

Telemedicínské technologie pro psychiatrii

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vedoucí Kanceláře transferu technologií NUDZ

TELEMEDICÍNA

- Technicko-medicínský obor umožňuje sledovat zdravotní stav na dálku.
- Nástroj medicíny sledující zdravotní stav, aniž by pacient musel být ve zdravotnickém zařízení, aniž by musel rezignovat na svůj životní styl. Pacient je ve svém domácím prostředí.

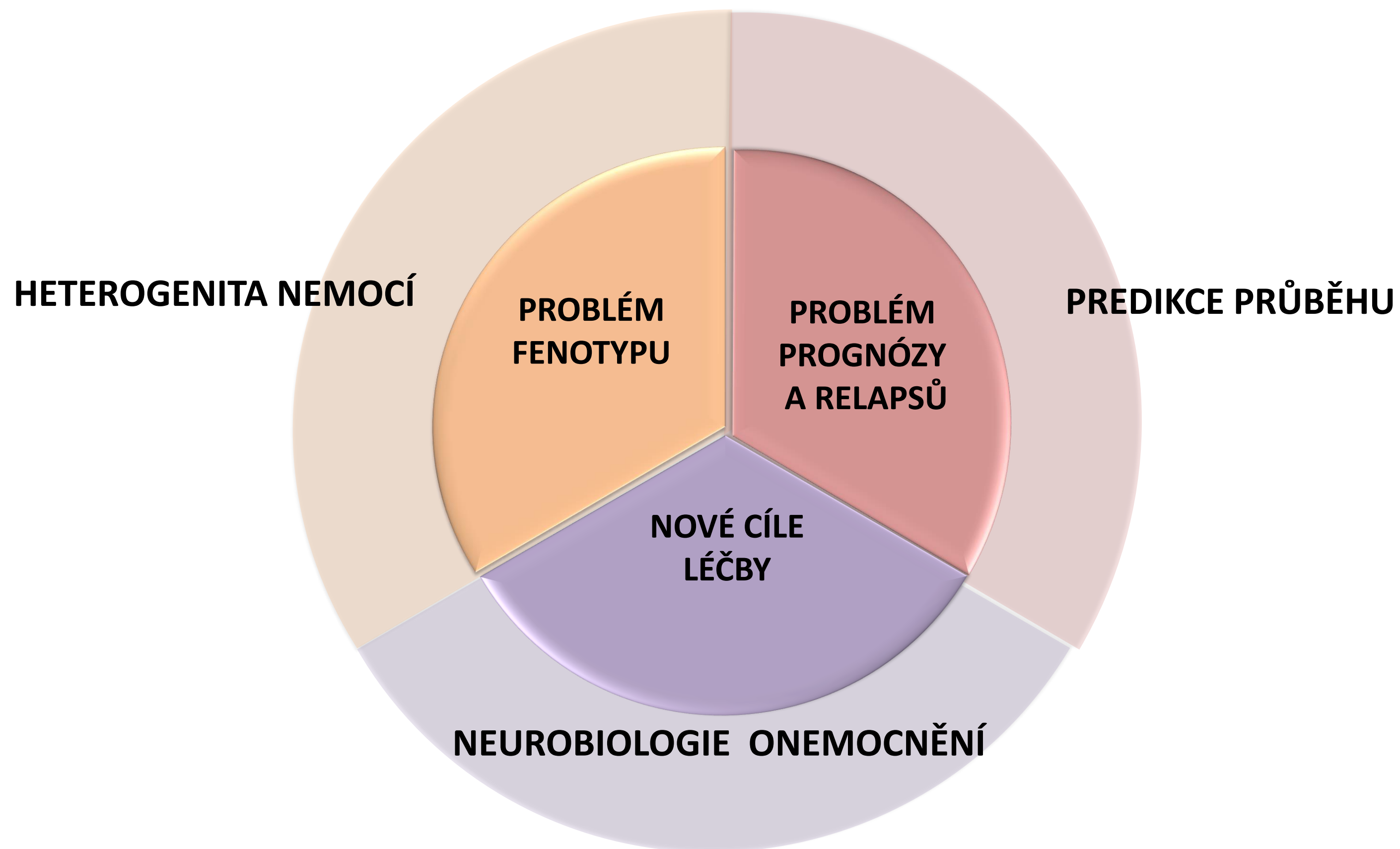
TELEMEDICÍNA

- Telemedicína umožňuje častější monitoring fyziologických fcí i chování
- Telemedicína má potenciál především v oblasti prevence, včasné diagnostiky a predikce změny zdravotního stavu

