

Digital Health Summit Munich

International Day 2

Nov 30, 2018

Introduction, K. A. Kuhn

Part 1

Short Overview of DIFUTURE

Part 2

Overview of the International Day
see presentations

DIFUTURE: Overview of the Consortium

Funded by BMBF - **Federal Ministry of Education and Research BMBF**
in the framework of the **National Medical Informatics Initiative**
Funding: **28.5 M Euro for 4 Years**, starting in 1/2018

- **Core Consortium**

- **TU Munich / U Medical Center „rechts der Isar“**
- **U Munich / U Medical Center**
- **U Tübingen / U Medical Center**
 - Establish Data Integration Centers
 - Implement “Use Cases”, starting with Multiple Sclerosis
- **U Augsburg, Medical Center Augsburg**
 - U Medical Center currently being built up
 - Data Integration Center by 2021, one UC: Multiple Sclerosis

DIFUTURE: Overview of the Consortium

- **Networking Partners**
 - University Medical Center **Regensburg**
 - **Saarland** University and University Medical Center
 - Will use, adapt, and roll-out solutions of the consortium
 - Participate in conceptual work
 - Strive for establishing data integration centers
- **New Partner**
 - University and University Medical Center **Ulm**
 - Positive evaluation of application has just been received
 - Will establish DIC and participate in MS use case
- **Kairos, Industrial partner**
 - Metadata repository

DIFUTURE's Use Cases

Use Cases of DIFUTURE

are **disease-oriented**

aim at demonstrating **measurable benefits**

no “methodical” use case in DIFUTURE

Objectives of all Use Cases

Integration analyses of Data for **targeted prevention, diagnosis, therapy, follow-up care**

Development and integration of
decision support components

Overall Objectives

precision medicine, personalized medicine

DIFUTURE's Use Cases

Diseases addressed by the UCs

Multiple Sclerosis, from 2016/17

Parkinson's Disease, from 2017

Oncology, Cardiology, Stroke from 2020, more in 2022

Concepts and solutions are re-usable, blue prints

Approach

Integration of health care data and research data

follow-up documentation structured / harmonized / standardized

Standardization of imaging

technical parameters, structured / harmonized reports

Patient reported outcomes via mobile devices

Focus on high data quality; in addition: NLP on free text data

Data Integration Centers in DIFUTURE

- Harmonize and structure processes and data at each site
- Support secure data sharing

