Эффективность и безопасность ранних реабилитационных мероприятий при инсультах

Проф. Ахмадеева Лейла Ринатовна
www.ufaneuro.org

данные современных международных исследований

Спасибо всем, кто нам мешает

Спасибо всем, кто нам мешает,
Кто нам намерено вредит,
Кто наши планы разрушает,
И нас обидеть норовит!
О, если б только эти люди
Могли понять, какую роль
Они играют в наших судьбах,
Нам, причиняя эту боль!
Душа, не знавшая потери,
Душа, не знавшая обид,
Чем счастье в жизни будет мерить?
Прощенья радость, с чем сравнит?
Ну, как мудреть и развиваться
Без этих добрых злых людей?
Из ими созданных препятствий
Возникнут тысячи идей,
Наполненных добром и светом!
И повторю я им сто раз:
Спасибо вам за всё за это,
Ну, что б мы делали без вас!

Валентин Гафт

26.01.2017

Цель

Познакомить с результатами лучших международных исследований, опубликованных в 2016-2017 гг. после принятия AHA/ASA руководства по постинсультной реабилитации

Stroke is available at http://stroke.ahajournals.org DOI: 10.1161/STR.0000000000000098

Recommendations: Rehabilitation Interventions in the Inpatient Hospital Setting	Class	Level of Evidence
It is recommended that early rehabilitation for hospitalized stroke patients be provided in environments with organized, interprofessional stroke care.	I	A
It is recommended that stroke survivors receive rehabilitation at an intensity commensurate with anticipated benefit and tolerance.	I	B
High-dose, very early mobilization within 24 hours of stroke onset can reduce the odds of a favorable outcome at 3 months and is not recommended.	III	A

AHA/ASA Guideline

Guidelines for Adult Stroke Rehabilitation and Recovery

A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association

Endorsed by the American Academy of Physical Medicine and Rehabilitation and the American Society of Neurorehabilitation

The American Academy of Neurology affirms the value of this guideline as an educational tool for neurologists and the American Congress of Rehabilitation Medicine also affirms the educational value of these guidelines for its members

This guideline was approved by the American Heart Association Science Advisory and Coordinating Committee on January 4, 2016,

Ранняя реабилитация после инсультов рекомендована Российскими и международными стандартами

Каковы самые «свежие» доказательства того, что это **безопасно и эффективно**?

Early rehabilitation after stroke

Julie Bernhardt[a,b,c], *Erin Godecke*[b,d], *Liam Johnson*[a,b,e], *and Peter Langhorne*[f]

Curr Opin Neurol 2017, 30:48–54

DOI:10.1097/WCO.0000000000000404

Volume 30 • Number 1 • February 2017

Реабилитация в первые 7 дней после инсульта

- ***ПОЧЕМУ 7?***
  - –Потому что это – среднее пребывание пациента с острым инсультом на койке в стационаре в большинстве Западных стран

Нейробиология

Существуют **«критические» или «чувствительные»** периоды, когда головной мозг более отвечает улучшением на *двигательную активность* лучше

Bernhardt J, Borschmann K, Boyd L, *et al.* Moving rehabilitation research forward: developing consensus statements for rehabilitation and recovery research. Int J Stroke 2016; 11:454–458.

Еще 13 лет назад

Начало двигательной реабилитации через 5 дней дает лучший результат, чем начало через 14 дней

или 30 дней

Biernaskie J, Chernenko G, Corbett D. Efficacy of rehabilitative experience declines with time after focal ischemic brain injury. J Neurosci 2004; 24:1245–1254.

Безопасность (контроль mRS)

Франция – раннее (**до 24 часов**) высаживание в постели более чем на 15 мин в сут

Контроль - позиционирование в кровати и высаживание к 3му дню

167 пациентов

Herisson F, Godard S, Volteau C, *et al.* Early sitting in ischemic stroke patients (SEVEL): a randomized controlled trial. PLoS One 2016; 11:e0149466.

Безопасность (контроль mRS)

Ранние (**до 24 часов**) ежедневные занятия ВНЕ постели с использованием PNF или CTE

1 час/день первые 4 дня, потом – 2.25 часа/день ежедневно 14 недель, потом – 1.5 часа/день 5 дней/нед до 38 нед.

