Table 1. Characteristics of the included studies

Study (first author, year, type)	Participants: number, age (mean ± sd), sex (% female) stroke type	Intervention	Control	Outcome measures and follow up	Comments	Risk of bias (for all reported outcome measures)*
Gilad (2011) RCT	N = 72 Intervention: 36 Control: 36 Age: 70 ± 12 y Female: 35% Intracerebral hemorrhage (ICH)	ASM: Valproate (100%)	Placebo	Seizure occurrence: early < 14 days, and late > 14 days Functional outcome: NIHSS at 1 year FU (mean, sd) Mortality (1 year FU)	2 potential adverse events (mild liver dysfunction without discontinuation of VPA treatment)	Some concerns
Peter Derex (2022) RCT	N= 50 Intervention: 24 Control: 26 Age: 73 ± 19 y Female: 32% Intracerebral hemorrhage (ICH)	ASM: Levetiracetam (100%)	Placebo	Seizure occurrence: within 72h Functional outcome: Change in NIHSS and mRS (between 0, 3 , 6 and 12 months FU) Mortality (1 year) Safety: frequency of treatment related side effects (1 and 3 months)	No data could be extracted for pooled analysis on functional outcome (only change scores) Serious adverse events occurred 5 in LEV and 9 in placebo (ao neurological deterioration due to ICH and severe pneumonia) however were not considered to be treatment related	Some concerns
Van Tuijl (2021) RCT	N = 784 Intervention: 389 Control: 395 Age: 71 ± 12 y Female: 45% Acute ischemic or hemorrhagic stroke	diazepam (100%)	Placebo	Seizure occurrence: at 3 months Mortality, 3 months Adverse events: pneumonia	Pneumonia in 53 patients (diazepam) and 60 patients (placebo)	Some concerns
Battey (2012) Retrospective study	N = 1182 Intervention: 543 Control: 639	ASM: Phenytoin (68%), levetiracetam	No treatment	Functional outcome: Poor outcome (mRS ≥ 4) at 3 months	No data could be extracted for pooled analysis on functional outcome	Some concerns

	Age: 72 ± 13 y Female: 46% Intracerebral hemorrhage (ICH)	(30%), other (VPA/CBZ 2%)		Mortality, 3 months		
Christie (2020) Retrospective study	N = 360 Intervention: 273 Control: 87 Age: 70 ± 14 y Female: 46% Intracerebral hemorrhage (ICH)	ASM: Levetiracetam (97%)	Placebo/ no comparison	Seizure occurrence: before discharge Functional outcome: Good outcome (mRS ≤ 3) at 3 months		Some concerns
Mackey (2017) Retrospective study	N = 186 Intervention: 93 Control: 93 Age: 62 ± 14 y Female: 52% Intracerebral hemorrhage (ICH)	ASM: Levetiracetam (97%), phenytoin/combination (3%)	Placebo/ no comparison	Functional outcome: Poor outcome (mRS ≥ 4) at discharge Mortality, during hospitalization or first year following ICH		Some concerns
Messe (2009) Retrospective study	N = 295 Intervention: 23 Control: 272 Age: 67 ± 6 y Female: 35 % Intracerebral hemorrhage (ICH)	ASM: Phenytoin (78%) Valproate (17%), Lamotrigine (4%)	Placebo/ no comparison	Seizure occurrence: within first 3 days Functional outcome: Poor outcome (mRS ≥ 5) at 3 months		Some concerns
Naidech (2009) Prospective study	N = 98 Intervention: 40 Control: 58 Age: 63 ± 14 y Female: 46% Intracerebral hemorrhage (ICH)	ASM: Phenytoin Levetiracetam	Placebo/ no comparison	Functional outcome: Poor outcome (mRS ≥ 4) at 3 months Adverse events reported	No data could be extracted for pooled analysis on functional outcome (only data from multivariate analysis) 3 adverse events (rash, hypotension with IV infusion, fever) related to PHT	Some concerns
Naidech (2018) Prospective study	N= 142 Intervention: 38 Control: 104	ASM: Levetiracetam (100%)	Placebo/ no	Seizure occurrence: before discharge	No data could be extracted for pooled analysis on functional outcome (only p value)	Some concerns

Table 1. Characteristics of the included studies

	Age: 62 ± 14 y Female:46 % Intracerebral hemorrhage (ICH)		comparison	Functional outcome: mRS; 0, 3 months & 1 year Adverse events: delirium	9 patients with a delirium (3/38 (8%) LEV and 6/104 (6%) placebo)	
Passero (2002) Prospective study	N=761 Intervention: 423 Control:338 Age: 66 ± 12 y Female: 37% Intracerebral hemorrhage (ICH)	ASM: Phenobarbital (100%)	No treatment	Seizure occurrence: immediate <24h, and early < 30 days		Some concerns
Reddig (2011) Retrospective study	N = 157 Intervention: 46 Control: 111 Age: 62 ± 3 y Female: 33% Intracerebral hemorrhage (ICH)	ASM: Phenytoin (56%), Levetiracetam (33%), other (11%)	Placebo/ no comparison	Seizure occurrence: within 7 days Mortality (death/ hospice discharge) Adverse events; description of ASM associated toxicities reported	6 possible adverse reaction (fever and cough, Steven's Johnson syndrome, renal failure, hypotension, and fever with elevated liver function; all PHT), thrombocytopenia (LEV))	Some concerns
Savalia (2022) Prospective study	N = 1630 Intervention: 815 Control: 815 Age: 62 ± 15 y Female: 41% Intracerebral hemorrhage (ICH)	ASM: Levetiracetam (85%), Phenytoin (9%), other (6%)	Placebo/ no comparison	Seizure occurrence: before discharge Functional outcome: Poor outcome (mRS ≥ 3) at 3 months		Some concerns
Sheth (2015) Prospective study	N = 744 Intervention: 289 Control: 455 Age: 61 ± 15 Female: 41% Intracerebral hemorrhage (ICH)	ASM: Levetiracetam (86%), phenytoin (11%), combi LEV & PHT (4%)	Placebo/ no comparison	Functional outcome: Poor outcome (mRS ≥ 4) at 3 months		Some concerns

Woo (2012) Retrospective study	N = 263 Intervention: 216 Control: 47 Age: 60 ± 13 y Female: 41% Intracerebral hemorrhage (ICH)	ASM: Valproate (84%), Phenytoin (2%), Levetiracetam (14%)	Placebo/ no comparison	Seizure occurrence: within 7 days Functional outcome: Poor outcome (mRS) at discharge and 2 weeks Adverse events including mortality reported	No data could be extracted for pooled analysis on seizure occurrence or functional outcome (only data from multivariate analysis) Adverse events (8 patients hyperammonemia (VPA), 4 patients thrombocytopenia (LEV) 1 fever (PHT) and 34/263 had died (hemorrhage/ renal failure, acute myocardial infarction, acute respiratory distress, sepsie)	Some concerns
Zandieh (2016) Retrospective study	N = 802 Intervention: 81 Control: 721 Age: 66 ± 5 y Female: 36% Intracerebral hemorrhage (ICH)	ASM: Phenytoin (58%), valproate (17%), Levetiracetam (4%), CBZ (7%), Multiple (98%)	Placebo/ no comparison	Seizure occurrence: at 3 months Functional outcome: Poor outcome (mRS >3) at 3 months Mortality, 3 months		Some concerns

For further details, see risk of bias table in the appendix, including RoB per outcome measure