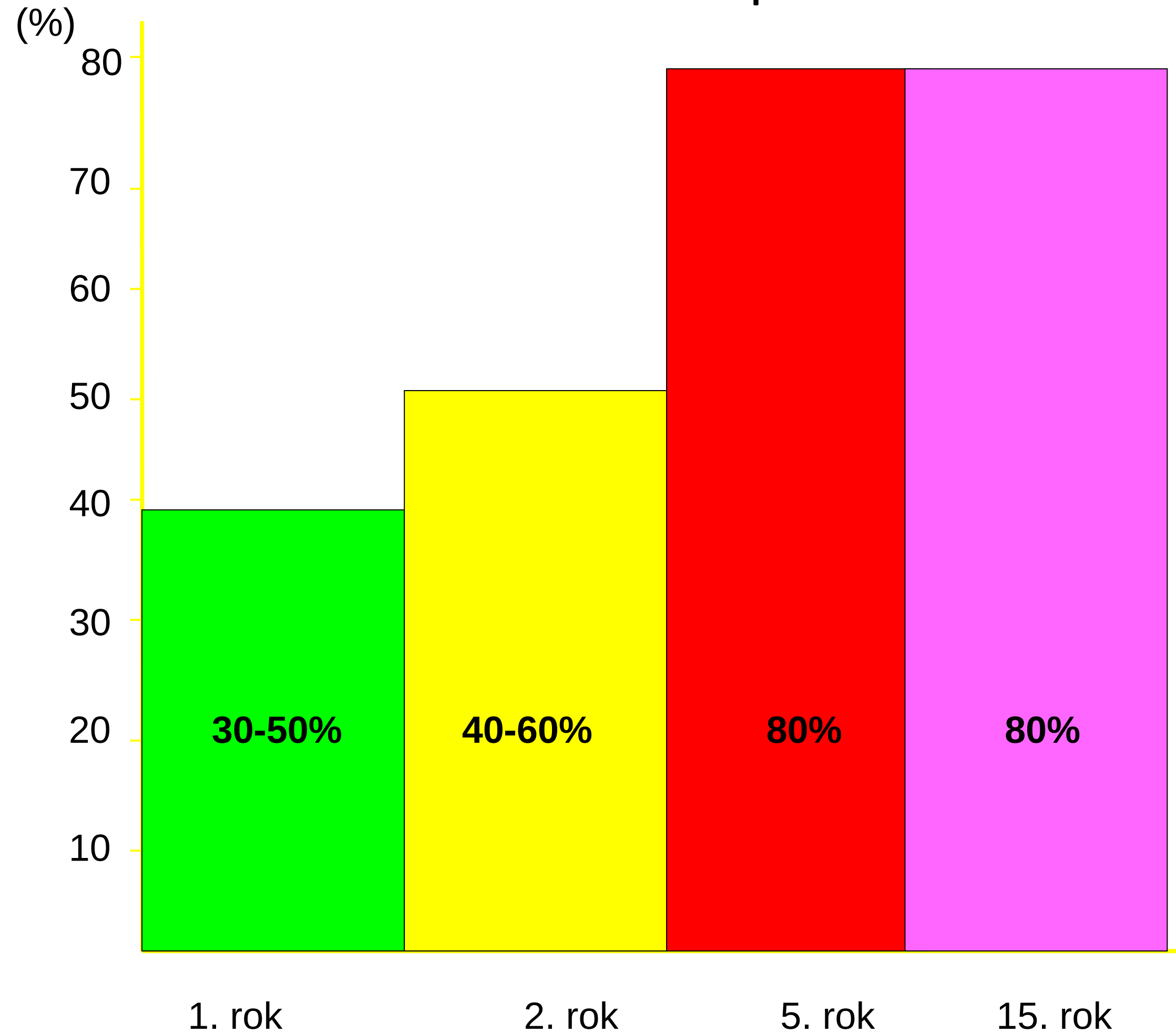
TELEMEDICÍNA V PSYCHIATRII

- **Přístupnost péče:** Telemedicína umožňuje pacientům získat přístup k psychiatrické péči z jakéhokoli místa s internetovým připojením.
- **Redukce stigma:** Pro mnoho lidí může návštěva psychiatra být spojována se stigma nebo obavami z odsouzení. Telemedicína může snížit bariéry spojené se hledáním psychické pomoci.
- **Kontinuita péče:** Díky telepsychiatrii mohou pacienti snadněji udržovat pravidelné konzultace s psychiatrem. To může vést k lepší kontinuitě péče
- **Pravidelné monitorování stavu:** Telemedicína umožňuje pravidelně monitorovat stav svých pacientů, což může být klíčové pro identifikaci a řešení možných komplikací či příznaků exacerbace psychických poruch.
- **Efektivita zdrojů:** Telepsychiatrie může pomoci poskytovat péči více pacientům
- **Integrace s dalšími formami terapie:** Telemedicína může být integrována s dalšími formami terapie, jako je farmakoterapie nebo psychoterapie, což umožňuje poskytovat komplexní péči prostřednictvím různých kanálů komunikace.

SOUČASNÉ PROBLÉMY PSYCHIATRIE



Procentu relapsů u schizofrenie



(Shepherd et al , 1989, Hogarty et al 1993, Möller et al., 1995, Wieden a Olsson 1995, Mason et al, WHO studie, 1996, Doering et al.,1998, Wiersma et al. 1998, Robinson et al. 1999, Ohmori et al . 1999, Rabinowitz et al. 2001, Gaebel 2002, Schooler et al., 2003)

Výzkum týmu dr. Španiela

DATABÁZOVÁ INFRASTRUKUTRA

HYDRA+
VÝZKUMNÝ NIS



MULTIMODÁLNÍ DATABÁZE

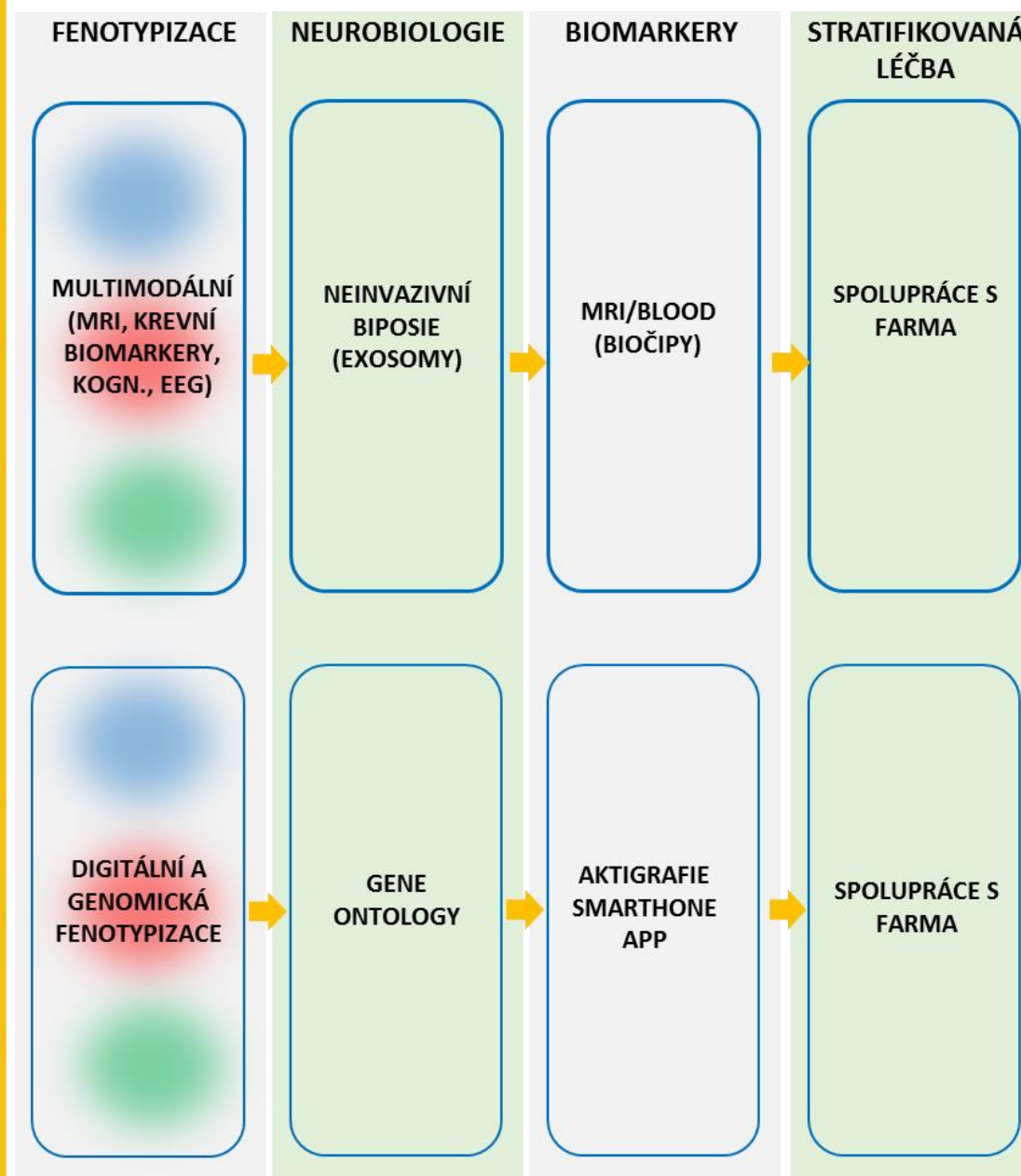
DATABÁZOVÝ SYSTÉM U LONGIT. FES



DATABÁZOVÝ SYSTÉM U LONGIT. BD



VÝZKUM



TECHNOLOGIE

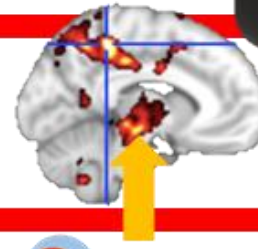


KLINICKÉ APLIKACE

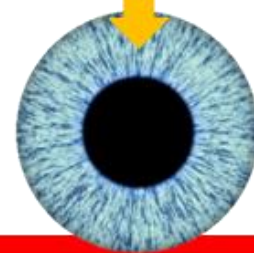
Specializované programy pro časná stadia SMI:

- Specializovaná ambulance NUDZ
- Vývoj CAD v psychiatrii pro ambulantní použití
- Stratifikovaná léčba a RHB
- Klinické studie
- Psychoedukační programy
- Early intervention týmy
- Zapojení do reformy v intencích NAPDZ:
 - ✓ SPECIFICKÝ CÍL 1.6: Umožnit pilotování inovativních metod v poskytování péče v oblasti duševního zdraví.
 - ✓ SPECIFICKÝ CÍL 2.2: Vytvořit funkční systém včasné intervence v oblasti duševního zdraví
 - ✓ SPECIFICKÝ CÍL 4.4: Zavést systém pro zapojování pacientů/klientů a rodinných příslušníků

TECHNOLOGIE



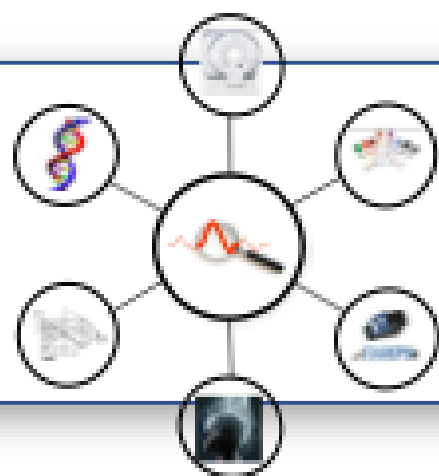
DYNAMICKÝ
PUPILOMETR



AKTIBIPO
SYSTEM

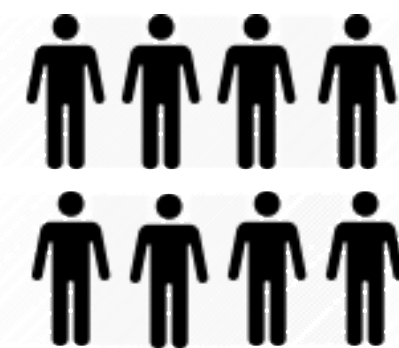


ESO



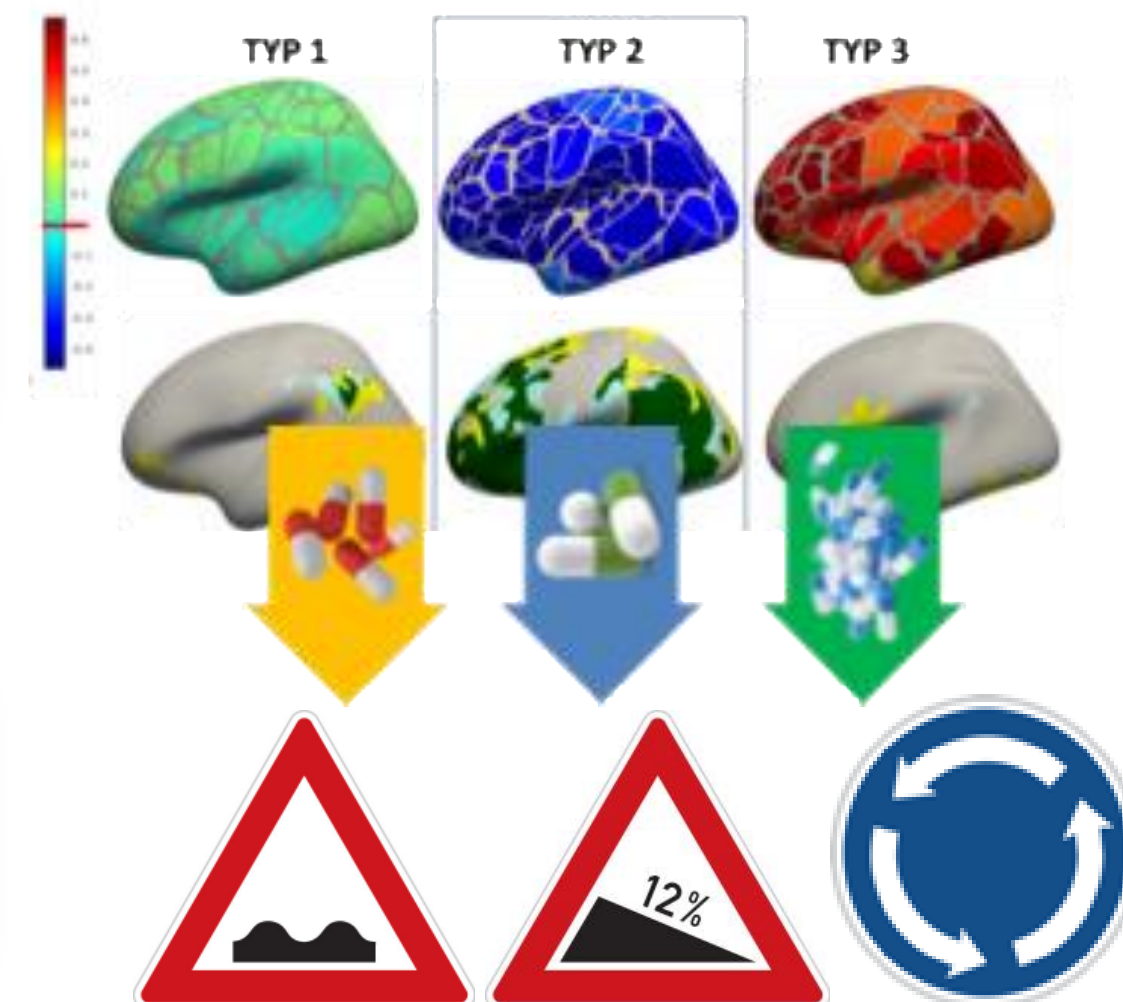
**Nesupervidovaná datová
pipeline**

SUBTYPIZACE PACIENTŮ



STRATIFIKACE LÉČBY

PREDIKCE VYÚSTĚNÍ



První (a přitom český) účinný psychiatrický telemedicínský program na světě-ITAREPS.



1. PACIENT A RODINNÝ
PŘÍSLUŠNÍK VYPLNÍ TÝDNĚ
JEDNODUCHÝ DOTAZNÍK



2. POČÍTAČ AUTOMATICKY
VYHODNOCUJE
SKÓRE DOTAZNÍKŮ.
NA SVÝCH OSOBNÍCH
INTERNETOVÝCH
STRÁNKÁCH LÉKAŘ
NALEZNE AKTUÁLNÍ
INFORMACE O STAVU
PACIENTA V GRAFICKÉ
I SLOVNÍ PODOBĚ.



3.
LÉKAŘ DOSTÁVÁ
DO SVÉ E-MAILOVÉ
POŠTY OKAMŽITOU
INFORMACI
O ZMĚNĚ STAVU
PACIENTA.



10-item Early Warning Signs Questionnaire: Patient Version (EWSQ-10P)

Evaluated is the change in items since the last evaluation.