Focus on Integration of Health Care Data comprising

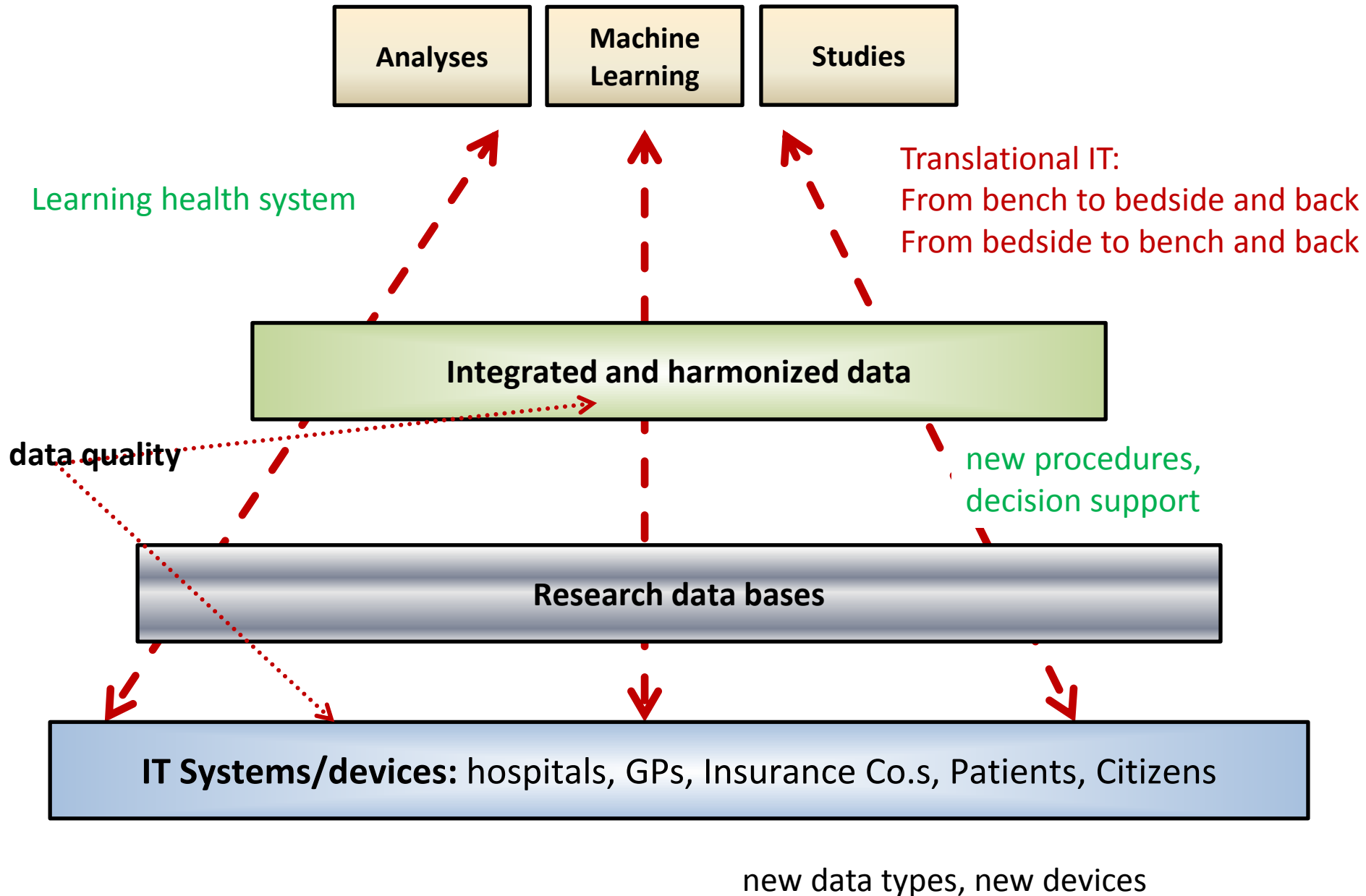
existing as well as new data types: genetics, imaging, ...

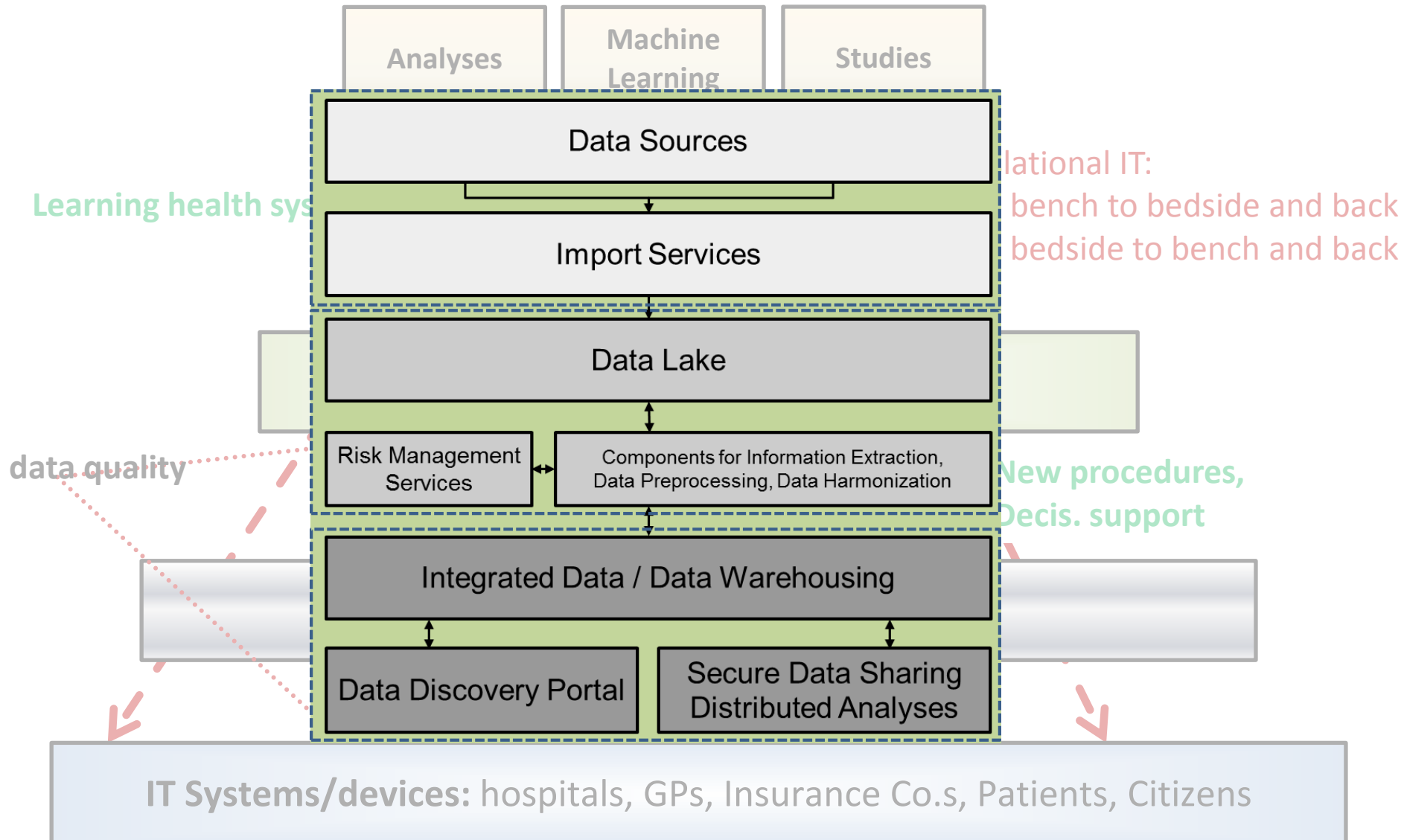
new and traditionally separate sources: smartphones, insurance data

