

What is Interventional Radiology? An Overview of the Profession.

Background

Ever wonder how a physician can treat a patient who has suffered from a heart attack by simply using wires and a few monitors? From child birth to eliminating cancer, there is not much that Interventional Radiology cannot do. Interventional Radiology (IR) is a sub-specialty of the diagnostic imaging sciences. The use of this kind of intervention is increasing at a very fast pace with the advancement of technology. It is a new medical intervention often taking place before open surgery. Many operating rooms (OR) are evolving integrate IR ¹

Interventional Radiology is quite young compared to other medical specialties, such as surgery or x-ray. IR came around in the 6th decade of the 20th century. Exactly in 1964, when Charles Dotter who is known as the father of IR, conducted the first angioplasty of a stenotic iliac artery.² (See Figure 1). This event revolutionized this branch of imaging science forever. At first, the newly recognized specialty had rudimentary equipment and it was difficult to perform procedures. Early interventionists invented catheters, wires, snares, baskets and coils, most tools weren't small enough to attempt performing a procedure on a child. Consequently, pediatric IR procedures were out of the question.³

Interventional Radiology Team

The IR environment is formed by a team of professionals who work together to achieve a common goal, while carrying out different roles. In principle according to Mark O. Baerlocher, MD et al ⁴, IR suites are composed of one or "more interventional radiologists, nurses, radiology technologists, and ancillary staff". (See Figure 2).

