Methods A systematic literature search was done on PubMed, Embase, Web of Science, and Cochrane Database of Systematic Reviews based on a search algorithm that included key terms including immune checkpoint inhibitor, immunotherapy, and hyperprogress. Studies published until June 21, 2022 which used a definition based on tumor kinetics were included. All studies were categorized according to one of three definitions of HPD: A) RECIST-defined progressive disease (PD) and tumor growth rate (TGR) ratio < u >> 21 B) RECIST-based defined progressive disease (PD) and tumor growth kinetics (TGR) ratio < u >> 21, and C) RECIST-defined PD and ATGR > 50%. A generalized linear mixed-effects model was used, and multivariable analysis was conducted to explore differences in the incidence across tumor types and HPD definitions.

Results A total of 34 studies comprising 4117 patients and 5 different tumor types (renal cell carcinoma (RCC), mixed or other, hepatocellular carcinoma (HCC), non-small cell lung cancer (NSCLC), and advanced gastric cancer (AGC)) were included in the meta-analysis. The overall pooled incidence of HPD was 12.40% (95% CI, 10.28 – 14.89%) and ranged from 0.0% to 36.73% (figure 1 and 2). Statistical heterogeneity was significant (I2 = 72.39%; P < 0.01). Patients diagnosed with AGC (odds ratio (OR), 10.83; 95% CI, 1.58-32.27; P =.004), and mixed or other (OR, 5.09; 95% CI, 1.12-23.12; P =.03) were more likely to experience HPD than patients with RCC. Across definitions, differences in the HPD incidence was significantly higher for definition B (OR, 1.81; 95% CI, 0.58-1.80; P =.025) compared to definition C. C.

Conclusions Significant differences in HPD incidence are observed across tumor types and HPD definitions. To better characterize these differences, further studies — as well as efforts to agree on a consensual definition — are warranted.


Abstract 519 Figure 2 Forest Plot of HPD incidence across definitions


Abstract 519 Figure 1 Forest Plot of HPD incidence across tumor types