Scoring:

- 0: No change or improvement
- 1: Mild worsening
- 2: Moderate worsening
- 3: Severe worsening
- 4: Extreme worsening

1. Has your sleep worsened since the last evaluation?

Compared to the last evaluation, your sleep has worsened since the last evaluation. Scoring:
early morning awakening,
The problems have been

2. Has your appetite worsened since the last evaluation?

Compared to the last evaluation, your appetite has worsened since the last evaluation. Scoring:
weight has newly occurred

3. Has your concentration worsened since the last evaluation?

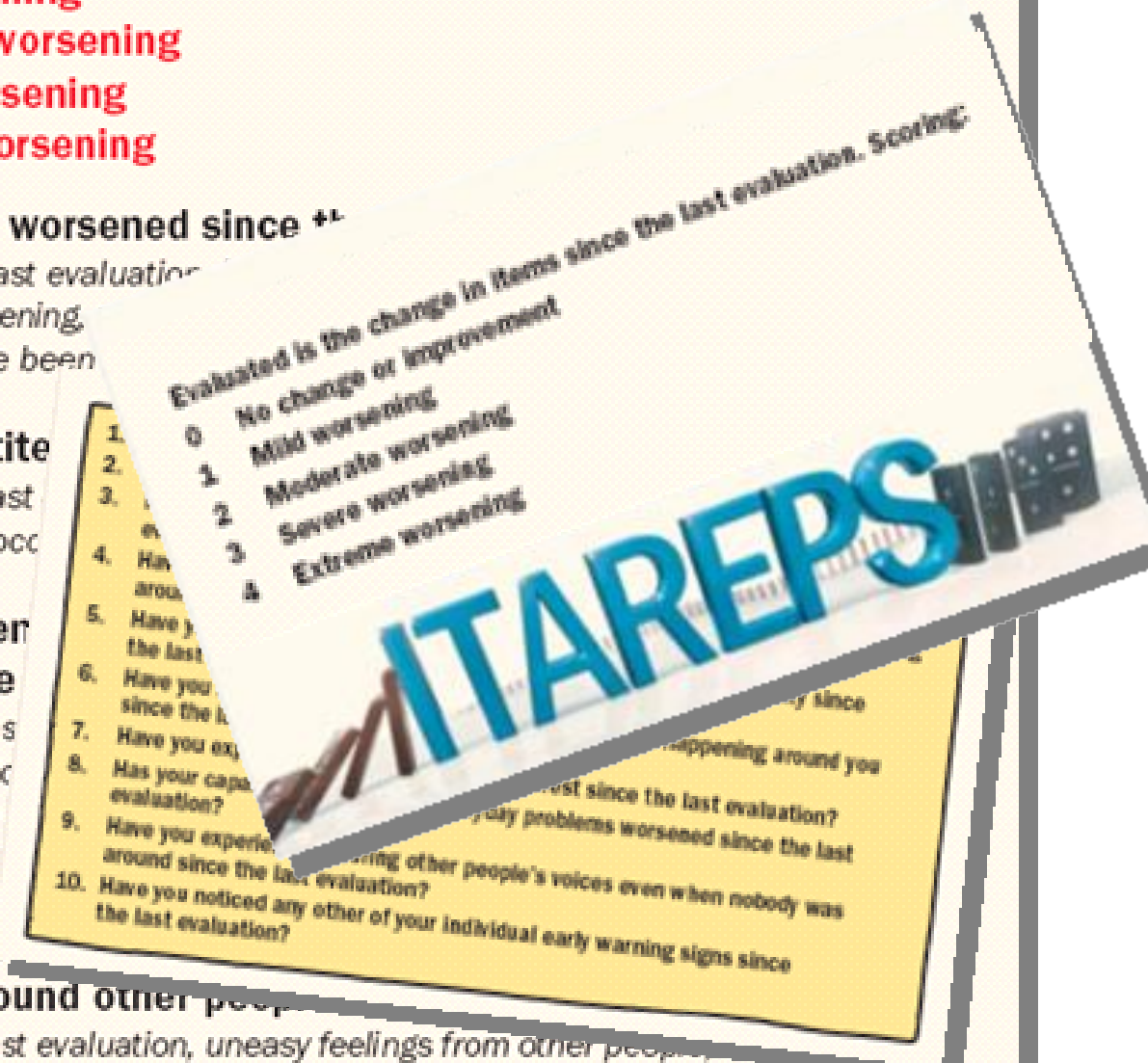
Compared to the last evaluation, your concentration has worsened since the last evaluation. Scoring:
inability to read a book or a TV show, to
occurred (or worsened)

4. Have you experienced increased restlessness, agitation, or irritability since the last evaluation?

Compared to the last evaluation, you have experienced increased restlessness, agitation, or irritability since the last evaluation. Scoring:
while being around other people, being the focus of their attention, being talked about,
have newly occurred (or worsened).

5. Have you experienced increased restlessness, agitation, or irritability since the last evaluation?

Compared to the last evaluation, you have experienced increased restlessness, agitation, or irritability since the last evaluation. Scoring:
a compulsion to walk up and down, inability to stay in one place, inner feelings of tension without any obvious cause have newly occurred (or worsened).



ITAREPS + aktigraf





ITAREPS: Information Technology Aided Relapse Prevention Programme in Schizophrenia: an extension of a mirror-design follow-up

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SHORT COMMUNICATION

The Information Technology Aided Relapse Prevention Programme in Schizophrenia: an extension of a mirror-design follow-up

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Linked Comment: Volavka, *Int J Clin Pract* 2008; 62: 1824–5.

SUMMARY

Aims: Decreasing a number of hospital admissions is important for improving outcomes for people with schizophrenia. The Information Technology Aided Relapse Prevention Programme in Schizophrenia (ITAREPS) programme enables early pharmacological intervention in psychosis by identification of prodromal symptoms of relapse using home telemonitoring via a phone-to-PC SMS platform. **Methods:** This study was a 1-year extension of a previously published mirror-design follow-up evaluation of programme clinical effectiveness. In total, 73 patients with psychotic illness (45 patients from original sample and 28 newly added subjects) collaborating with 56 family members participated in the clinical evaluation. **Results:** There was a statistically significant 77% decrease in the number of hospitalisations during the mean 396.8 ± 249.4 days of participation in ITAREPS, compared with the same time period before participation in ITAREPS (Wilcoxon-signed ranks test, $p < 0.00001$), as well as significantly reduced number of hospitalisation days when in the ITAREPS (2365 hospitalisation days before and 991 days after ITAREPS enrolment respectively, Wilcoxon-signed ranks test, $p < 0.003$). **Conclusion:** The ITAREPS programme represents an effective tool in the long-term treatment of patients with psychotic disorders.

Introduction

The need for providing more efficient healthcare services, coupled with major advancements in information and high-tech communication technology, has led to the development of new approaches to disease management in general. The main incentive for this was emerging evidence that early intervention may result in certain patients with psychotic disorders.

The need for providing more efficient healthcare services, coupled with major advancements in information and high-tech communication technology, has led to the development of new approaches to disease management in general. The main incentive for this was emerging evidence that early intervention may result in certain patients with psychotic disorders.

What's known

Studies published so far suggest that crisis interventions such as increasing the dose of antipsychotic medication, based on early detection within a relapse prevention programme, reduce readmission rates in schizophrenia. Previous findings from ITAREPS mirror-image design follow-up showed a statistically significant 60% decrease in the number of hospitalisations during the mean 283.3 ± 111.9 days of participation in ITAREPS compared with the same time period before entering the programme (signed ranks test, $p < 0.004$).