Контроль - обычное ведение первые 4 дня,

с 5го дня – как в основной группе

340 пациентов

Morreale M, Marchione P, Pili A, *et al.* Early versus delayed rehabilitation treatment in hemiplegic patients with ischemic stroke: proprioceptive or cognitive approach? Eur J Phys Rehabil Med 2016; 52:81–89.

Безопасность (контроль mRS)

Бразилия – раннее (**до 48 часов**) высаживание в постели (максимально возможное количество раз), вертикализация (вставание) и физические упражнения (30 мин/сут, 1 р/день, 5 дней/ нед)

Контроль - позиционирование в кровати и высаживание к 3му дню

39 пациентов

Poletto SR, Rebello LC, Valença MJM, *et al.* Early mobilization in ischemic stroke: a pilot randomized trial of safety and feasibility in a public hospital in Brazil. Cerebrovasc Dis Extra 2015; 5:31–40.

Эффективность

Очень раннее (**до 24 часов**) высаживание в постели, вставание, ходьба

5-30 мин/сут, 2 и более р/день, 7 и менее дней

Контроль - обычный режим 45 мин/ день

86 пациентов

Независимость по индексу Бартела через 3 мес

Иссл.гр. = 85%, контрольная гр. – 45% (p<0.01)

Chippala P, Sharma R. Effect of very early mobilisation on functional status in patients with acute stroke: a single-blind, randomized controlled trial. Clin Rehabil 2016; 30:669–675.

Reuter *et al. BMC Neurology* (2016) 16:222
DOI 10.1186/s12883-016-0744-7

BMC Neurology

RESEARCH ARTICLE Open Access

Access, timing and frequency of very early stroke rehabilitation – insights from the Baden-Wuerttemberg stroke registry

Björn Reuter[1*], Christoph Gumbinger[2], Tamara Sauer[3], Horst Wiethölter[4], Ingo Bruder[5], Curt Diehm[6], Peter A. Ringleb[2], Werner Hacke[2], Michael G. Hennerici[3], Rolf Kern[7] and and Stroke Working Group of Baden-Wuerttemberg

Published online: 16 November 2016

Results: PT was applied in 90/87% (IS/ICH), OT in 63/57%, and ST in 70/65% of the study population. Therapy was mostly initiated within 24 h (PT 87/82%) or 48 h after admission (OT 91/89% and ST 93/90%). Percentages of patients under therapy and also the average number of therapy sessions were highest in those with a discharge modified Rankin Scale score of 2 to 5 and lowest in patients with complete recovery or death during hospitalization. The outcome analyses were fundamentally hindered due to biases by individual decision making regarding the application and frequency of VER.

99753 – ишемический инсульт + 8824 – внутримозговое кровоизлияние

Conclusions: While most patients had access to PT we noticed an undersupply of OT and ST. Only little differences were observed between patients with IS and ICH. The staff decisions for treatment seem to reflect attempts to optimize resources. Patients with either excellent or very unfavorable prognosis were less frequently assigned to VER and, if treated, received a lower average number of therapy sessions. On the contrary, severely disabled patients received VER at high frequency, although potentially harmful according to recent indications from the randomized controlled AVERT trial.

90% пациентов начинают физическую реабилитацию в Германии (Баден-Вюртемберг) в течение 24 часов после развития инсульта.

Есть недостаток в работе эрготерапевтов и логопедов (90% начинают работу в течение 48 часов от развития инсульта)

Не было существенных различий между геморрагическими и шемическими инсультами

Около 110 тысяч пациентов

Arch Phys Med Rehabil. 2016 Dec 10. pii: S0003-9993(16)31294-1. doi: 10.1016/j.apmr.2016.11.004. [Epub ahead of print]

Association Between 7 Days Per Week Rehabilitation and Functional Recovery of Patients With Acute Stroke: A Retrospective Cohort Study Based on Japan Rehabilitation Database.

Kinoshita S[1], Momosaki R[2], Kakuda W[3], Okamoto T[1], Abo M[4].

