## Slide 2

* Welcome to the Introduction to AML interactive learning experience.
* In this module, you will learn the essential AML disease state background, from the biology underlying the disease to the approaches for diagnosis and classification. You’ll learn about who is most likely to develop this disease and the prognosis for patients.
* Remember, the information within this module is for your education only.

## Slide 3

* Acute myeloid leukemia, or AML, is an aggressive cancer that originates in a particular type of blood cell called a myeloid cell. AML is a rare cancer that is primarily diagnosed in older adults.
* Many genetic abnormalities can occur in the leukemic blasts of AML and they often influence many aspects of the AML treatment journey, including diagnosis, prognosis, and treatment options.
* In this module, we will explore the AML disease state, including pathogenesis, diagnosis, classification, prognosis, and the impact of this disease on patient lives.
* Throughout this module you will have the opportunity to learn about the patient experience from Rodney, a fictitious AML patient. Tap the button and take a moment to find out what he has to say.

## Slide 5

* This module is designed to build a strong foundation of knowledge about the AML disease state. Take a moment to read the learning objectives for this module.

## Slide 6

* Before we dive into the module, familiarize yourself with the navigational features of the AML Foundations interactive modules.

## Slide 7

* AML is the most common acute leukemia in adults. In this chapter we’ll introduce the AML disease state and describe who is affected by the disease.
* Before we continue, take a moment to review the key learning objectives for this chapter.

## Slide 8

* AML is an aggressive cancer that begins in immature myeloid cells located in the bone marrow. These cells typically mature to become functional blood cells, but in AML, the build up of clonal myeloid blasts in the bone marrow prevents the normal production of red blood cells, white blood cells, and platelets.
* Tap the button to learn more about the different types of leukemia.

## Slide 9

* Leukemia can be classified into 4 main types based on the speed of its progression and the origin of the white blood cell it affects.
* Read more to discover the similarities and differences of AML with other leukemias.

## Slide 10

* Although AML is the most common acute leukemia in adults, it accounts for 1.2% of all new cancer cases in the United States and has a 5-year survival rate of 28.3%.
* Review the events estimated to occur in 2019 here, and to learn more about Rodney’s experience, tap the button.

## Slide 12

* One risk factor for developing AML is age. The risk of developing AML increases approximately 8-fold from ages 30–34 years to ages 65–69 years. The median age at diagnosis for AML is 68 years.
* Review the remaining risk factors associated with the diagnosis of AML. After, tap the buttons to view patient demographic data based on age.

## Slide 14

* AML can be a particularly challenging disease for patients because of the speed at which it develops and progresses.
* Treatment of AML should be aggressive and begin shortly after diagnosis. The main treatment option for AML is chemotherapy and patients are categorized into 2 groups largely based on their age: patients who are <60 years old are considered eligible for intensive chemotherapy and patients who are ≥60 years old are considered ineligible for intensive chemotherapy.
* This module will not discuss the treatment of AML further, but this distinction is critical for your understanding of how clinicians approach AML and how the AML patient journey differs among patient types.

## Slide 15

* In this chapter we introduced the AML disease state and described the typical patient characteristics using epidemiology.
* Review the key concepts we discussed from Chapter 1 here.

## Slide 19

* To better understand the AML disease state, it’s important to understand the basics of myeloid cell biology. In this chapter, we’ll discuss the differentiation process of myeloid stem cells, the development of AML, and the AML genetic landscape.
* Before we continue, take a moment to review the key learning objectives for this chapter.

## Slide 20

* Hematopoiesis is the process by which new blood cells are formed. In adults, it occurs in the bone marrow of the skull, spine, pelvis, and ends of the long bones.
* Hematopoiesis begins with the maturation and development of hematopoietic stem cells into mature, functional blood cells, such as red blood cells, white blood cells, and platelets.

## Slide 21

* Hematopoietic stem cells mature and develop along 2 different pathways: the myeloid or lymphoid lineage to become progenitor cells of each lineage.
* The progenitor cells are committed to their lineage and will further develop to form specific types of blood cell.
* Tap on the cells to build the various lineages of hematopoietic cells.

## Slide 22

* AML occurs because of genetic changes in immature myeloid cells. These changes alter the cells ability to mature into functional blood cells and instead, they rapidly grow and accumulate in the bone marrow and peripheral blood.
* The immature myeloid cells, or blasts, can be in various stages of maturation when they transform into leukemic cells, which makes AML a heterogeneous disease affecting different myeloid blast lineages.

## Slide 23

* AML can be split into 2 categories based on how it develops—de novo AML and secondary AML.
* Tap on the categories to review how each type of AML develops.

## Slide 25

* Chromosomal abnormalities and specific gene mutations can occur in the DNA of myeloid blasts, causing the development of AML. Now let’s explore several of the chromosomal and genetic abnormalities and how they can influence a patient’s prognosis and treatment options.