What's new

The ITAREPS enables early pharmacological intervention in psychosis by identification of prodromal symptoms of relapse using home telemonitoring via a phone-to-PC SMS platform. This study was a 1-year extension of a previously published mirror-design follow-up evaluation of programme clinical effectiveness. In total, 73 patients with psychotic illness (45 patients from original sample and 28 newly added subjects) collaborating with 56 family members participated in the clinical evaluation. **Results:** There was a statistically significant 77% decrease in the number of hospitalisations during the mean 396.8 ± 249.4 days of participation in ITAREPS, compared with the same time period before participation in ITAREPS (Wilcoxon-signed ranks test, $p < 0.00001$), as well as significantly reduced number of hospitalisation days when in the ITAREPS (2365 hospitalisation days before and 991 days after ITAREPS enrolment respectively, Wilcoxon-signed ranks test, $p < 0.003$). **Conclusion:** The ITAREPS programme represents an effective tool in the long-term treatment of patients with psychotic disorders.

KEY WORDS: schizophrenia, relapse prevention, medication, information technology

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Effectiveness of the Information Technology-Aided Program of Relapse Prevention in Schizophrenia (ITAREPS): A Randomized, Controlled, Double-Blind Study

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Effectiveness of Information Technology Aided Relapse Prevention Programme in Schizophrenia excluding the effect of user adherence: A randomized controlled trial

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ABSTRACT

Background: A relapse prevention program called the Information Technology Aided Relapse Prevention Programme in Schizophrenia (ITAREPS) has been developed and is reported to be highly effective. However, the role of the ITAREPS has been partially influenced by user adherence to the protocol of the program. The purpose of this study is to evaluate the effectiveness of the ITAREPS excluding the effect of user adherence. **Methods:** We attempted to perform a randomized controlled trial by the devised method with waiting nurse service. Outpatients with schizophrenia were randomized to the ITAREPS group (n = 22) or control group (n = 23) and were observed for 12 months. **Results:** The mean number of hospitalization days was significantly lower in the ITAREPS group (18.5 days) compared with the control group (21.5 days) ($p = 0.03$). The rate of the number of hospitalizations in the ITAREPS group was significantly lower than that of the control group ($p = 0.03$). The rate of the number of hospitalizations in the ITAREPS group was significantly lower than that of the control group ($p = 0.03$). **Conclusions:** The relapse prevention effectiveness of the ITAREPS was high and we confirmed that the ITAREPS, excluding the effect of user adherence, is an effective intervention during the early stages of relapse.

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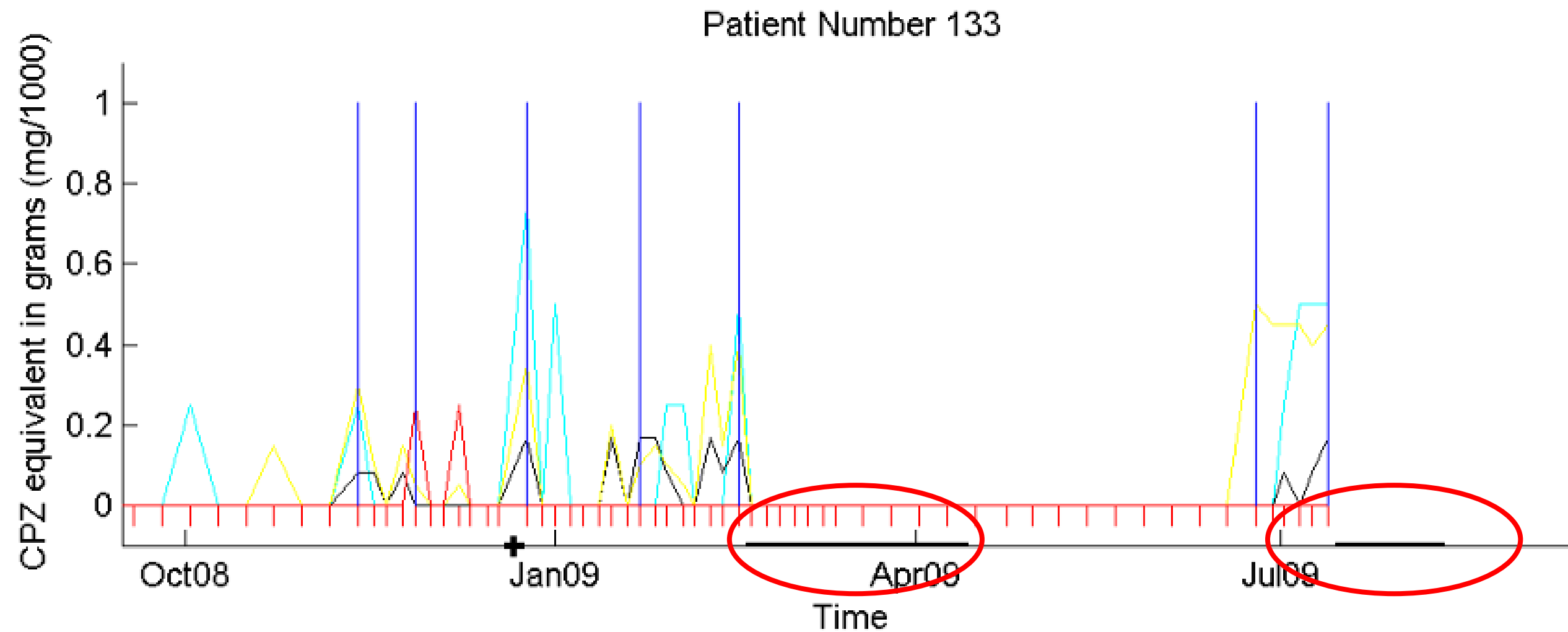
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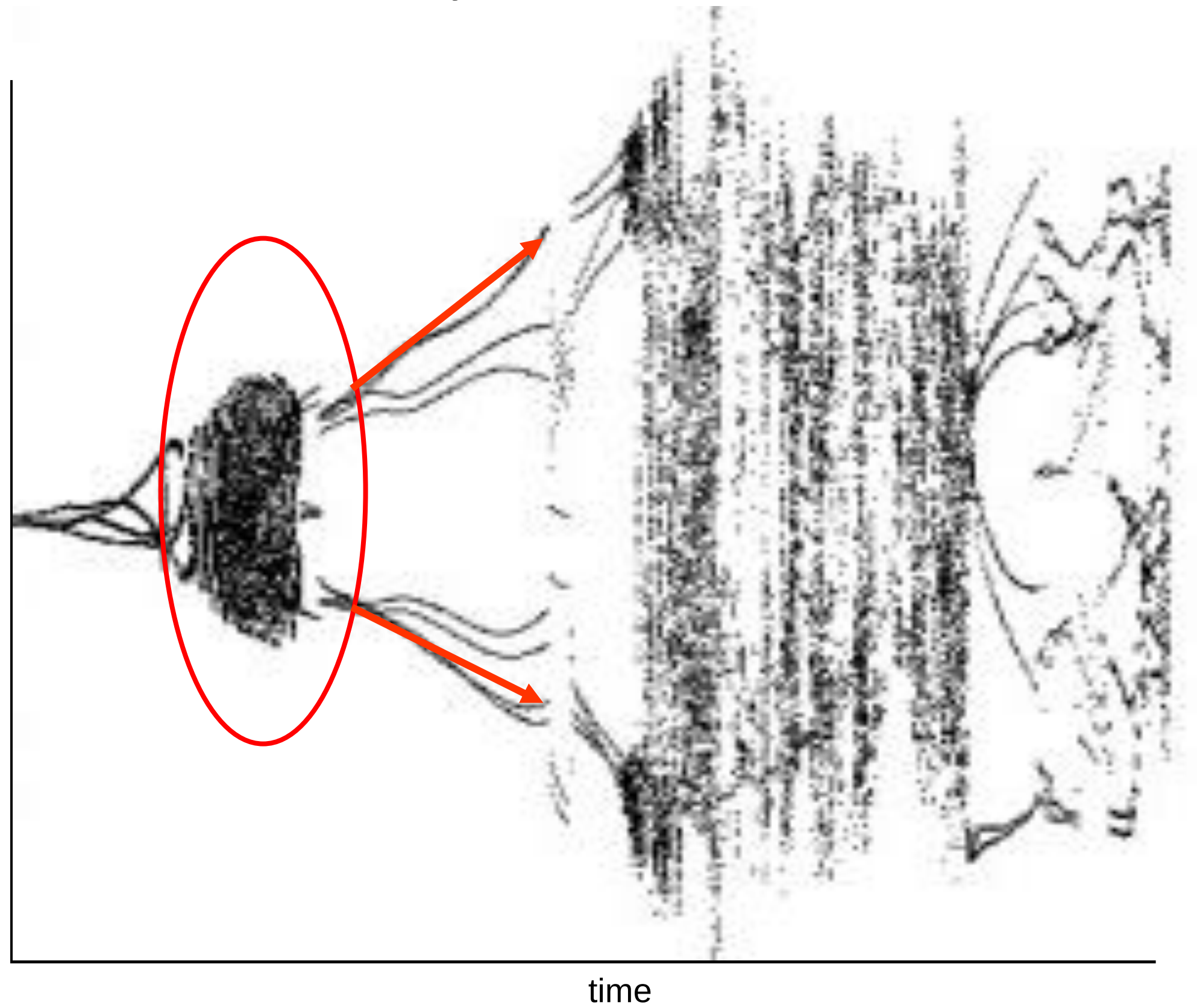
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<http://dx.doi.org/10.1016/j.jpsychres.2013.08.007>

