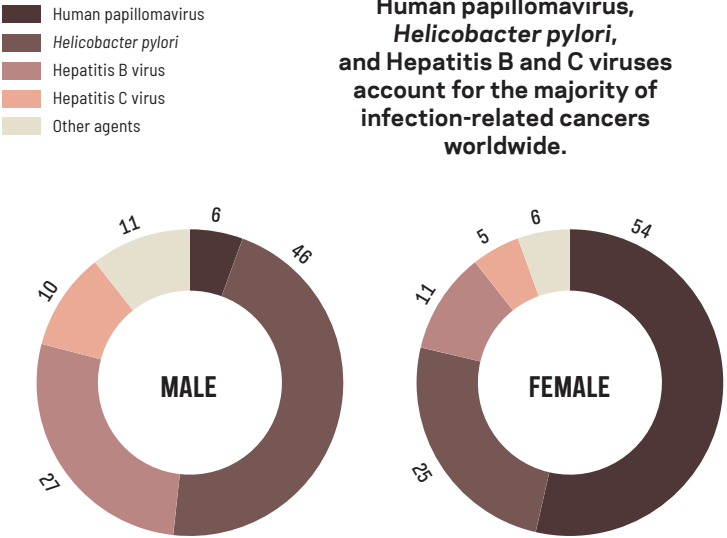


INFECTION

Infections are an important cause of many cancers worldwide, especially in economically transitioning countries

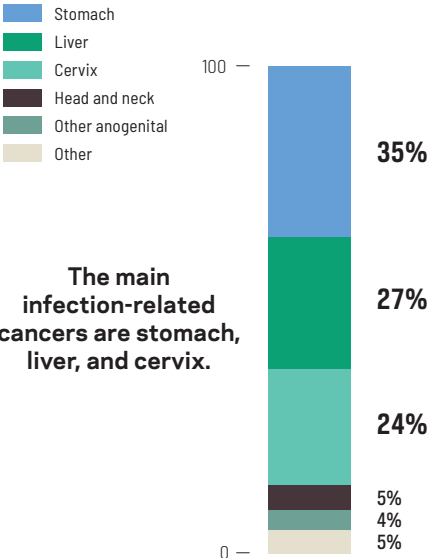
Infectious agents are responsible for an estimated 15% of all new cancer cases annually worldwide, of which two-thirds occur in less developed countries (where they account for up to one quarter of all cancer). **FIGURE 4.1** The four most important cancer-causing infections worldwide are *Helicobacter pylori* (770,000 cases globally in 2012), human papillomavirus (HPV) (640,000), hepatitis B virus (HBV) (420,000), and hepatitis C virus (HCV) (170,000), which together account for more than 90% of all infection-related cancers. **FIGURE 4.2** *Helicobacter pylori* causes 90% of stomach cancers, half of which occur in China alone. HPV infection

FIGURE 4.2
Leading cancer-causing infections worldwide, by sex (%)



Human papillomavirus, *Helicobacter pylori*, and Hepatitis B and C viruses account for the majority of infection-related cancers worldwide.

FIGURE 4.3
Most common infection-attributable cancers worldwide



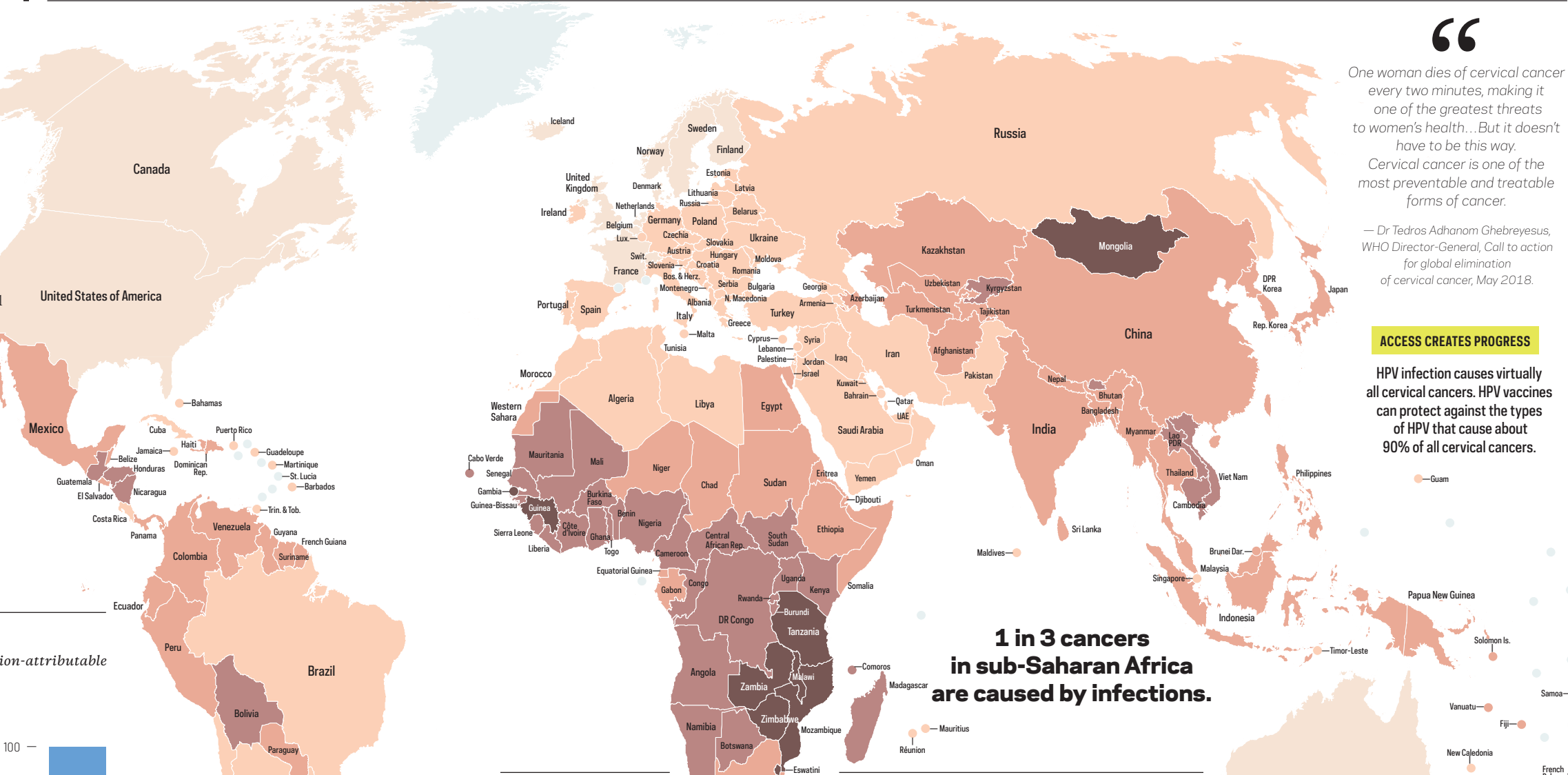
The main infection-related cancers are stomach, liver, and cervix.

