Dorothy Cawood was born at Parramatta, New South Wales, on 9 December 1884. She was the seventh child of John Cawood, a carpenter, and his English-born wife, Sarah. There are few details of her early education, but in 1909 at the age of 25, she began training as a nurse at Coast Hospital, at Little Bay in Sydney.

Cawood enlisted in the Australian Imperial Force on 14 November 1914 as a staff nurse in the Army Nursing Service and was posted to the 2nd Australian General Hospital (2AGH). She embarked on the Kyarra and sailed to Egypt. On arrival in Egypt, 2AGH was based at Mena and Ghezireh, on the outskirts of Cairo. During the Gallipoli Campaign, Cawood mainly served at 2AGH, though on several occasions, she was seconded to transport ships bringing wounded back to Egypt. In December 1915 she was promoted to nursing sister. With the Gallipoli campaign over, she went with 2AGH to France. Nursing at the 2nd Australian Casualty Clearing Station at Armentières during July 1917 Sister Cawood along with Sisters Deacon, Ross King and Staff Nurse Derrer, risked their lives to rescue patients trapped in burning buildings after a German air raid. In September the four became the first members of the Australian Army Nursing Service to be awarded Military Medals.

On 1 August Sister Cawood was transferred to the 38th Stationary Hospital at Calais and, in November, to the 6th Australian General Hospital. While serving there she was mentioned in dispatches for "distinguished and gallant service in the field". After being demobilised she worked in the State Hospital at Liverpool, New South Wales, before becoming matron of the David Berry Hospital in Berry. She retired in 1943 and the following year returned to Parramatta where she lived until her death in 1962. She had never married and was buried in Sydney's Rookwood cemetery.