1. **What are waitlist mortality rates?**
   Waitlist mortality rates compare the observed to the expected deaths after a candidate has been added to the waitlist. The number of expected deaths is determined from the national experience, using a statistical model to adjust for candidate age, ethnicity, gender, primary diagnosis, ABO, time on the waiting list, and medical urgency status (for liver candidates). Waitlist mortality rates are presented as a ratio of the observed to the expected (O/E) number of deaths after listing. Values > 1 indicate more deaths after listing than would be expected given the characteristics of the candidates; values < 1 indicate fewer deaths after listing than would be expected given the characteristics of the candidates.

2. **If a candidate is removed from the waiting list for a reason other than death and then later dies, are they included as deaths in the waitlist mortality rates?**
   The waiting list mortality rates are meant to assess deaths following listing as opposed to deaths while technically still on the waiting list. Therefore, in addition to including candidates removed from the waitlist due to death, some patient deaths after removal are also included. If a patient is removed from the waiting list for a reason other than transplant, transfer, or recovery (no longer in need of a transplant), for example because they are too sick for transplant, that patient continues to be followed until the end of the study period and any subsequent deaths are counted. If a patient is removed for recovery, any death within the subsequent 60-day period is also counted. Waitlist deaths are identified from data submitted by OPTN members and, where necessary, supplemented through external sources, such as the social security death master file.

3. **What are transplant rates?**
   The transplant rate compares the observed to the expected number of deceased and living donor transplants among waitlisted candidates. The number of expected transplants is determined from the national experience, using a statistical model to adjust for candidate ABO, age, previous transplant, medical status (liver), peak PRA (kidney), and time on the waiting list. Transplant rates are presented as a ratio of the observed to the expected (O/E) number of transplants. Values > 1 indicate more transplants than would be expected given the characteristics of the candidates; values < 1 indicate fewer transplants than would be expected given the characteristics of the candidates.

4. **Are inactive candidates included in the transplant rate and waitlist mortality rate calculations?**
   Both active and inactive candidates are included in the metrics for transplant rates and mortality rates.

5. **Is time spent while a candidate is inactive included in transplant rate and waitlist mortality rate calculations?**
   Both active and inactive time are included in the metrics for transplant rates and mortality rates. A candidate is still at risk for death after listing whether or not they are active or inactive. A
program that places a large number of candidates in the inactive status for lengthy periods may have lower than expected transplant rates. The MPSC wants to be able to identify these situations, as they may highlight patient safety issues.

6. What are acceptance rates?
Acceptance rates can be computed two ways: based on the organs offered to a program or based on the offers made to candidates at a program. For example, if a program is offered one organ and accepts it for one of its candidates, the organ acceptance rate is 100%. If the organ was offered to ten candidates, the offer acceptance rate is 10%. For both organ and offer-based acceptance rates, the observed number of accepted organs (or organ offers) is compared to the expected number, using a statistical model to adjust for donor and candidate covariates such as age, COD, serum creatinine, candidate diagnosis, and size of the program’s waiting list. Organs such as ECD’s, split livers, and organs from HCV+ donors are excluded from acceptance rate calculations. Difficult-to-place organs (those not accepted by one of the first three transplant programs or within the first 50 candidates on the list) are also excluded. Covariate-adjusted acceptance rates are presented as a ratio of the observed to expected (O/E) number of organs (or offers) accepted. Values > 1 indicate more organs (or offers) accepted than would be expected given the characteristics of the donors and candidates; values < 1 indicate fewer organs (or offers) accepted than would be expected given the characteristics of the donors and candidates.

7. Why are three different metrics being used to measure pre-transplant performance, instead of focusing on just one, and why are they being combined into a single, composite metric (CPM)?
While all 3 metrics are related, they each explain a different facet of the waitlist management process. For example, a program could have a low transplant rate simply by virtue of their location. It is known that some areas of the country have fewer donors available per patients listed than do other areas. In a composite metric, the low transplant rate can be offset, or partially compensated by, a reasonably high acceptance rate. In this way, the CPM provides a more complete, balanced assessment of overall pre-transplant performance. The Committee decided that focusing on only one particular metric for pre-transplant performance monitoring was neither fair nor adequate. Often, programs with severe difficulties in managing their waitlist will have below expected results in all 3 metrics. CPM is designed to detect these kinds of outlier programs, as well as to identify potential best practices.

8. How is the CPM calculated?
The CPM is a weighted average of the three pre-transplant metrics. For liver programs, the CPM component weights are currently as follows: waitlist mortality rates (0.50), transplant rates (0.25), acceptance rates (0.25). For kidney programs, the CPM component weights are currently as follows: waitlist mortality rates (0.00), transplant rates (0.50), acceptance rates (0.50). Before computing the weighted average, the sample size and statistical uncertainty associated with each component are taken into account by attenuating O/E ratios closer to 1.0 if they are based on a small amount of data. For example, a waitlist mortality O/E ratio of 5.0 (five times higher than expected) based on one patient death will be “shrunk” to a value somewhere between approximately 1.0 and 1.5, providing a more realistic estimate based on this limited sample size. Values based on much more evidence will not change appreciably. The
attenuated O/E ratios are then combined by way of a weighted average (on the natural log scale) using the component weights shown above. To make the three metrics point in the same direction, the reciprocal of the transplant and acceptance rate ratios is used for computing the weighted average.

9. Why are waitlist mortality rates not included in the CPM for kidney programs (weight=0.00)?

After data review and extensive deliberations, the CPM Work Group elected to set the mortality rate weight to zero for kidney programs primarily because the statistical model does not currently contain a variable explicitly capturing patients’ cardiovascular risk. In addition, the group agreed that waitlist mortality rates for kidney candidates are largely outside of the control of the transplant programs, in part because of the waiting-time driven allocation system, whereas mortality rates do provide a more useful gauge of pre-transplant performance for liver programs.

10. The post-transplant graft and patient survival metrics are calculated separately for adult and pediatric recipients. Is the same approach used for pre-transplant metrics?

No. At this time, waitlist mortality rates, transplant rates, and mortality rates are computed including both adult and pediatric candidates together. Thus, there is only one CPM per transplant program, not one for adults and another for pediatrics. However, breaking out these pre-transplant metrics by adult vs. pediatric has been discussed and may be considered in the future.

11. Are pre-transplant metrics, including CPM, currently being used to monitor programs? Will members face action based on these data?

No, CPM and its component analysis are not currently being used by the MSPC to monitor program performance. Members will not face action based on data included in the letters sent to sampled centers during the study period; however, if your program participates in the study and is identified to have exhibited potential noncompliance with UNOS requirements based on information you submitted in response to the study, you may be referred to the MPSC for consideration.

12. Where can I find the SRTR-produced pre-transplant performance metrics for my program?

You can find waitlist mortality rates and transplant rates at http://srtr.org/. Just click the Transplant Program Reports link. At this time, acceptance rates are only available on your SRTR secure site (https://securesrtr.transplant.hrsa.gov/).

For more detailed information about the statistical models used in these calculations, please see the SRTR’s technical methods document: http://srtr.org/csr/current/all_csr_documentation.pdf