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units in the Netherlands (2). In a country proud of its national screening program, Latinga et al. (2) found that gastroscopies decreased by a staggering 57% and colonoscopies by 45%, with a subsequent reduction in the number of gastrointestinal cancers detected. Similar disappointing results were seen in a national study in the United Kingdom (3). Early in the United Kingdom's response to the pandemic, endoscopy activity reduced to just 5% of normal activity, and 10 weeks later activity had increased to only 20% of pre-pandemic levels. Endoscopic cancer detection decreased by 58%, and colorectal cancer detection by 72% (3). Of course, this is going to have far-reaching consequences in terms of future cancer survival.

This is only the tip of the iceberg; the total number of collateral casualties will eventually be higher than the coronavirus disease 2019 deaths. The speed of recovery of diagnostic activities across the board will determine the scale of the collateral damage. The time is ripe for a collective overview of all aspects of the pandemic's impact on current health care delivery and the roll-out of telemedicine solutions.

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The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate. For more information, visit the [Author Center](#).

REFERENCES

1. Einstein AJ, Shaw LJ, Hirschfeld C, et al. International impact of COVID-19 on the diagnosis of heart disease. *J Am Coll Cardiol* 2021;77:173-85.
2. Latinga MA, Theunissen F, Ter Borg PCJ, et al. Impact of COVID-19 pandemic on gastrointestinal endoscopy in the Netherlands: analysis of a prospective endoscopy database. *Endoscopy* 2021;53:166-70.
3. Rutter MD, Brookes M, Lee TJ, et al. Impact of the COVID-19 pandemic on UK endoscopic activity and cancer detection: a national endoscopy database analysis. *Gut* 2021;70:537-43.

REPLY: Collateral Casualties of COVID-19



We appreciate the thoughtful comments by Dr. Koulaouzidis and colleagues and are in fundamental agreement. Indeed coronavirus disease 2019 (COVID-19)'s "collateral casualties" may well surpass its direct mortality. Nowhere is this more important than for cardiovascular diseases, the leading cause of mortality worldwide, which account for approximately 18 million deaths annually even with health care delivery not curtailed by the pandemic response. The dramatic reduction in evaluations for cardiovascular disease at the beginning of the pandemic that we observed in the INCAPS COVID (International Atomic Energy Agency Noninvasive Cardiology Protocols Study of COVID-19) (1) begs the need for aggressive efforts to identify and reach patients who have missed cardiac care, including coordinated efforts to catch up for studies missed.

As Dr. Koulaouzidis and colleagues emphasize, a similar phenomenon has been described for the gastrointestinal cancer detection field, where they have made important contributions to characterizing the pandemic-associated drop in diagnostic testing and screening. Clearly this problem vexes other types of cancer, too, with mammography screening hit especially hard (2). National Cancer Institute Director Norman Sharpless has predicted, based on modeling, a ~1% increase in breast and colon cancer mortality, representing >10,000 excess deaths in the United States, due to missed screening and treatment during the pandemic, and reports as well an unprecedented disruption of cancer clinical trials (3). A similar disruption of the cardiovascular clinical trial landscape has been described, with problems including suspended trials, missed and postponed trial-related assessments hindering data quality, heterogeneity in data collection, underpowered outcome analyses from lowered event rates related to patients' avoiding the health care system, and, conversely, inflated mortality endpoints (4).

Thus, across the health care enterprise, and for cardiovascular disease in particular, COVID-19 continues to wreak collateral casualties in diagnosis, screening, treatment, research, and education. The magnitude of these problems beyond the initial phase of the pandemic is less well understood and will be characterized in the worldwide INCAPS COVID 2 study, which is planning to collect data in May 2021; those interested in participating are cordially invited to send an e-mail in that regard to INCAPS.Contact-Point@iaea.org. It is incumbent on the cardiovascular community—as for other communities, such as cancer—to

aggressively address these challenges to minimize the long-term burden of the pandemic.

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REFERENCES

1. Einstein AJ, Shaw LJ, Hirschfeld C, et al. International impact of COVID-19 on the diagnosis of heart disease. *J Am Coll Cardiol* 2021;77:173-85.
2. Freer PE. The impact of the COVID-19 pandemic on breast imaging. *Radiol Clin North Am* 2021;59:1-11.
3. Sharpless NE. COVID-19 and cancer. *Science* 2020;368(6497):1290.
4. Selvaraj S, Greene SJ, Khatana SAM, et al. The landscape of cardiovascular clinical trials in the United States initiated before and during COVID-19. *J Am Heart Assoc* 2020;9:e018274.