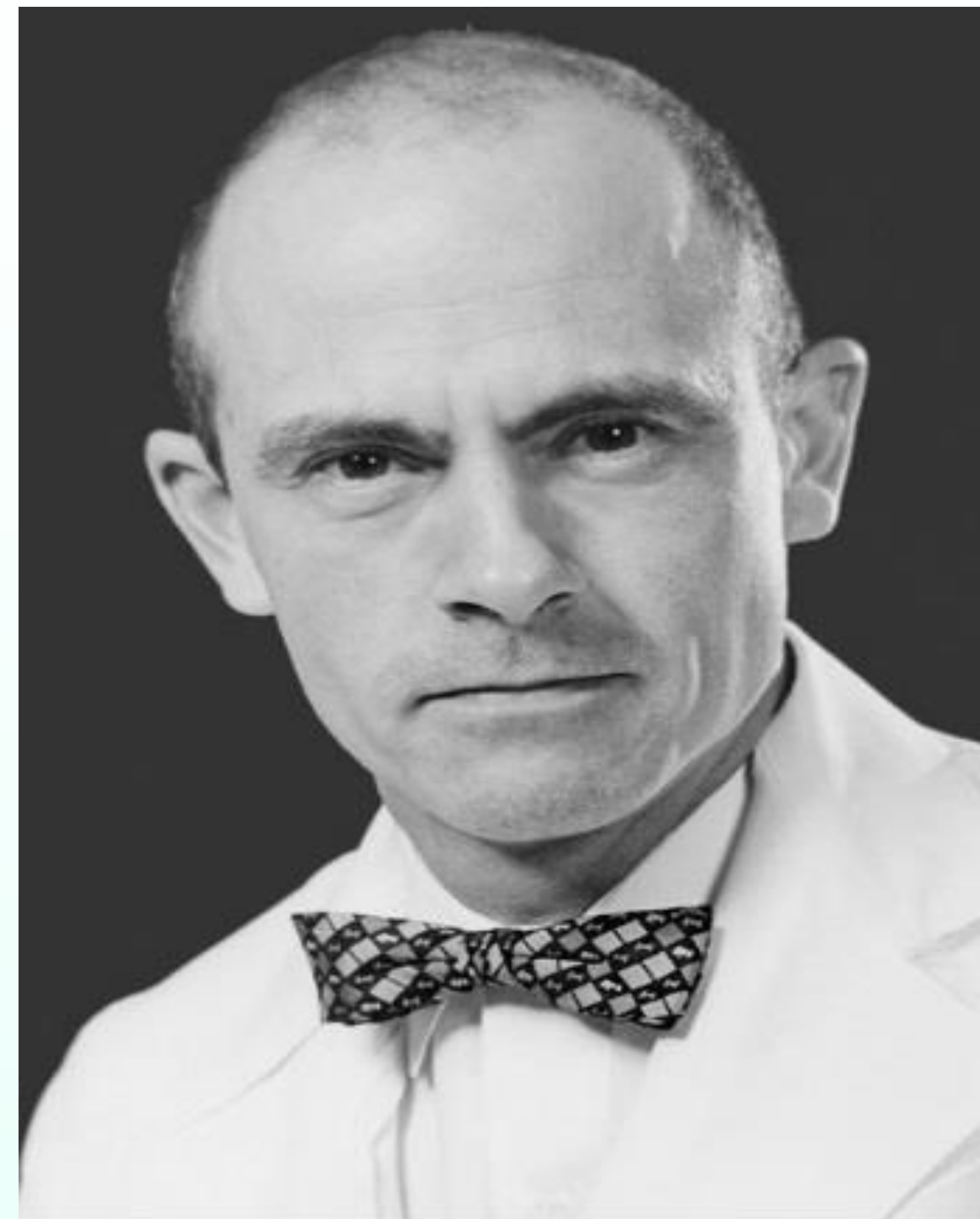


Figure 1. Charles Dotter.⁵

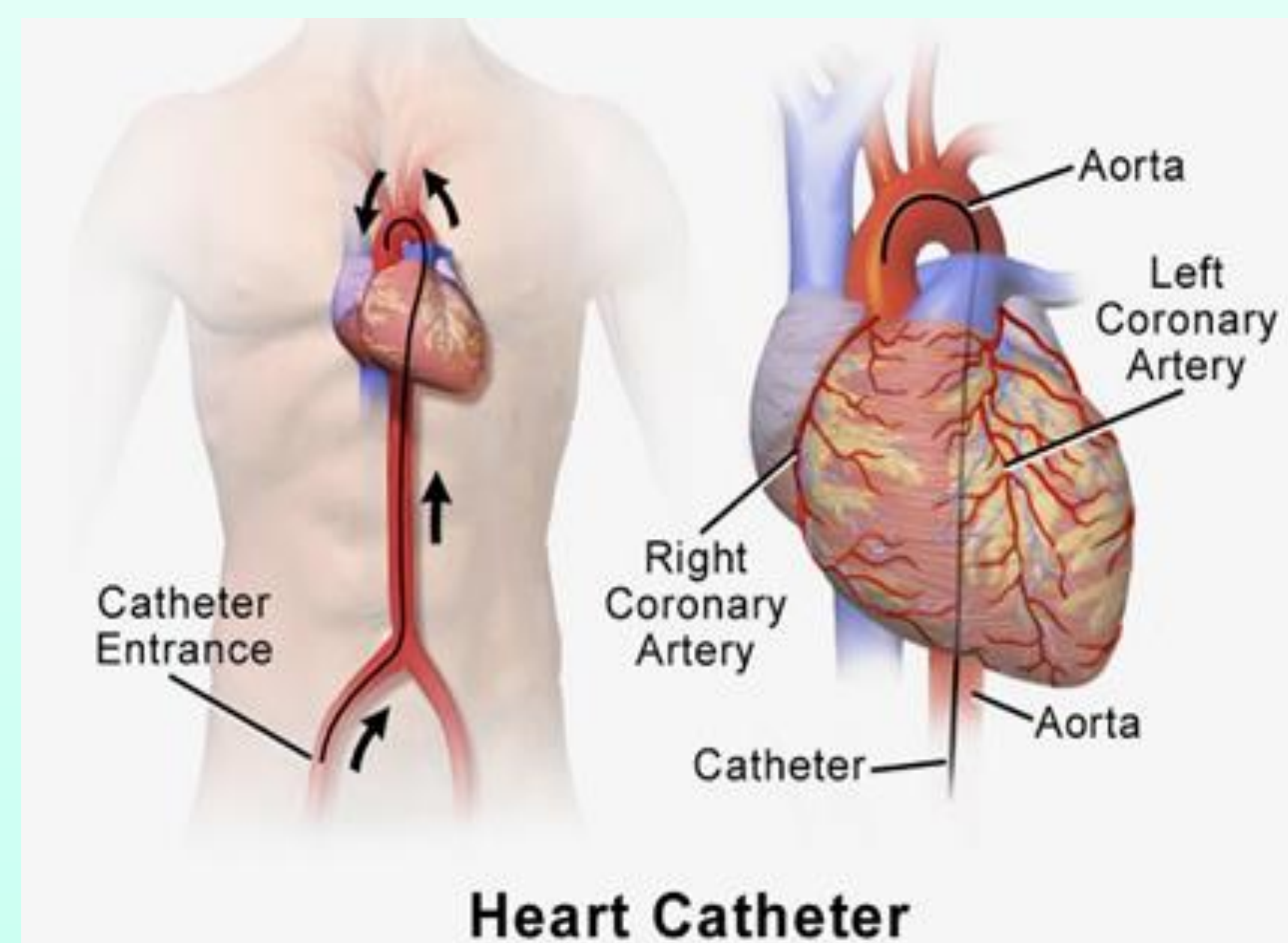


Figure 3. Catheter accessing coronary arteries.⁷



Figure 2. IR Technologist and Interventional Radiologist.⁶

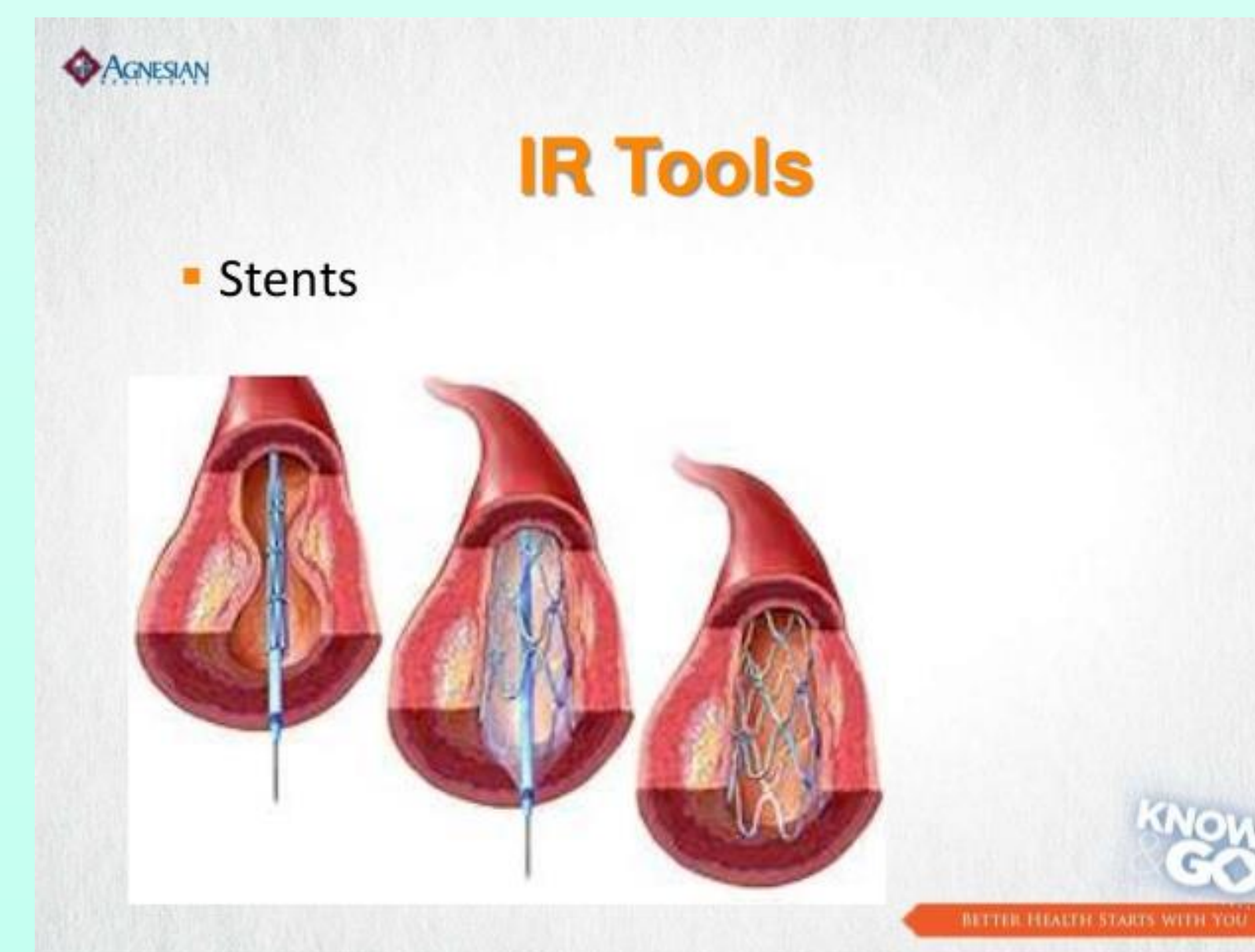


Figure 4. Stent placement in narrowed blood vessel.⁸

Tools and Technology

Tools used in interventional radiology are as important as the skills of the doctor performing a procedure. There is a great variety of tools used in cardiovascular interventional technology, and it is important for technologists to be familiar with them. Some tools used in IR are:

- Catheters (See Figure 3)
- Guide wires
- Stents
- Balloon Dilation Catheters
- Power injectors
- Monitors
- Wall mounted C-arm.

Common Procedures⁹

- Cardiac Catheterization
- Angiography
- Balloon Angioplasty
- Biliary drainage and stent placement (See Figure 4).
- Chemoembolization
- Embolization

References

