TPS11188 Poster Session

Strength of evidence supporting cancer drug approvals in China, 2017-2021.

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Background: Well-designed and adequately conducted clinical trials are the cornerstone evidence to demonstrate drug safety and efficacy and support regulatory approval of drugs. We aim to investigate the strength of evidence supporting new cancer drug indications approved in China. **Methods:** This retrospective observational study included pivotal trials supporting cancer drug indications approved in China in 2017-21. We assessed their ability to minimize bias of single-arm trials, measured as adopted external control arm and adjusted confounders; risk of bias of randomized controlled trials (RCTs), as evaluated using the revised Cochrane tool for risk of bias assessment. The ratio of hazard ratios (RHR) was calculated to quantify differences in effect size in RCTs with different risks of bias. **Results:** Between 2017 and 2021, 77 novel cancer drugs for 148 indications were approved in China, based on data from 205 pivotal studies. Of the 56 pivotal single-arm trials with regulatory review documents, 6 (10.7%) used aggregated data from earlier trials as external controls without adjustment for confounders. Of the 128 pivotal RCTs with published results, 95 (74.2%) were assessed as having some concern or a high risk of bias. RCTs judged to be at some concern or high risk of bias in the randomization process had smaller effect sizes (RHR=0.67, 95% CI: 0.53-0.86), and those judged to be at some concern or high risk of bias in missing outcome data had larger effect sizes (RHR=1.11, 95% CI: 1.00-1.23), compared to RCTs at low risk of bias in these domains). **Conclusions:** Over four-fifths of pivotal studies supporting cancer indication approvals in China had design weaknesses that introduce uncertainty to the estimation of treatment effects. To ensure the validity of drug efficacy data and reduce uncertainty, stakeholders should strengthen and implement a high-quality standard on the design, conduct, and analysis of studies supporting regulatory approval of new therapies. Research Sponsor: National Natural Science Foundation of China; 72274004.

Characteristics of cancer drugs and corresponding indications approved in China between 2017 and 2021.

Characteristic	All, No (%)	No. (%) 2017	2018	2019	2020	2021
Cancer Drug	**77 (100.0)**	**7 (9.1)**	**16 (20.8)**	**13 (16.9)**	**16 (20.8)**	**25 (32.5)**
Authorized Region						
Authorized in China only	28 (36.4)	0	5 (31.3)	3 (23.1)	6 (37.5)	14 (56.0)
Also approved by the FDA/EMA[a]	49 (63.6)	7 (100)	11 (68.8)	10 (76.9)	10 (62.5)	11 (44.0)
Cancer Indication	**148 (100.0)**	**16 (10.8)**	**42 (28.4)**	**33 (22.3)**	**30 (20.3)**	**27 (18.2)**
No. Supporting Pivotal Studies						
1	106 (71.6)	8 (50.0)	34 (81.0)	25 (75.8)	18 (60.0)	21 (77.8)
2	32 (21.6)	5 (31.3)	7 (16.7)	2 (6.1)	12 (40.0)	6 (22.2)
≥3	10 (6.8)	3 (18.8)	1 (2.4)	6 (18.2)	0	0 (0)
No. Pivotal Randomized Trials						
0	44 (29.7)	4 (25.0)	6 (14.3)	7 (21.2)	11 (36.7)	16 (59.3)
1	79 (53.4)	7 (43.8)	29 (69.0)	19 (57.6)	13 (43.3)	11 (40.7)
≥2	25 (16.9)	5 (31.3)	7 (16.7)	7 (21.2)	6 (20.0)	0

Abbreviations: EMA, European Medicine Agency; FDA, the United States Food and Drug Administration.
[a]By December 31, 2021.