Abstract

OBJECTIVE: To test the hypothesis that functional outcome of patients with stroke who receive 7d/wk of rehabilitation is generally better than that of similar patients who undergo 5 or 6d/wk of rehabilitation.

DESIGN: Retrospective cohort study.

SETTING: Acute hospitals.

PARTICIPANTS: From the Japan Rehabilitation Database, which includes data on 8033 patients with acute stroke collected between January 2005 and December 2013, we included 3072 patients with stroke who were admitted to the acute hospitals and received 7d/wk of rehabilitation.

INTERVENTION: Seven days per week of rehabilitation was defined as rehabilitation therapy administrated by a physical or occupational therapist on every weekday, Saturday, and Sunday.

MAIN OUTCOME MEASURE: Favorable functional independence in daily living, defined as a modified Rankin Scale score of 0 to 2 at the time of discharge.

RESULTS: A total of 1075 (35.0%) patients received 7d/wk of rehabilitation. Univariate analysis demonstrated a significant difference in favorable functional recovery between the 7d/wk rehabilitation group and non-7d/wk rehabilitation group (43.3% vs 37.6%, respectively; P=.002). Multivariate logistic regression analysis using the generalized estimating equations method showed that 7d/wk of rehabilitation was independently associated with favorable functional recovery.

CONCLUSIONS: Our cohort analysis demonstrated that 7d/wk of rehabilitation in early rehabilitation for patients with acute stroke can lead to functional recovery.

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Kinoshita S[1], Momosaki R[2], Kakuda W[3], Okamoto T[1], Abo M[4].

Япония: 11 тысяч пациентов после инсульта
Получены значимые различия по исходам между группой, получавшей реабилитационные мероприятия 7 дней в неделю и группой, получавшей их 5-6 раз в неделю
Реабилитация в течение 7 дней в неделю приводила к лучшему функциональному восстановлению (p=0.002)

MAIN OUTCOME MEASURE: Favorable functional independence in daily living, defined as a modified Rankin Scale score of 0 to 2 at the time of discharge.

RESULTS: A total of 1075 (35.0%) patients received 7d/wk of rehabilitation. Univariate analysis demonstrated a significant difference in favorable functional recovery between the 7d/wk rehabilitation group and non-7d/wk rehabilitation group (43.3% vs 37.6%, respectively; P=.002). Multivariate logistic regression analysis using the generalized estimating equations method showed that 7d/wk of rehabilitation was independently associated with favorable functional recovery.

CONCLUSIONS: Our cohort analysis demonstrated that 7d/wk of rehabilitation in early rehabilitation for patients with acute stroke can lead to functional recovery.

Stroke. 2017 Feb;48(2):400-405. doi: 10.1161/STROKEAHA.116.014803. Epub 2016 Dec 22.

AMOBES (Active Mobility Very Early After Stroke): A Randomized Controlled Trial.

Yelnik AP[1], Quintaine V[2], Andriantsifanetra C[2], Wannepain M[2], Reiner P[2], Marnef H[2], Evrard M[2], Meseguer E[2], Devailly JP[2], Lozano M[2], Lamy C[2], Colle F[2], Vicaut E[2]; AMOBES Group.

BACKGROUND AND PURPOSE: Intensive physical therapy (PT) facilitates motor recovery when provided during a subacute stage after stroke. The efficiency of very early intensive PT has been less investigated. We aimed to investigate whether intensive PT conducted within the first 2 weeks could aid recovery of motor control.

METHODS: This multicentre randomized controlled trial compared soft PT (20-min/d apart from respiratory needs) and intensive PT (idem+45 minutes of intensive exercises/day) initiated within the first 72 hours after a first hemispheric stroke. The primary outcome was change in motor control between day (D) 90 and D0 assessed by the Fugl-Meyer score. Main secondary outcomes were number of days to walking 10 m unassisted, balance, autonomy, quality of life, and unexpected medical events. All analyses were by intent to treat.

