OPTN

Proposed Organ Distribution Frameworks

Introduction

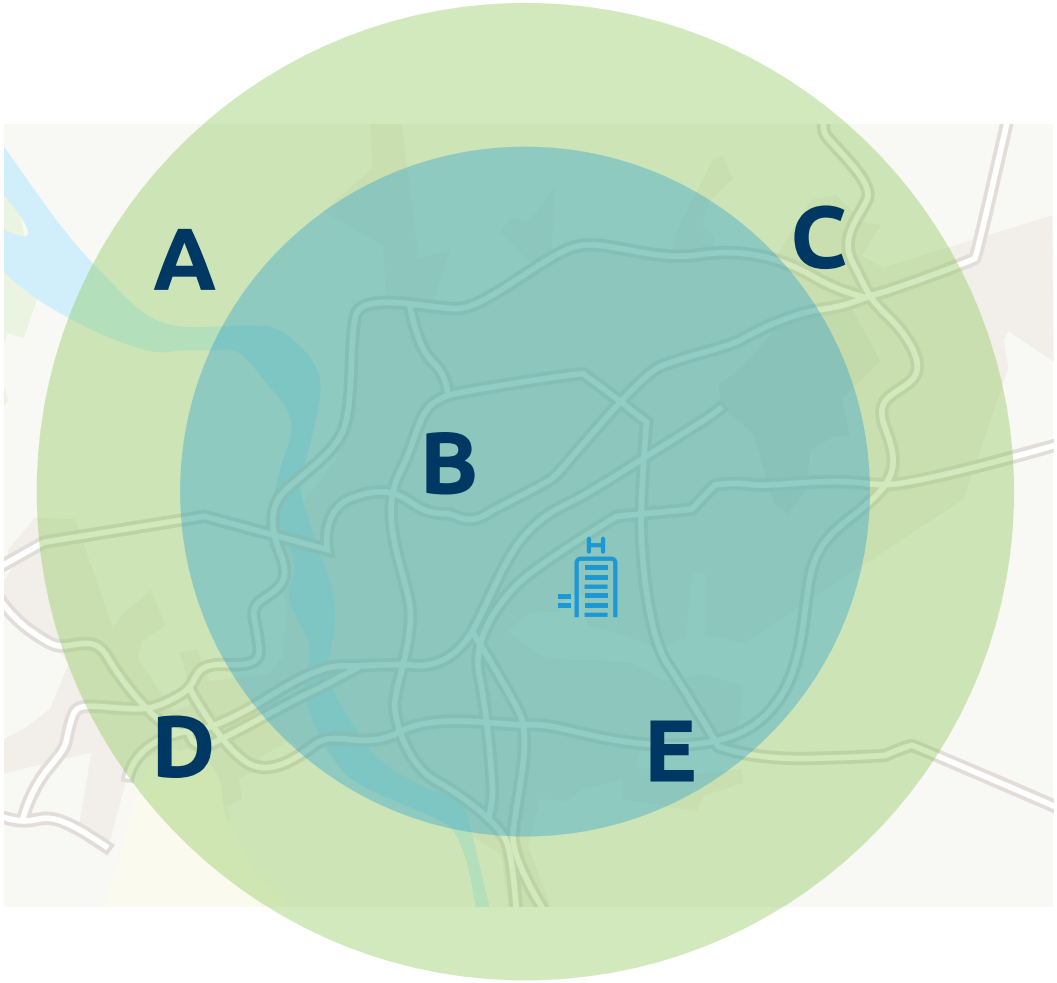
The OPTN Ad Hoc Geography Committee will seek public comment on three proposed frameworks for distribution. The frameworks are models that can be applied and studied to ensure that organ distribution policies comply with the principles of organ distribution established by the OPTN Board of Directors in June 2018.

The graphics and accompanying text illustrate how each framework could be used.

Framework 1

Fixed Distance from Donor Hospital

This framework creates fixed geographic areas based on the distance between the donor hospital and the transplant candidate's hospital. While local matches may receive priority, this approach may also allow wider distribution for other characteristics such as medical urgency.



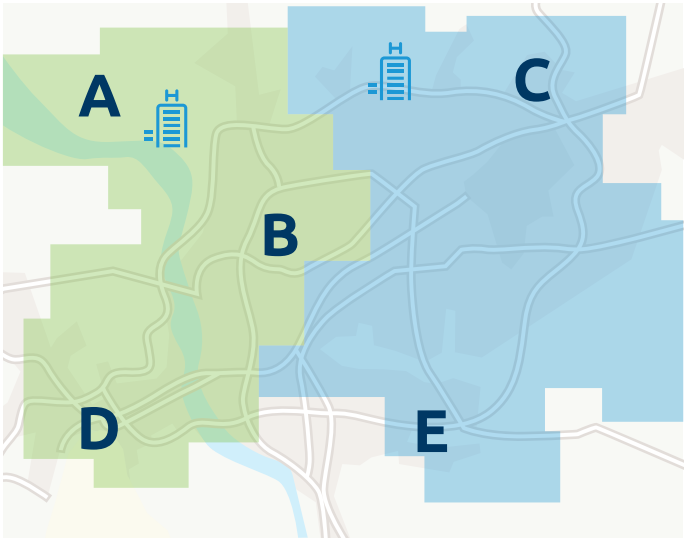
In this example, the donor hospital is located between and relatively close to transplant hospitals B and E. Candidates at hospitals B and E are within the first proximity circle. Candidates at transplant hospitals A, C and D are in a wider circle. If there are no major differences in urgency between candidates at any of the hospitals, the local candidates at hospitals B or E would appear on a match run before those in the wider circle. But if a candidate at hospital C is considerably sicker than any at hospital B or E, the system could prioritize that candidate ahead of more local candidates.