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Pitfall I: Můžeme predikovat relaps?



Ne-lineární dynamika činnosti mozku



Prediktivní přesnost

Study	N	METODA	SENSITIVITA (%)	SPECIFICITA (%)	Youden index
Marder 1984	41	BPRS	48	?	?
Subbotnik 1988	50	BPRS	59	7	-0,34
Birchwood 1989	19	ESS	63	82	0,45
Hirsch and Jolley 1989	54	Clin. Eval.	73	?	?
Marder 1991	50	BPRS	50	?	?
Tarrier 1991	84	PAS	50	81	0,31
Gaebel 1993, 2000, 2007	364	BPRS	8	90	-0,02
Malla and Norman 1994	55	BDI	50	90	0,4
Jorgensen 1998	60	ESS	74	79	0,53
Gleeson 2005	50	ESS	80	47	0,27
Spaniel 2012	71	EWSQ	70	77	0,47

Median

59

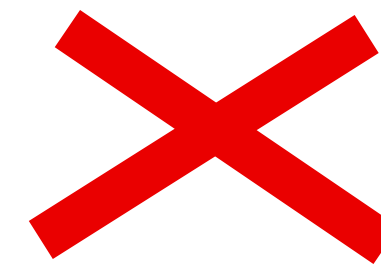
80

Pitfall II: Prodromy jsou subtilní

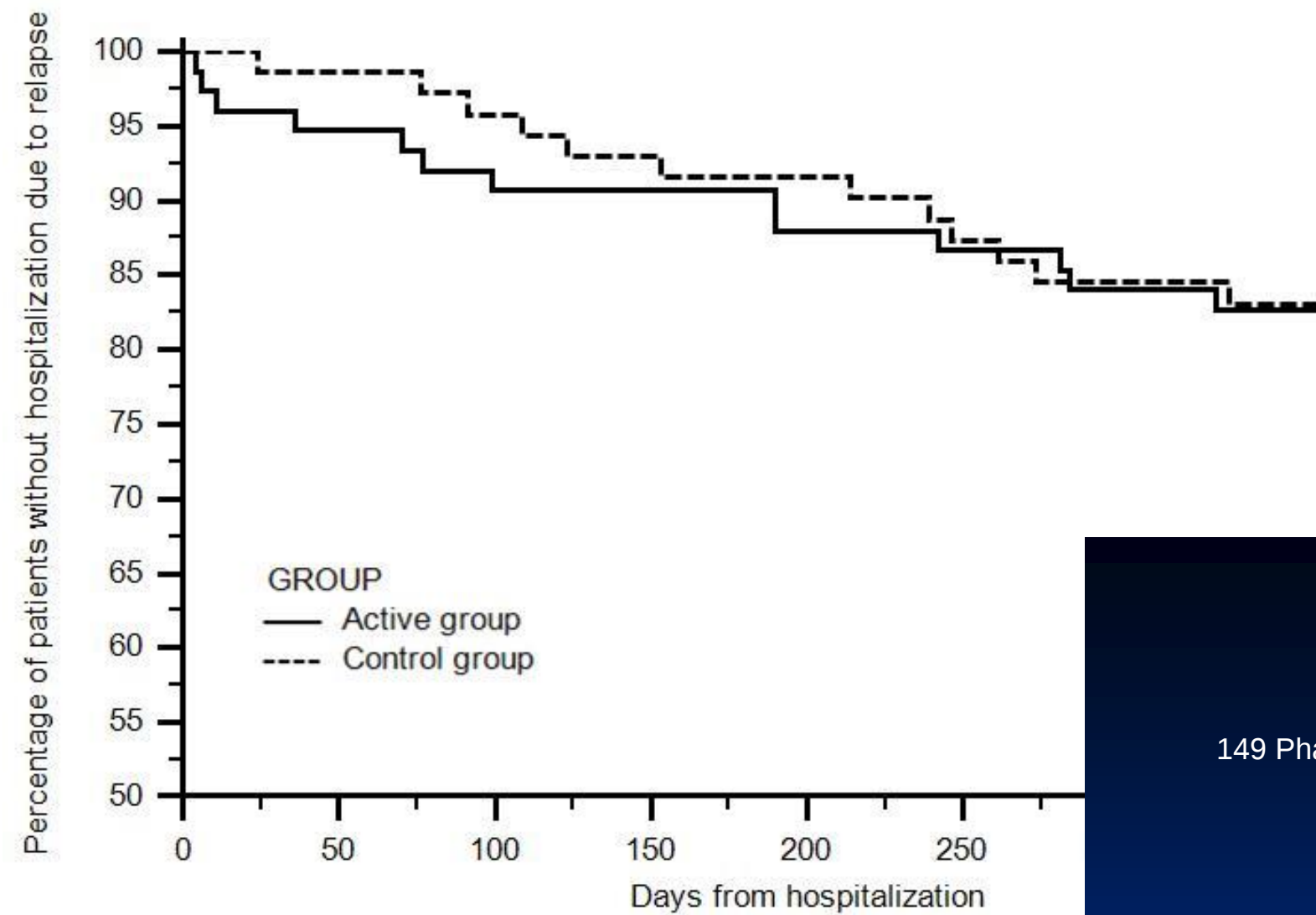
ACTIVE GROUP (n=75)