RESULTS: We could analyze data for 103 of the 104 included patients (51 control and 52 experimental group; 64 males; median age overall 67 [interquartile range 59-77], 67 right hemispheric lesions, 80 ischemic lesions, National Institutes of Health Stroke Scale score ≥8 for 82%). Fugl-Meyer score increased over time (P<0.0001), with no significant effect of treatment (P=0.29) or interaction between treatment and time (P=0.40). The median change in score between D90 and D0 was 27.5 (12-40) and 22.0 (12-56) for control and experimental groups (P=0.69). Similar results were found for the secondary criteria.

CONCLUSIONS: Very early after stroke, intensive exercises may not be efficient in improving motor control. This conclusion may apply to mainly severe stroke.

CLINICAL TRIAL REGISTRATION: URL: http://www.clinicaltrials.gov. Unique identifier: NCT01520636.

Вывод: для **тяжелых** инсультов **очень ранние и интенсивные** упражнения скорее всего неэффективны для улучшения двигательных функций

Impact of Insurance Status on Outcomes and Use of Rehabilitation Services in Acute Ischemic Stroke: Findings From Get With The Guidelines-Stroke

Laura N. Medford-Davis, MD; Gregg C. Fonarow, MD; Deepak L. Bhatt, MD, MPH; Haolin Xu, MS; Eric E. Smith, MD, MPH; Robert Suter, DO; Eric D. Peterson, MD, MPH; Ying Xian, MD, PhD; Roland A. Matsouaka, PhD; Lee H. Schwamm, MD

Background—Insurance status affects access to care, which may affect health outcomes. The objective was to determine whether patients without insurance or with government-sponsored insurance had worse quality of care or in-hospital outcomes in acute ischemic stroke.

Methods and Results—Multivariable logistic regressions with generalized estimating equations stratified by age under or at least 65 years were adjusted for patient demographics and comorbidities, presenting factors, and hospital characteristics to determine differences in in-hospital mortality and postdischarge destination. We included 589 320 ischemic stroke patients treated at 1604 US hospitals participating in the Get With The Guidelines-Stroke program between 2012 and 2015. Uninsured patients with hypertension, high cholesterol, or diabetes mellitus were less likely to be taking appropriate control medications prior to stroke, to use an ambulance to arrive to the ED, or to arrive early after symptom onset. Even after adjustment, the uninsured were more likely than the privately insured to die in the hospital (<65 years, OR 1.33 [95% CI 1.22-1.45]; ≥65 years OR 1.54 [95% CI 1.34-1.75]), and among survivors, were less likely to go to inpatient rehab (<65 OR 0.63 [95% CI 0.6-0.67]; ≥65 OR 0.56 [95% CI 0.5-0.63]). In contrast, patients with Medicare and Medicaid were more likely to be discharged to a Skilled Nursing Facility (<65 years OR 2.08 [CI 1.96-2.2]; OR 2.01 [95% CI 1.91-2.13]; ≥65 years OR 1.1 [95% CI 1.07-1.13]; OR 1.41 [95% CI 1.35-1.46]).

Conclusions—Preventative care prior to ischemic stroke, time to presentation for acute treatment, access to rehabilitation, and in-hospital mortality differ by patient insurance status. (***J Am Heart Assoc.* 2016;5:e004282 doi: 10.1161/JAHA.116.004282**)

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В США на исход и результативность реабилитации влияет статус медицинского страхования: люди без страховки чаще умирают, не получают стационарную реабилитацию, имеют хуже исходы

Journal of the Neurological Sciences 371 (2016) 6–14

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Journal of the Neurological Sciences

journal homepage: www.elsevier.com/locate/jns

Botulinum toxin as early intervention for spasticity after stroke or non-progressive brain lesion: A meta-analysis

Raymond L. Rosales, MD, PhDProfessor [a,b,c,*], Fran Efendy [b], Ericka SA Teleg [a], Mary MD Delos Santos [c], Mary CE Rosales [d], Marc Ostrea [c], Michelle J Tanglao [c], Arlene R. Ng [b,c]

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Keywords:
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Botulinum toxin
Rehabilitation
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Lower limb

