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## Reply

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We commend Ariyaratnam and colleagues for their excellent letter [1] in response to our work [2]. Whereas our analysis utilized a private-payer database to report predictors of new persistent opioid use among patients who all received an initial opioid prescription after lung cancer surgery, the authors report incidence and predictors of thoracic (n=2260) and cardiac (n=4481) patients at their institution receiving an opioid prescription at discharge. Both studies identified younger age and thoracotomy as predictors of either receiving an opioid prescription at discharge [1] or new persistent opioid use [2] in thoracic surgery patients. Interestingly, the authors found female gender to confer higher odds of opioid prescription, whereas we found male sex to confer higher odds of new persistent use.

Importantly, the authors report that only 53% of thoracic and 20% of cardiac patients were discharged on an opioid. This may be unexpected to U.S. readers and highlights the principle that many cardiothoracic surgery patients may not need an opioid prescription at discharge. Interestingly, we found that >40% of opioid-naïve patients undergoing sternotomy for CABG +/- valve operations at our institution, who received an opioid prescription at discharge, had actually not used an opioid during the day before discharge. Not prescribing opioids to patients who are not using opioids while hospitalized represents an easy intervention to improve opioid prescribing in our specialty. Also of note, the proportion of patients with a discharge opioid prescription rose in this U.K. series (thoracic: 37%–60% between 2013–2017; cardiac: 3%–41% between 2009–2017), whereas we have found the opposite trend in the U.S., potentially due to opioid-related legislation and increased awareness of the opioid epidemic. Despite opposite trends, the proportion of patients receiving an opioid prescription remains higher in the U.S.

We agree with the authors regarding the importance of aligning these findings with patient-reported opioid use data, as amounts prescribed and used are often discrepant. Defining these gaps will allow for the creation of robust evidence-based prescribing guidelines. Our institutional data for opioid-naïve cardiac patients undergoing sternotomy have been used to generate a preliminary prescribing recommendation [3], and a multicenter study is underway. Going forward, aggregation of these data across institutions and countries will provide the necessary evidence to shape appropriate and safe management of postoperative pain for patients undergoing cardiothoracic surgery.

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