

DAVID DINGLI: My name is David Dingli. I'm a consultant in the Division of Hematology in the Transplant Center at Mayo Clinic in Rochester, Minnesota. Today, I would like to talk with you about multiple myeloma. And the route of autologous stem cell transplantation as part of the treatment plan for this disease.

One of the mainstays of therapy for this disease is autologous stem cell transplantation. At Mayo Clinic, we have been performing autologous stem cell transplant since the early '90s. Every year, we perform approximately 150 transplants for this disease, and we see approximately 300 new patients every year. There are currently 15 physicians with a specialist interest in multiple myeloma, and patients will come here with benefit from the cumulative expertise of all these physicians who have taken care of patients for so many years.

The role autologous stem cell transplant is changing as well as the treatments that we're using during transplant are changing. In fact, we have even clinical protocols that explore different conditioning regimens for this disease. One can divide the process of autologous stem cell transplantation into three phases.

After the initial induction phase where the disease is brought under control, the patient is evaluated to make sure that he or she can undergo stem cell transplantation safely. And this process takes a few days to make sure that the heart, lungs, kidneys, and liver are functioning at a satisfactory level before we can proceed with safe transplantation. The second phase requires the collection of autologous stem cells which make the transplant possible. This process typically takes a few days and requires the use of growth factors that stimulate the bone marrow stem and progenitor cell to divide and reproduce themselves and leave the bone marrow and go into the bloodstream. And then the stem cells are collected with a process of apheresis, which is similar in some ways to dialysis. We need a certain minimum number of stem cells to do a transplant safely, and typically, in many patients, would like to collect for more than one transplant depending on their age. How many sets we collect depends on how the individual patient tolerates the stem cell mobilization, the growth factors that we use for mobilization, and of course, the goals of collection in this particular patient.

Once we collect the stem cells, one can proceed to autologous stem cell transplant. For this transplant, we need to give chemotherapy that will destroy the bone marrow. Hopefully it will destroy most of the remaining malignant plasma cells that are the defining feature of multiple myeloma. The day after we give the chemotherapy, then we give the stem cells back. We do this process as an outpatient, meaning that most patients will never spend a day in the hospital during the whole transplant period. This includes the days after transplant.

Most patients tolerate the infusion of stem cells well, and typically, the first few days after transplant, patients feel well. We monitor these patients very carefully every day in the outpatient setting. We want to be sure that they're eating, drinking, and they are not developing any fever.

Age is a relative contraindications to stem cell transplantation. In our experience, patients up to the age of 75 can be transplanted relatively safely, although I'm not saying that every patient at the age of 75 will be transplanted. But age by itself is not a reason not to be seen at Mayo Clinic for stem cell transplantation. A decision on whether a patient is eligible or not for a transplant depends on the total evaluation and then evaluation of their co-morbidities.

Another issue I'd like to discuss today is that the patients may require more than one transplant. And depending on their age and their disease characteristics, we often collect for more than one transplant upfront. There are benefits to this approach, because the cells will then be ready if a second transplant is necessary. And there is a small subset of patients who normally require tandem transplantation. And again, this has to be planned fairly early in the course of the disease. Transplantation is not the be-all or end-all in myeloma. But many patients benefit immensely from the transplant.