ABSTRACT

Spasticity is a functionally limiting disorder that commonly occurs following stroke or severe brain injury, and may lead to disability and pain. In tandem with neurorehabilitation, botulinum toxin type A (BoNT-A) is the recommended first-line treatment for spasticity and, to date, the majority of trials have reported BoNT-A use in patients >6 months after ictus. The present meta-analysis aimed to evaluate the effects of early BoNT-A injection for post-stroke spasticity on improvements in hypertonicity, disability, function and associated pain. A literature search yielded six studies reporting the effects of BoNT-A treatment within 3 months post-stroke; three in the upper limb and three in the lower limb. All six studies permitted concomitant rehabilitation. Reduction in hypertonicity was compared in all six studies and revealed a significant treatment effect ($P = 0.0002$) on the most affected joints between weeks 4 and 12 following injection. However, no significant effects of treatment were observed for improvement in disability at week 4 or improvement in function at weeks 4 and 20–24. A trend towards reduction in spasticity-related pain at week 4 following BoNT-A treatment ($P = 0.13$) was also observed. These results demonstrate the beneficial effects of BoNT-A treatment on improving hypertonicity within 3 months post-stroke and emphasise the importance of concomitant neurorehabilitation therapy.

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Keywords:
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ABSTRACT

Ботулинические токсины типа могут быть рекомендованы для раннего (через 3 месяца) применения при постинсультной спастичности: эффект выражен между 4-й и 12й неделями после инъекций при адекватных реабилитационных мероприятиях

Treadmill exercise promotes neuroprotection against cerebral ischemia–reperfusion injury via downregulation of pro-inflammatory mediators

This article was published in the following Dove Press journal:
Neuropsychiatric Disease and Treatment
12 December 2016
Number of times this article has been viewed

Ying Zhang[1,*]
Richard Y Cao[2,*]
Xinling Jia[3,*]
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*These authors contributed equally to this work

Background: Stroke is one of the major causes of morbidity and mortality worldwide, which is associated with serious physical deficits that affect daily living and quality of life and produces immense public health and economic burdens. Both clinical and experimental data suggest that early physical training after ischemic brain injury may reduce the extent of motor dysfunction. However, the exact mechanisms have not been fully elucidated. The aim of this study was to investigate the effects of aerobic exercise on neuroprotection and understand the underlying mechanisms.

Materials and methods: Middle cerebral artery occlusion (MCAO) was conducted to establish a rat model of cerebral ischemia–reperfusion injury to mimic ischemic stroke. Experimental animals were divided into the following three groups: sham (n=34), MCAO (n=39), and MCAO plus treadmill exercise (n=28). The effects of aerobic exercise intervention on ischemic brain injury were evaluated using functional scoring, histological analysis, and Bio-Plex Protein Assays.

Results: Early aerobic exercise intervention was found to improve motor function, prevent death of neuronal cells, and suppress the activation of microglial cells and astrocytes. Furthermore, it was observed that aerobic exercise downregulated the expression of the cytokine interleukin-1β and the chemokine monocyte chemotactic protein-1 after transient MCAO in experimental rats.

Conclusion: This study demonstrates that treadmill exercise rehabilitation promotes neuroprotection against cerebral ischemia–reperfusion injury via the downregulation of pro-inflammatory mediators.

Treadmill exercise promotes neuroprotection against cerebral ischemia–reperfusion injury via downregulation of pro-inflammatory mediators

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*These authors contributed equally to this work

В эксперименте на крысах доказан нейропротективный эффект физических упражнений на дорожке «тредмил», уменьшающий церебральную ишемию и ишемически-реперфузионное повреждение мозга через регуляцию провоспалительных медиаторов

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Early rehabilitation after stroke

Julie Bernhardt[a,b,c], *Erin Godecke*[b,d], *Liam Johnson*[a,b,e], *and Peter Langhorne*[f]

Curr Opin Neurol 2017, 30:48–54

DOI:10.1097/WCO.0000000000000404

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Purpose of review

Early rehabilitation is recommended in many guidelines, with limited evidence to guide practice. Brain neurobiology suggests that early training, at the right dose, will aid recovery. In this review, we highlight recent trials of early mobilization, aphasia, dysphagia and upper limb treatment in which intervention is commenced within 7 days of stroke and discuss future research directions.