CONTROL GROUP (n=71)

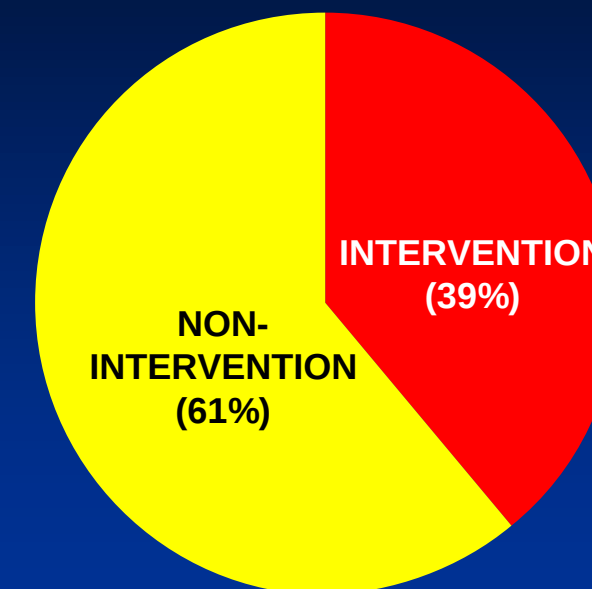


Pitfall III: Akceptace zdravotníky je nízká

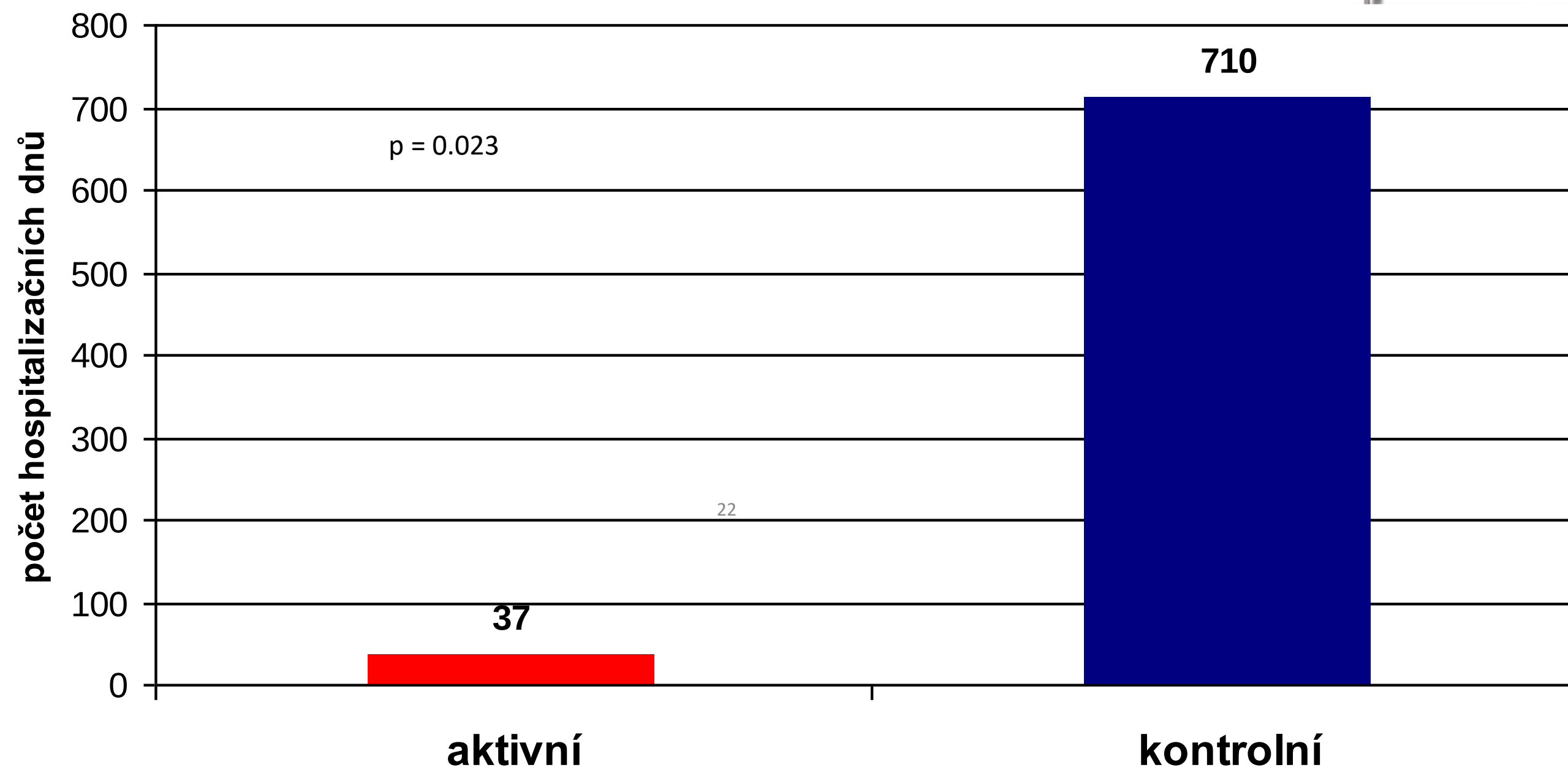


Investigator non-adherence

149 Pharmacological Intervention Requiring Events:

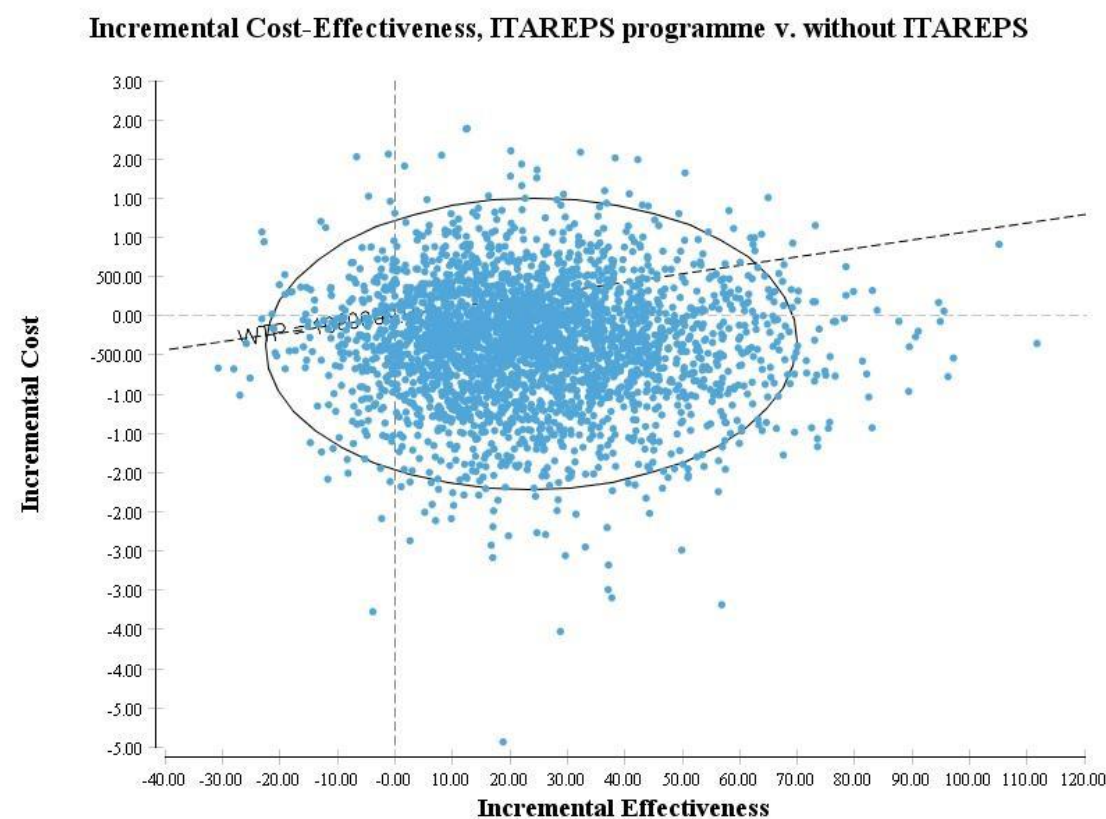


ITAREPS JAPAN STUDY



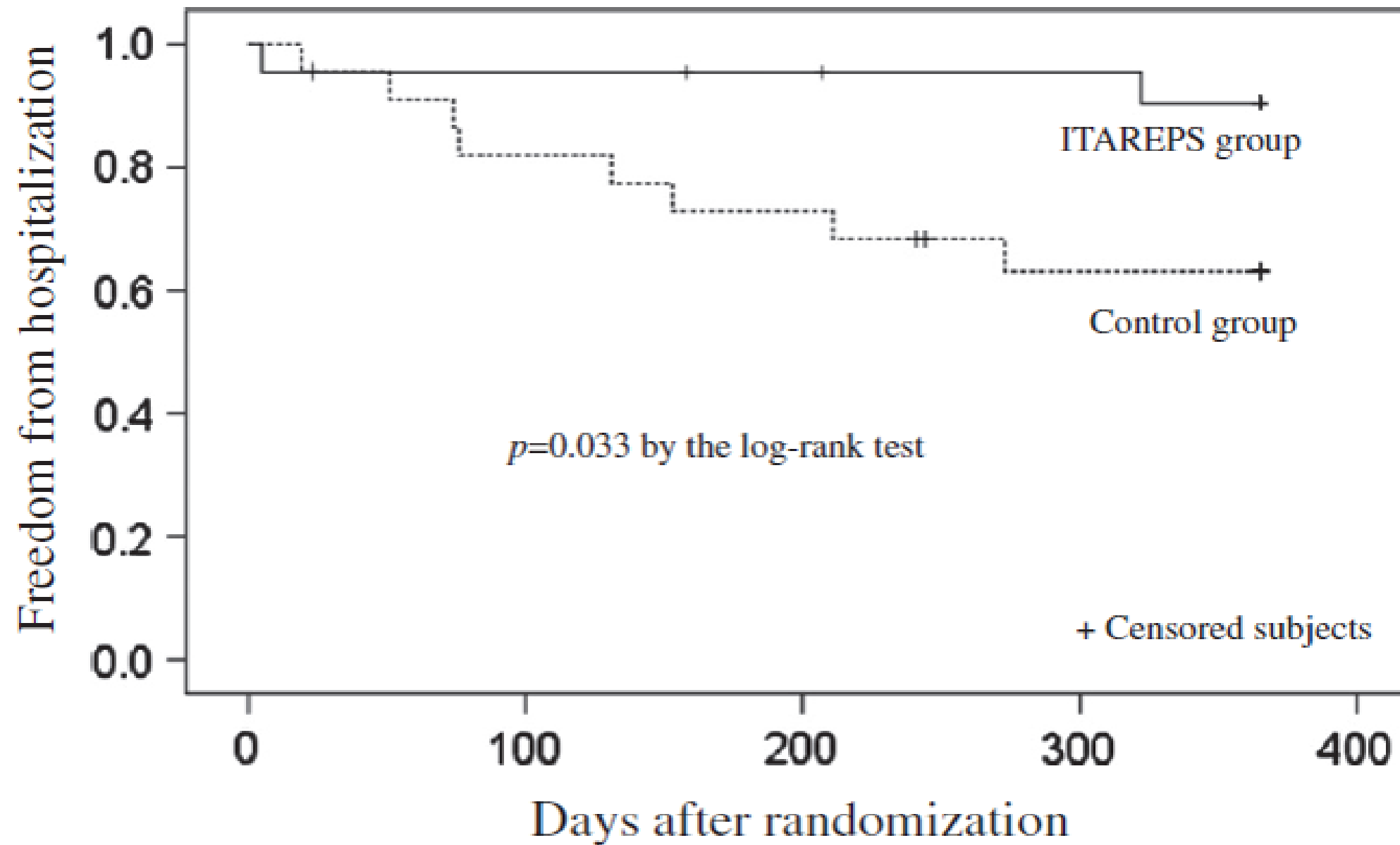
ITAREPS: Analýza efektivity nákladů

- ITAREPS vykazuje nejenom vysokou míru nákladové efektivity, je ale nákladově dominantní (=čistá úspora prostředků)
- Ta by mohla dosáhnout cca 900 € ročně
- ITAREPS nákladově efektivní.



MLCOCH, T., et al. Cost-Effectiveness Analysis of the Information Technology Aided Relaps Prevention Programme in Schizophrenia (Itareps) in the Czech Republic. Value in Health, 2015, 18.7: A410.

ITAREPS: JAPONSKO



- ITAREPS SNIŽUJE RIZIKO HOSPITALIZACE NA JEDNU PĚTINU.
- Hazard ratio = 0.21, 95% CI 0.04–0.99, $p = 0.03$
- Number needed to treat (NNT) = 4, 95% CI 2.1–35.5

KOMATSU, Hideki, et al. Effectiveness of Information Technology Aided Relapse Prevence Programme in Schizophrenia excluding the effect of user adherence: a randomized controlled trial. Schizophrenia research, 2013, 150.1: 240-244.

HETEROGENITA NEMOCÍ

**PROBLÉM
FENOTYPU**

**PROBLÉM
PROGNÓZY
A RELAPSŮ**

PREDIKCE PRŮBĚHU

**NOVÉ CÍLE
LÉČBY**

NEUROBIOLOGIE ONEMOCNĚNÍ

- ESO CAD
 - ITAREPS
 - AKTIBIPO
 - PEBDI
- =
KLINICKÉ APLIKACE

Závěr

- Vyvíjené technologie výrazně zvyšují efektivitu péče o pacienty
- Sledované parametry jsou neurobiologicky komplexní, velmi subtilní, s relativně nízkou prediktivní přesností.
- Příležitost pro další výzkum a kombinaci s dalšími metodikami
- Umožňuje včasnou intervenci.
- Nicméně, výrazná změna by vyžadovala změnu v ambulantní praxi



- Děkuji za pozornost

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