

# COVID-19 Pandemic 101

## An epidemiology and public health primer for oncology nurses

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**BACKGROUND:** Understanding basic epidemiology and public health concepts is essential to the provision of safe care during a pandemic. These basic concepts and terms include containment, mitigation, predictive modeling, latent period, incubation period, reproduction number, case fatality rate, and test sensitivity and specificity.

**OBJECTIVES:** Public health concepts and terms are defined, described in the context of the COVID-19 pandemic, and specific implications for oncology nursing practice are discussed.

**METHODS:** A review of public health literature and reputable websites with a focus on COVID-19 data. This article defines epidemiologic and public health concepts and uses examples from the pandemic to illustrate oncology nursing implications.

**FINDINGS:** The COVID-19 pandemic is changing oncology nursing care delivery. Oncology nurses need to understand these concepts to anticipate and advocate for optimal oncology care.

### KEYWORDS

pandemic; COVID-19; epidemiology;  
oncology nursing; public health

### DIGITAL OBJECT IDENTIFIER

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**EPIDEMIOLOGY AND PUBLIC HEALTH INITIATIVES ARE FAMILIAR TOPICS** to oncology nurses. The familiar perspective is one of prevention or mitigation of the exposures contributing to cancer, such as environmental carcinogens. With the onset of the COVID-19 pandemic, the epidemiology and public health focus in oncology quickly shifted to a perspective focused on an airborne infectious disease. During this time, oncology nurses have been expected to understand broad epidemiology concepts and to apply the concepts in practice for the benefit and safety of clinicians, patients, and communities. To that end, this article will define relevant public health concepts and terms in the context of the current COVID-19 pandemic. A discussion of the concept or term significance and application to oncology nursing practice will follow each definition.

### Public Health Concepts

#### Epidemiology, Public Health, Outbreak, Epidemic, and Pandemic

Epidemiology is a broad field and includes the study of the distribution and determinants of health or disease in a specified location or population. Public health focuses on populations as opposed to individuals. Outbreak, epidemic, and pandemic are all relative terms. No criteria or established number of cases is required for a condition to fall into any one of those categories. Instead, the terms are a relative comparison of how “common a condition is at a point in time relative to how common it was at an earlier time” (Grennan, 2019, p. 910). In general, an epidemic is an increase of more than an expected number of cases in a regional population; a pandemic is an epidemic spread across multiple regions or countries (Centers for Disease Control and Prevention [CDC], 2012). The terms are a way to describe what is expected versus what is observed. In the case of COVID-19, a cluster of unexplained pneumonia cases in Wuhan, China, was initially reported in late December 2019 (Sun et al., 2020; Zhu et al., 2020). The cluster of cases grew into an outbreak, which was described as a public health emergency on January 30, 2020 (Sun et al., 2020). It was then identified as a global pandemic on March 11, 2020, with cases in more than 100 countries (World Health Organization, 2020).

**IMPLICATIONS:** The application to nurses revolves around awareness and readiness. Identifying reputable sources of information is essential. The CDC provides information and links to resources for a broad range of pandemic