THE **IMPORTANCE** OF **DIAGNOSTIC TESTS** IN **FIGHTING INFECTIOUS DISEASES**

Infectious diseases are caused by pathogenic microorganisms, such as bacteria, viruses, parasites or fungi, and each year millions of Americans are affected by them.[1] Many infectious diseases have minor complications if diagnosed and treated appropriately. But left untreated, others—including pneumonia, tuberculosis, HIV and meningitis—can be life-threatening.[2]

Infectious diseases pose a greater challenge today than they did even two decades ago.

New bacteria, viruses, fungi and parasites emerge and evolve each year.[3]

Densely populated regions and easy travel accelerate the spread of infectious disease.[4]

Antibiotic resistance is a major global health concern. More than 2 million Americans develop drug-resistant infections each year.[5]

A few types of infections have been linked to a long-term increased risk of cancer:[6]

Human papillomavirus is linked to cervical cancer.

Helicobacter pylori is linked to stomach cancer and peptic ulcers.

Hepatitis B and C are linked to liver cancer.

Early and accurate diagnosis of infectious disease is critically important because:

- Diagnosis can improve the effectiveness of treatments and avoid long-term complications for the infected patient.[7]
- Undiagnosed patients can unknowingly transmit the disease to others. Early diagnosis can help to prevent or stop an outbreak.[8]
- Widespread overuse and misuse of antibiotics contribute to antibiotic resistance. Diagnostic tests can determine when antibiotics are an appropriate treatment—and when they are not.[9]

Test manufacturers are continually advancing and developing diagnostics to match the evolution and emergence of new infectious diseases. Recent advances enable health care providers to reach a diagnosis more quickly, improving patient outcomes and lowering associated health care costs.

- Infectious diseases were associated with an economic burden of more than $120 billion in the U.S. in 2014 alone.[10]
- Use of a diagnostic test for the early detection of MRSA enabled doctors to prescribe optimum antibiotics 1.7 days sooner, reducing the length of hospital stays by 6.2 days and lowering hospital costs by more than $21,000.[11]
- Point of care (POC) testing allows patient diagnoses in the physician's office, an ambulance, the home, the field or in the hospital. The results allow for rapid treatment.[12]
- During the recent Ebola crisis, test manufacturers rushed to develop new POC rapid diagnostic tests to avoid multi-day delays in diagnosing affected patients. Between November 2014 and December 2015, four such tests were developed and approved by the World Health Organization; the U.S. Food and Drug Administration has authorized 10 tests for emergency use. Had these POC tests been used during the epidemic, researchers estimate that the scale of the epidemic could have been reduced by more than a third.[13]

AdvaMedDx
Vital Insights | Transforming Care

1. Health, United States, 2014. Centers for Disease Control and Prevention, accessed Feb. 16, 2016 at http://www.cdc.gov/nchs/fastats/infectious-disease.htm.
2. Mayo Clinic, accessed Feb. 16, 2016 at http://www.mayoclinic.org/diseases-conditions/infectious-diseases/symptoms-causes/dxc-20168651.
3. Facts About ID. Infectious Diseases Society of America, accessed Feb. 16, 2016 at http://www.idsociety.org/Facts_About_ID.
4. Ibid.
5. Antibiotic/Antimicrobial Resistance. Centers for Disease Control and Prevention, accessed Feb. 16, 2016 at http://www.cdc.gov/drugresistance.
6. Mayo Clinic, accessed Feb. 16, 2016 at http://www.mayoclinic.org/diseases-conditions/infectious-diseases/symptoms-causes/dxc-20168651.
7. Ibid.
8. Guzman, M. et al. Evaluation of diagnostic tests for infectious diseases: general principles. Nat Rev Microbiol. 2010 Dec; 8(12 Suppl):S17-29. http://www.nature.com/nrmicro/journal/v8/n12_supp/full/nrmicro1523.html.
9. Centers for Disease Control and Prevention, accessed Feb. 16, 2016 at http://www.cdc.gov/drugresistance/about.html.
10. Trust for America's Health, accessed Feb. 22, 2016 at www.healthyamericans.org.
11. Bauer, K. et al. An Antimicrobial Stewardship Program's Impact. Clin Infect Dis. (2010) 51 (9):1074-1080.
12. Point-of-Care Diagnostic Testing. National Institutes of Health, accessed Feb. 22, 2016 at https://report.nih.gov/nihfactsheets/ViewFactSheet.aspx?csid=112.
13. Nouvellet P., Garske T., Mills H.L., et al. The role of rapid diagnostics in managing Ebola epidemics. Nature. 2015;528(7580):S109-S116.

AdvaMedDx
Vital Insights | Transforming Care