

The mnemonic device for DIRECT Standardization was Directly Observed Rates. You just have to remember that and remember that indirect standardization is the opposite. Instead of using Observed Rates * Standard Population (as in direct standardization), for indirect you use Standard Rates * Observed Population:

For INDIRECT stdzn you will need to know:
1. # of people in each stratum in the observed population
2. total # of events in the observed population
3. rate of events in each stratum in the standard population

for stratum calculate the expected # of events in stratum 1

① (rate of events in stratum 1 in the standard population) * (# of people in stratum 1 in the observed population)

Repeat this for each stratum.

Now you have the expected events for each stratum.

② add up the expected events for each stratum

Now you have the total # of expected events

YOU ARE NOT FINISHED!!

Calculate the standardized mortality ratio (SMR):

100 * # Observed Events / # Expected events

If:

SMR = 100 then the observed population has the same overall experience as the standard population

SMR < 100 then the observed population has a better overall experience than the standard population

SMR > 100 then the observed population has a worse overall experience than the standard population

Naturally there are statistical tests to determine whether the SMR is significantly different from 100. We won't go into those here.

YES, standardization will be on the exam!