is a necessary cause of cervical cancer, which is the leading cause of cancer death among women in many less-developed regions of the world because of lack of screening. HPV infection is also responsible for a proportion of vulvar (25%), vaginal (78%), anal (88%), penile (50%), oropharyngeal (31% on average, but much higher in North America and Northern Europe), oral cavity (2.2%) and laryngeal cancer (2.4%). **FIGURE 4.3**

Worldwide, HBV and HCV infections account for 56% and 20% of liver cancer deaths, respectively. However, these proportions substantially vary by region, with HBV the predominant cause of liver cancer in less developed countries (2/3 of cases) and HCV in more developed settings (44%). Other infections that cause cancer include Epstein-Barr virus (120,000 cases, estimated conservatively), Kaposi sarcoma-associated herpesvirus (HHV-8; 40,000 cases, mainly in sub-Saharan Africa), human T-cell lymphotropic virus, liver flukes, and schistosomal infections. Human immunodeficiency virus (HIV) infection also indirectly causes infection-related cancers through immunodepression. In the US, for instance, the proportion of infection-associated cancer in people with HIV (40%) is 10 times larger than in the general US population (4%).

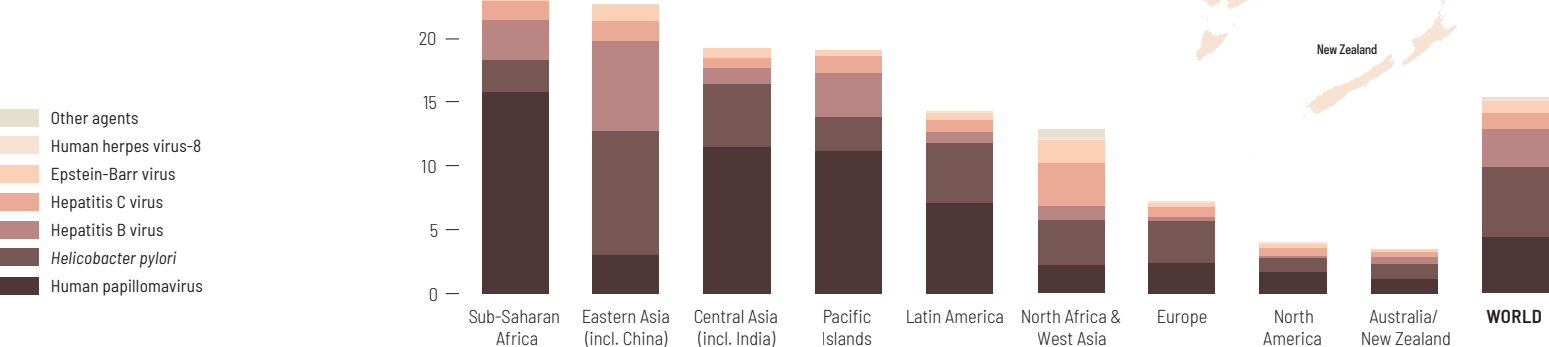
Powerful prevention tools exist for infection-related cancer, including HPV and HBV vaccines, screening for HPV-driven cervical precancer, and drugs to treat HBV, HCV, *Helicobacter pylori*, and HIV infections.

MAP 4.1
Proportion of cancers attributable to infections (%), by country



1 in 3 cancers in sub-Saharan Africa are caused by infections.

FIGURE 4.1
Proportion of cancers attributable to infections (%), by agent and region



“One woman dies of cervical cancer every two minutes, making it one of the greatest threats to women’s health...But it doesn’t have to be this way. Cervical cancer is one of the most preventable and treatable forms of cancer.”

— Dr Tedros Adhanom Ghebreyesus, WHO Director-General, Call to action for global elimination of cervical cancer, May 2018.

ACCESS CREATES PROGRESS

HPV infection causes virtually all cervical cancers. HPV vaccines can protect against the types of HPV that cause about 90% of all cervical cancers.