1. Interventional Radiology – Current Practice and Future Developments. Medscape. https://www.medscape.com/viewarticle/829751_15. Published 2014. Accessed January 28, 2019.
2. Donaldson J. Pediatric interventional radiology: a maturing subspecialty. *Pediatric Radiology* [serial online]. May 15, 2017;649, 650. Available from: Academic Search Premier, Ipswich, MA. Accessed August 29, 2018.
3. Kachura J. The Growth of Interventional Radiology in Canada. *Canadian Association of Radiologists Journal* [serial online]. August 2, 2012;S1. Available from: Academic Search Premier, Ipswich, MA. Accessed August 29, 2018.
4. Mark O. Baerlocher, MD, Sean A. Kennedy, MD, Thomas J. Ward, MD, Boris Nikolic, MD, MBA, Curtis W. Bakal, MD, MPH, Curtis A. Lewis, MD, MBA, JD, Adam B. Winick, MD, Gerald A. Niedzwiecki, MD, Ziv J Haskal, MD, and Alan H. Matsumoto, MD. Society of Interventional Radiology Position Statement: Staffing Guidelines for the Interventional Radiology Suite. *Journal of Vascular Interventional Radiology* 2016; 27:618–622. Accessed August 29, 2018.
5. Figure 1. Christine Runyon. The Father of Angioplasty: Charles Dotter. Amber Diagnostics. <https://www.amberusa.com/blog/father-angioplasty-charles-dotter>. Published October 14, 2016. Accessed November 7, 2018.
6. Figure 2. Zagoudis J. Defining the Value of Interventional Radiology. *Imaging Technology News*. <https://www.itnonline.com/article/defining-value-interventional-radiology>. Published July 5, 2018. Accessed November 7, 2018.
7. Figure 3. Health Jade Team. Cardiac Catheterization. Health Jade. <https://healthjade.com/cardiac-catheterization/>. Accessed November 7, 2018.
8. Agnesian HealthCare. Agnesian HealthCare Know & Go Showcase: Interventional Radiology. Slideshare.net. <https://www.slideshare.net/InGoodHealthFDL/know-go-interventional-radiology-with-dr-smith>. Published September 4, 2013. Accessed January 16, 2019.
9. Interventional Radiology Procedures. UCSF Radiology. <https://radiology.ucsf.edu/patient-care/sections/ir/procedures>. Published May 16, 2017. Accessed January 28, 2019.