Recent findings

Trials in this early time window are few. Although the seminal AVERT trial suggests that a cautious approach is necessary immediately (<24 h) after stroke, early mobility training and mobilization appear well tolerated, with few reasons to delay initiating some rehabilitation within the first week. The results of large clinical trials of early aphasia therapy are on the horizon, and examples of targeted upper limb treatments with better patient selection are emerging.

Summary

Early rehabilitation trials are complex, particularly those that intervene across acute and rehabilitation care settings, but these trials are important if we are to optimize recovery potential in the critical window for repair. Concerted efforts to standardize 'early' recruitment, appropriately stratify participants and implement longer term follow-up is needed. Trial standards are improving. New recommendations from a recent Stroke Recovery and Rehabilitation Roundtable will help drive new research.

Purpose of review

Early rehabilitation is recommended in many guidelines, with limited evidence to guide practice. Brain neurobiology suggests that early training, at the right dose, will aid recovery. In this review, we highlight recent trials of early mobilization, aphasia, dysphagia and upper limb treatment in which intervention is commenced within 7 days of stroke and discuss future research directions.

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Trials in this early time window are few. Although the seminal AVERT trial suggests that a cautious approach is necessary immediately (<24 h) after stroke, early mobility training and mobilization appear well tolerated, with few reasons to delay initiating some rehabilitation within the first week. The results of large clinical trials of early aphasia therapy are on the horizon, and examples of targeted upper limb treatments wi

Ранняя мобилизация и упражнения хорошо переносятся
Есть несколько причин для чуть более позднего начала физической реабилитации в течение первой недели

Summary

Early rehabili abilitation care settings, but window for repair. Concerted efforts to standardize 'early' recruitment, appropriately stratify participants and implement longer term follow-up is needed. Trial standards are improving. New recommendations from a recent Stroke Recovery and Rehabilitation Roundtable will help drive new research.

Table 3 Safety checklist specific to early mobilization in the NICU

Yes	No	N/A	Inclusion criteria
☐	☐	☐	If there is an EVD, is the EVD closed and secure for patient mobilization?
☐	☐	☐	Have ICPs been well controlled for 24 h with no administration of mannitol or hypertonic saline?
☐	☐	☐	Is there no *active* titration of parenteral vasopressors or antihypertensives?
☐	☐	☐	Is the CAM-ICU negative for delirium?
☐	☐	☐	Does the patient have a stable neurologic exam?
☐	☐	☐	If patient has an AIS, has it been 24 h after the onset of symptoms?
☐	☐	☐	If patient has an aSAH, has the aneurysm been treated?
☐	☐	☐	If patient has a spontaneous ICH, has the hemorrhage volume been stable for 24 h?

If all above questions are answered "Yes" or "N/A," proceed with early mobilization

NICU neurological intensive care unit, *EVD* external ventricular drain, *ICP* intracranial pressure, *CAM-ICU* confusion assessment method for the intensive care unit, *AIS* acute ischemic stroke, *aSAH* aneurysmal subarachnoid hemorrhage, *ICH* intracerebral hemorrhage

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CURRENT CONCEPTS

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Table 3 Safety checklist specific to early mobilization in the NICU

Yes	No	N/A	Inclusion criteria
☐	☐	☐	If there is an EVD, is the EVD closed and secure for patient mobilization?
☐	☐	☐	Have ICPs been well controlled for 24 h with no administration of mannitol or hypertonic saline?
☐	☐	☐	Is there no *active* titration of parenteral vasopressors or antihypertensives?
☐	☐	☐	Is the CAM-ICU negative for delirium?

Наружный вентрикулярный дренаж (закрыт/безопасен)
Мониторирование ВЧД (без гипертонических растворов и маннитола)
Нет АКТИВНОГО титрования доз вазопрессоров и антигипертензивных
Нет делирия по шкале CAM-ICU
Нет ли НОВОЙ очаговой неврологической симптоматики /стабильность сост.
Первые 24 часа после развития симптоматики инсульта
Если было САК – была ли прооперирована/выключена аневризма
Если были в/мозговое кровоизлияние, стабилен ли его объем в течение 24 ч.

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