The aim of the study was to investigate relationships between temperaments' features and cognitive development of premature children at 14 months-old age.

Materials and methods
Cohort study. Premature group included 12 infants (mean corrected age 14.3 ± 0.3 months, 5 males; average gestation age 32.4 ± 2.0 weeks). Control group included 23 full-term infants (mean age 14.43 ± 0.64 months, 12 males). The temperament was assessed by Russian adaptation of the Revised Infants Behavior Questionnaire (IBQ-R). Bayley Scales of Infant and Toddler Development Third Edition (Bayley-III) was used for measurement cognitive, language and motor skills. All parents signed informed consent form.

Results
In the premature group: «High Intensity Pleasure» (IBQ-R) was strongly correlated with row scores Cognitive scale (Bayley-III, rₛ = 0.6 p = 0.02). Row scores Receipt Language scale (Bayley-III) was correlated with «Falling Reactivity» (IBQ-R) (rₛ = 0.8 p = 0.002) and was negatively correlated with «Approach», «Activity Level» and «Duration of Orienting» (IBQ-R) (rₛ = −0.9 p = 0.01; rₛ = −0.7 p = 0.03 and rₛ = −0.7 p = 0.01 accordingly). «Sadness» (IBQ-R) was negatively correlated with row scores Grow Motor scale (Bayley-III, rₛ = −0.6 p = 0.03).

In the control group: «Vocal Reactivity» (IBQ-R) was correlated with row scores Expressive Language scale (Bayley-III, rₛ = 0.5 p = 0.01), and «Distress to Limitations» was negatively correlated with row scores Receipt and Expressive Language scales (Bayley-III, rₛ = −0.5 p = 0.01 and rₛ = −0.6 p = 0.005 accordingly).

Conclusion
Thus, temperament was interrelated with the level of development in both groups, the pictures of these relationships were different. In premature 14-month-old infants, it was more heterogeneous and relates to the larger range of development.

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Poster Session 4
A temporal change of in vivo oxidative stress imaging in a mouse stroke model
Y. Nakana, Y. Manabe, T. Yamashita, Y. Ohta, K. Abe
Okayama medical center, Neurology, Okayama, Japan
Okayama University Graduate School of Medicine - Dentistry and Pharmaceutical Sciences, Neurology, Okayama, Japan

Nuclear factor erythroid 2-related factor 2 (Nrf2) plays a pivotal role in cellular defense against oxidative stress damage after ischemic stroke. In the present study, we examined the time-dependent change of in vivo optical imaging of oxidative stress after stroke with Keap1-dependent oxidative stress detector (OKD) mice. OKD mice were subjected to transient middle cerebral artery occlusion (tMCAO) for 45min, and in vivo optical signals were detected during the pre-operative period, 12 h, 1 d, 3 d, and 7 d after tMCAO. Ex vivo imaging was performed immediately after obtaining in vivo optical signals at 1 d after tMCAO. Immunohistochemical analyses and infarct volume were also examined after in vivo imaging at each period. The in vivo signals showed a peak at 1 d after tMCAO that was slightly correlated to infarct volume. The strong ex vivo signals, which were detected in the peri-ischemic area, corresponded to endogenous Nrf2 expression. Moreover, endogenous Nrf2 expression was detected mainly in neurons followed by oligodendrocytes and pericytes, but only slightly in astrocytes, microglia, endothelial cells. The present study successfully demonstrated the temporal change of in vivo imaging of oxidative stress after tMCAO, which is consistent with strong expression of endogenous Nrf2 in the peri-ischemic area with a similar time course.

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Poster Session 4
Economic burden of care and treatment options for patients with Rett syndrome: Two systematic literature reviews
O. Dabbou, V. Taieb, E. Abdennadher, M. Bouchemi, J. Chorząty, K. Borkowska, V. Georgieva, B.E. McGill, T.A. Macek, B. Maru, R. Arjunji
AveXis- Inc., Global HEOR and RWE, Bannockburn, USA
Creativ-Ceutical, Health Economics Outcomes Research, London, United Kingdom
Creativ-Ceutical, Health Economics Outcomes Research, Tunis, Tunisia
Creativ-Ceutical, Health Economics Outcomes Research, Kraków, Poland
Creativ-Ceutical, Health Economics Outcomes Research, Sofia, Bulgaria
Creativ-Ceutical, Clinical Development, Bannockburn, USA

Rett syndrome, a rare disorder caused by mutations in the X-linked MECP2 gene, occurs almost exclusively in girls and leads to severe developmental impairment.

Two systematic literature reviews (economic burden; clinical trials) were performed on 25 June 2018. Databases included DARE (economic burden); ClinicalTrials.gov (clinical trials); MEDLINE®, Embase, and Cochrane Library (both). Intervention type and costs were extracted from 9/133 identified articles (4 studies). Efficacy and safety were extracted from 28/652 retrieved articles (20 studies).

In the economic burden studies, enteral feeding and assisted walking increased the risk of respiratory-related hospital admissions, while length-of-stay was lower in younger patients. Mean recovery-stay after scoliosis-correcting surgery was 18.2 and 12.3 days in each of two studies. Care integration improved outcomes and reduced costs. Of 20 clinical studies identified (15 randomized controlled trials, 5 single-arm; N = 8–82; follow-up 1–26 months): 19 focused on pharmacological symptom treatment; 1 examined the effects of environmental enrichment; none targeted the underlying cause. The most common primary endpoints: Rett Syndrome Gross Motor Scale; Clinical Severity Score, Motor and Behavioral Assessment; Anxiety Depression and Mood Scale. Significant clinical benefits were demonstrated for naltrexone, trofetinide, and mecamerin vs placebo; most treatments showed no significant improvement. Recent clinical guidelines/treatment patterns data were limited.

Little data exist on costs of Rett syndrome management, and effective therapies are lacking; those available only manage symptoms. There is demand for safe and effective treatments targeting the underlying cause (eg. gene therapy), which could improve quality of life and prognosis of patients with Rett syndrome.

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