## Slide 26

* Approximately 50% of newly-diagnosed AML patients have a detectable chromosomal abnormality. The more commonly observed abnormalities are incorporated in the AML classification systems, which we will review later in the module.
* Tap the button to refresh your knowledge of cytogenetic notation.

## Slide 27

* Human chromosomes are divided into 2 arms: the short arm and the long arm. Read more to learn how to decipher the code used to describe the type chromosomal mutation and where it occurs.

## Slide 28

* Molecular genetic testing for specific genes in AML cells has become a standard part of the AML diagnostic work-up. The commonly mutated genes can be classified into functional categories that are believed to play a role in the development of AML.
* Tap each gene mutation and the button at the bottom to learn more.

## Slide 32

* Read more to discover additional gene mutations found in AML blasts.

## Slide 33

* In this chapter we discussed the growth of blood cells and the genetic abnormalities that can lead to the development of AML.
* Review the key concepts we discussed from Chapter 2 here.

## Slide 37

* Since AML progresses rapidly, patients often feel unwell for a short period of time before their diagnosis. In this chapter we’ll discuss the signs and symptoms of AML and the techniques used to diagnose the disease.
* Before we continue, take a moment to review the learning objectives for this chapter.

## Slide 38

* Many signs and symptoms of AML can be attributed to the overproduction of myeloid blasts and shortage of healthy blood cells.
* Tap each blood cell type to learn the symptoms of low cell counts.

## Slide 41

* Patients who are suspected to have AML are first evaluated through a physical exam and their medical history is taken. The patient’s blood and bone marrow is then tested to determine the percentage of blasts and their molecular and genetic features.
* A diagnosis of AML can be confirmed when a patient’s peripheral blood or bone marrow contains ≥20% blasts.
* Tap the button to learn more about acute promyelocytic leukemia, a specific subtype of AML.

## Slide 42

* Acute promyelocytic leukemia, or APL, is characterized by a translocation between chromosome 15 and 17, which results in the gene fusion called PML-RARA.
* Although APL is associated with a high early death rate due to a potentially fatal bleeding disorder, the evolution of diagnostic techniques and treatment options has transformed it from the most fatal to the most curable subtype of AML in adults.

## Slide 43

* Using the blood and bone marrow samples from the patient’s initial work-up, several tests will be used to characterize and classify each patient’s AML. These include a complete blood count with differential, a peripheral blood smear, and a bone marrow aspirate and biopsy.
* Tap each technique to learn more. If you'd like to learn even more about diagnostic testing for AML, tap the button on the bottom of the screen.

## Slide 49

* In this chapter we reviewed the signs and symptoms of AML and the techniques used to diagnosis the disease.
* Review the key concepts we discussed from Chapter 3 here and tap the button to see how Rodney is doing.

## Slide 54

* The classification of AML is used to define the AML subtype based on immunophenotype, and genetic and clinical features. AML subtypes can influence a patient’s prognosis and treatment options.
* Before we continue, take a moment to review the key learning objectives for this chapter.

## Slide 55

* The prognosis and treatment course for AML patients depends on the subtype of AML, which can be classified using the French-American-British Classification or the newer World Health Organization Classification.
* The WHO Classification is more commonly used for AML and divides patients based on the morphology, immunophenotype, and genetic and clinical features of their disease.
* Tap the buttons to learn more about the specific subtypes within each classification system.

## Slide 56

* The FAB classification divides AML subtypes based on the type of immature blood cell the blast originates from.

## Slide 57

* The WHO classification incorporates new clinical, prognostic, morphologic, immunophenotypic, and genetic data that can impact a patient’s prognosis and treatment selection.
* Use the scroll bar to review the WHO classification system for AML.

## Slide 59

* Genetic abnormalities are strong prognostic factors in AML. Therefore, molecular and genetic risk stratification is important to predicting a patient’s outcome and can be used to guide treatment decisions.
* Review the table to learn more about the European LeukemiaNet recommendations for AML risk stratification.

## Slide 60

* The subtype of AML can help to determine a patient’s prognosis, however patient-related factors can also affect why some patients have a better outcome than others.
* Tap each number to reveal the adverse, patient-related prognostic factors for AML and the button at the bottom to see how Rodney is doing.

## Slide 63

* The classification of AML determines the prognostic subgroup based on the morphology, immunophenotype, genetics, and clinical features of the leukemic blasts.
* Genetic abnormalities are powerful prognostic factors in AML and may influence treatment options.
* Review the key concepts we discussed from Chapter 4 here.

## Slide 66

* Congratulations, you have completed the AML Disease State Essentials module.
* We hope you have found this interactive learning experience informative and helpful in your journey to understand the AML disease state.
* For a quick recap of the material covered, review the module summary here.