LARGE PHASE 3 TRIALS IN RR MS

updated September 2013

Abbreviations Key:
AAN – American Academy of Neurology
CIS – Clinically Isolated Syndrome
ECTRIMS – European Committee of Treatment and Research in MS
IM – intramuscular, injected into muscle
IV – intravenous, injected into vein
PP - primary progressive
PR - progressive relapsing
RR - relapsing-remitting
SC – subcutaneous, injected under the skin
SP - secondary progressive

AGENT	PURPOSE OF STUDY	POSSIBLE MECHANISM	HOW DRUG IS TAKEN	TYPE OF MS/NUMBER OF SUBJECTS	RESULTS
Alemtuzumab (Genzyme Corporation) vs. interferon beta-1a (Rebif®, Serono Pfizer)	To compare effect on progression of disability and relapse rate, also known as CARE-MS I, CAMMS 323	Targets CD52 antigen expressed on B and T lymphocytes (alemtuzumab)/Slows down immune response, possibly by interfering with T cell activation and movement across blood-brain barrier, and inducing suppressive T cells (Rebif)	intravenous, subcutaneous	RR/581	Reduced relapse rates by 55% over Rebif; no statistically significant difference in slowing disease progression or EDSS increase (*The Lancet* 2012;380:1819; read more here http://www.nationalmssociety.org/news/news-detail/index.aspx?nid=7078)

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Alemtuzumab (Genzyme Corporation) vs. interferon beta-1a (Rebif®, Serono Pfizer)	To test 2 doses of alemtuzumab versus interferon beta-1a on progression of disability and relapse rate, also known as CARE-MS II, CAMMS 324	Targets CD52 antigen expressed on B and T lymphocytes (alemtuzumab)/Slows down immune response, possibly by interfering with T cell activation and movement across blood-brain barrier, and inducing suppressive T cells (Rebif)	intravenous, subcutaneous	RR/700	Relapse rate reduced by 49% compared to Rebif; risk of disability progression reduced by 42% (*The Lancet* 2012;380:1829; read more here http://www.nationalmssociety.org/news/news-detail/index.aspx?nid=7078)
BIIB017 (PEGylated interferon beta-1a)	To reduce relapses	Slows down immune response, possibly by interfering with T cell activation and movement across blood-brain barrier, and inducing suppressive T cells	subcutaneous	RR/1260	Met primary endpoint, reducing relapses significantly more than placebo (Abstract #Abstract S31.006, AAN 2013); read more here http://www.nationalmssociety.org/news/news-detail/index.aspx?nid=7305).
Daclizumab High Yield Process (DAC HYP) vs. interferon beta-1a (Avonex®, Biogen Idec)	To evaluate safety and effectiveness, also known at the DECIDE study	Limits T cell expansion by blocking signaling of cytokine IL-2	intramuscular, subcutaneous	RR/1800	Ongoing, not recruiting; read more http://clinicaltrials.gov/ct2/show/NCT01064401.

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Daclizumab High Yield Process (DAC HYP)	Testing the use of a prefilled syringe to administer monthly under the skin injections of the experimental therapy daclizumab, also known as the OBSERVE study	Limits T cell expansion by blocking signaling of cytokine IL-2	subcutaneous	RR/100	Ongoing, not recruiting; read more http://clinicaltrials.gov/ct2/show/NCT01462318.
Glatiramer acetate (Copaxone®, Teva Pharmaceutical Industries Ltd.)	To test less frequent dosing, also known as GALA Study	Peptide copolymer synthesized to mimic myelin basic protein, induces shift from Th1 to Th2	subcutaneous	RR/1350	Reduced average annual relapse rate by 34.4% compared to placebo (Abstract #S01.005, AAN 2013; read more here http://www.nationalmssociety.org/news/news-detail/index.aspx?nid=7635).
GTR (glatiramer acetate, Synthon) vs. Glatiramer acetate (Copaxone®, Teva Pharmaceutical Industries Ltd.)	To reduce disease activity on MRI scans	Peptide copolymer synthesized to mimic myelin basic protein, induces shift from Th1 to Th2	subcutaneous	RR/750	Ongoing, not recruiting; read more http://clinicaltrials.gov/ct2/show/NCT01489254.

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Interferon beta-1a (Avonex®, Biogen Idec) + glatiramer acetate (Copaxone®, Teva Pharmaceutical Industries Ltd.)	To test combination therapy on brain lesion load and underlying disease course, also known as CombiRx Study	Slows down immune response, possibly by interfering with T cell activation and movement across blood-brain barrier, and inducing suppressive T cells (Avonex)/Peptide copolymer synthesized to mimic myelin basic protein, induces shift from Th1 to Th2 (Copaxone)	intramuscular, subcutaneous	RR/1000	No significant difference in reducing clinical relapses or progression (*Annals of Neurology* 2013;73:327; read more here http://www.ncbi.nlm.nih.gov/pubmed/23424159).
Laquinimod (Teva Pharmaceutical Industries)	To reduce time to confirmed disease progression on EDSS, also known as CONCERTO study	Immunomodulatory	oral	RR/1800	Ongoing, read more http://clinicaltrials.gov/ct2/show/NCT01707992.
Laquinimod (Teva Pharmaceutical Industries) vs. interferon beta-1a (Avonex®, Biogen Idec)	To control disease course and development of brain lesions, also known as BRAVO study	Immunomodulatory (laquinimod)/Slows down immune response, possibly by interfering with T cell activation and movement across blood-brain barrier, and inducing suppressive T cells (Avonex)	oral, intramuscular	RR/1200	Did not reduce annualized relapse rate significantly more than placebo (Abstract 148, AAN 2012; read more http://www.nationalmssociety.org/news/news-detail/index.aspx?nid=5695).

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Methylprednisolone	To compare oral versus intravenous delivery to control development of brain lesions and treat disease relapses, also known as OMEGA study	Closes damaged blood-brain barrier, reducing inflammation in CNS	oral, intravenous	RR/140	Ongoing, read more http://clinicaltrials.gov/ct2/show/NCT00418145.
Methylprednisolone	To compare oral versus intravenous delivery to control development of brain lesions and treat disease relapses, also known as COPOUSEP study	Closes damaged blood-brain barrier, reducing inflammation in CNS	oral, intravenous	RR/200	Ongoing, read more http://clinicaltrials.gov/ct2/show/NCT00984984.
NU100 (recombinant human interferon beta-1b)	To control disease course and development of brain lesions	Slows down immune response, possibly by interfering with T cell activation and movement across blood-brain barrier, and inducing suppressive T cells	subcutaneous	RR/500	Ongoing; read more http://clinicaltrials.gov/ct2/show/NCT01464905.

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Ocrelizumab vs. interferon beta-1a (Rebif®, Serono Pfizer)	To evaluate safety and effectiveness in reducing disease activity, also known as ORATORIO study	Binds to CD20 antigen on B cells and induces B-cell lysis (ocrelizumab)/Slows down immune response, possibly by interfering with T cell activation and movement across blood-brain barrier, and inducing suppressive T cells (Rebif)	intravenous, subcutaneous	RR/800	Ongoing, not recruiting; read more http://clinicaltrials.gov/ct2/show/NCT01247324.
Teriflunomide (HMR1726)	To control lesion development, disease progression and relapses, also known as TOPIC study	Modulates responses of T-cells within the immune system by impairing DNA synthesis	oral	CIS/780	Ongoing, not recruiting; read more http://clinicaltrials.gov/ct2/show/NCT00622700.