Framework 2

Mathematically Optimized Boundaries

Mathematical optimization can be used to establish distribution boundaries. The boundaries are based on a statistical formula designed to achieve the best results for one or more specific goals, such as having a consistent ratio of donors to potential recipients within each distribution area.

Distribution areas could range from a limited number of large districts to a relatively large number of localized neighborhoods. Their shape could also be customized to account for unique issues of demographics, geography or clinical factors. Neighborhood boundaries could overlap if the factors used to calculate them share common characteristics, thus an individual transplant hospital may be in more than one neighborhood.

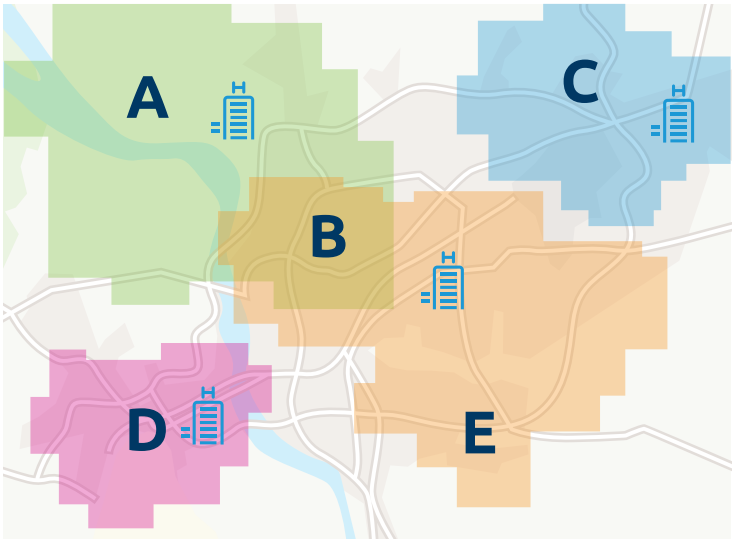


Limited number of large districts

In this example transplant hospitals A, B and D are in one distribution district, with hospitals C and E in a separate district.

Larger number of localized neighborhoods

Using a neighborhood approach, hospitals A and B and B and E are in common neighborhoods, while hospitals in C and D are in separate neighborhoods. Candidates at hospital B may thus appear as local matches in either neighborhood the hospital shares with A or E.

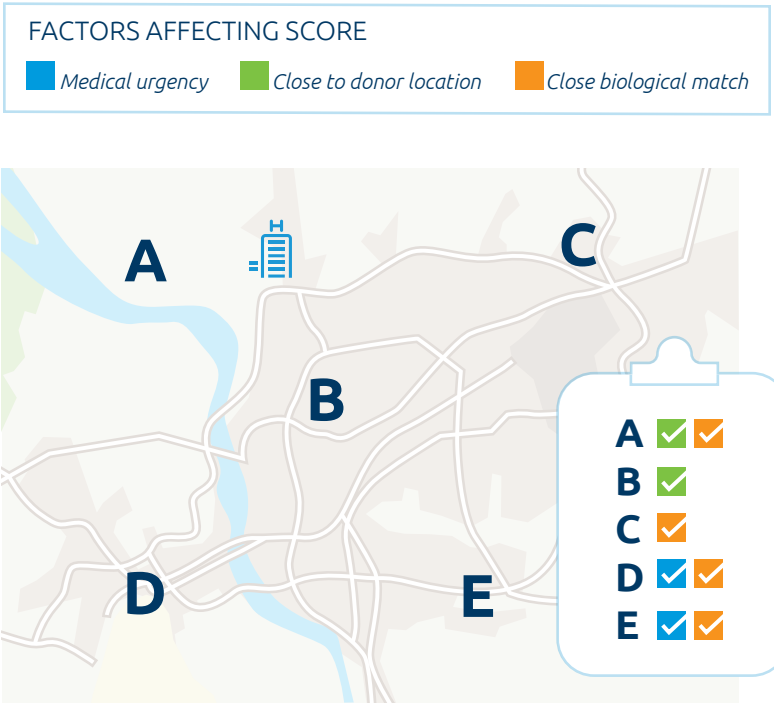


Framework 3

Continuous Distribution

Organs can be distributed to candidates using a statistical formula that combines important clinical factors, such as medical urgency and likelihood of graft survival, along with proximity to the donor location.

Using this approach, all candidates would receive a relative distribution score, but there would be no absolute geographic boundary. Candidates who best meet the combination of factors receive the highest priority.



In this example, there are no fixed boundaries between transplant hospitals. The donor hospital is closest to Hospitals A and B, so candidates at those two hospitals receive some points for proximity. Hospitals A, C, D and E all have candidates who are a close biologic match. Hospitals D and E both have candidates with elevated medical urgency, with Hospital D having the most urgent candidate.

When these various factors are combined, a candidate at Hospital D would appear first on the match. This candidate receives no proximity points but ranks strongly based on medical urgency and biologic compatibility. The candidate appearing next on the match is at Hospital A, with a combination of priority for proximity and biological compatibility. Candidates at the other three hospitals appear lower on the match according to how strongly they match on the combined factors.