

CORRECTION

## Correction to: Efficacy and Safety of the Newer Multiple Sclerosis Drugs Approved Since 2010

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Page 271, Table 1, “Pivotal trial data and most important drug information”: In the ‘Dimethyl fumarate’ row, ‘ARR reduction’ column, the DEFINE trial entry, which previously read:

“43%”

should read:

“53%”

The corrected Table 1 is shown on the following page:

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The original article can be found online at <https://doi.org/10.1007/s40263-018-0488-6>.

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**Table 1** Pivotal trial data and most important drug information

Drug	Approval	Mode and frequency of administration	Mechanism	Pivotal trials	ARR reduction	Disability progression
Fingolimod	FDA: 09/2010 EMA: 03/2011	Oral, capsule, 0.5 mg qd	S1P receptor modulator; internalization and degradation of S1PR	FREEDOMS [8] FREEDOMS 2 [121] TRANSFORMS [12]	FREEDOMS: 60% FREEDOMS 2: 48% TRANSFORMS: 50% after switching	FREEDOMS: HR 0.7/0.68 FREEDOMS 2: HR 0.83 (ns) TRANSFORMS: no difference
Dimethyl fumarate	FDA: 03/2013 EMA: 01/2014	Oral, capsule, 240 mg bid	Immunomodulation of immune cells, shift towards Th2 [23], cytoprotective properties by activation of Nrf2 [22]	DEFINE [27] CONFIRM [28]	DEFINE: 53% CONFIRM: 44% (twice), 51% (thrice), 29% (GA)	DEFINE: 38% (twice daily), 34% (three times daily) reduction CONFIRM: 21% (ns)/24% (ns)/7% (ns)
Teriflunomide	FDA: 09/2012 EMA: 08/2013	Oral, tablet, 14 mg qd	Inhibitor of dihydroorotate dehydrogenase, reduces proliferation of B- and T-cells	TEMSO [43] TOWER [122]	TEMSO: 31.2% (7 mg), 31.5% (14 mg) TOWER: 22% (7 mg), 36% (14 mg)	TEMSO: 23.7% (7 mg, ns), 29.8% (14 mg, $p = 0.03$ ) TOWER: HR 0.95 (7 mg, ns), HR 0.68 (14 mg, $p = 0.04$ )
Cladribine	FDA: Under review EMA: 08/2017	Oral, tablet, 3.5 mg/kg bodyweight for 2 years. 2 treatment weeks/year	Purine nucleoside, phosphorylated in cells with high amount of deoxycytidine kinase, leading to nuclear accumulation and cell death	CLARITY [58]	57%	HR 0.67 (3.5 mg/kg) HR 0.69 (5.25 mg/kg)
Laquinimod	Russia: 05/2013		Quinoline-3-carboxamide, immunomodulation by aryl hydrocarbon receptor [123]	ALLEGRO [74, 124] BRAVO [75]	ALLEGRO: 23% BRAVO: 18% (ns)	ALLEGRO: 11.1% (LQ); 15.7% (LQ) (HR 0.64) BRAVO: 31% (ns)
Daclizumab	FDA: 05/2016 EMA: 07/2016 <b>As of March 2nd, 2018, Biogen Idec has retracted Daclizumab from the market</b>	Sc injection, 150 mg monthly	Humanized monoclonal IgG1 antibody, which is mediated against the alpha subunit (CD25) of the IL-2 receptor [81], activation of immunoregulatory CD56 <sup>bright</sup> natural killer cells [83]	SELECT [85] DECIDE [86]	SELECT: 54%, 50% DECIDE: ARR 0.22 vs. 0.39 with IFN- $\beta$ , $p < 0.001$ [86]	SELECT: 150 mg: HR 0.43 (0.21–0.88) ( $p = 0.021$ ) 300 mg: HR 0.57 (0.30–1.09) ( $p = 0.091$ ) DECIDE: No difference compared to IFN- $\beta$

Table 1 continued

Drug	Approval	Mode and frequency of administration	Mechanism	Pivotal trials	ARR reduction	Disability progression
Alemtuzumab	FDA: 11/2014 EMA: 09/2013	IV, first year 5 infusions in 5 days (at 12 mg), second year 3 infusions	Monoclonal antibody directed against CD52, which mediates the depletion of lymphocytes	CAMMS223 [96] CARE-MS I [97] CARE-MS II	CAMMS223: ARR 0.1 vs. 0.36 (IFN- $\beta$ ) CARE-MS: 49% less relapses than IFN- $\beta$ group	CAMMS223: 9.0% alemtuzumab group, 26.2% in the IFN- $\beta$ group; $p < 0.001$ )
Ocrelizumab	FDA: 03/2017 EMA: Under review	Infusion, first dose two 300 mg infusions, 2 weeks apart, second dose after 6 months	Monoclonal antibody against CD20	OPERA I [117] OPERA II [117]	OPERA I: ARR reduced by 46% compared to IFN- $\beta$ OPERA II: ARR reduced by 47%	Lower disability progression at 12 weeks (9.1 vs. 13.6%) and 24 weeks (6.9 vs. 10.5%)

ARR annualized relapse rate, bid twice daily, EMA European Medicines Agency, FDA US Food and Drug Administration, GA, HR hazard ratio, IFN interferon, IgG1 immunoglobulin G1, IL interleukin, IV intravenous, ns not significant, Nrf2 nuclear factor (erythroid derived 2)-like 2, qd once daily, SC subcutaneous, SIP sphingosine 1 phosphate, Th2 T-helper 2