research based on health care data: learning health system

Focus on Integration of Research Data: combination increases depth and breadth

Central challenge: data protection





Multiple Sclerosis

Since 2010: existing follow-up data: texts, structured data, images

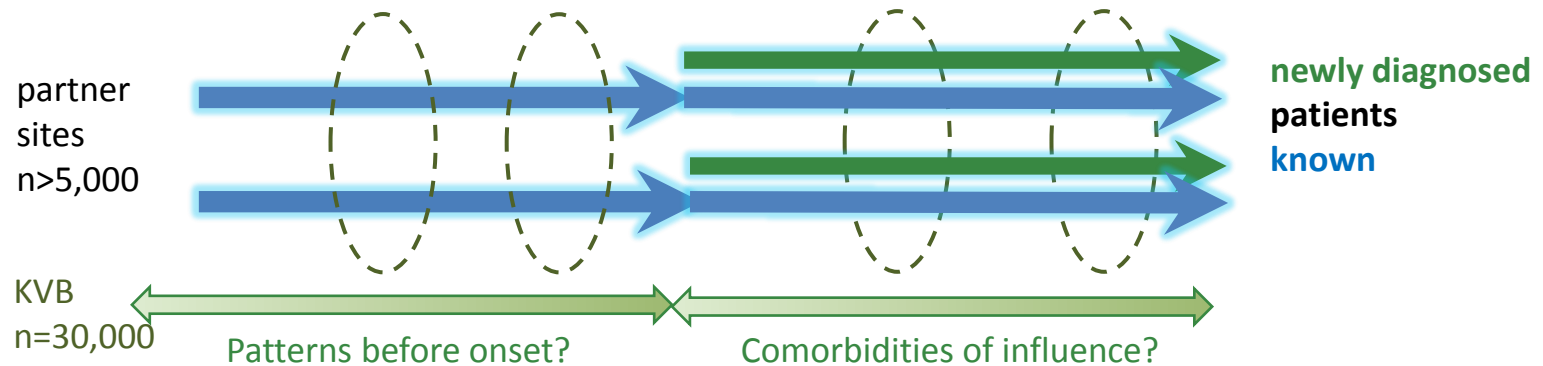
- distributed analyses: **functional hypotheses, algorithmic prognostic rules**

From 01/2018: further follow-up and newly diagnosed (500) patients

- imaging and structured data collection is standardized
- distributed analyses and evaluation of study
- **validation of rules, generation of further hypotheses**

KVB (assoc. statutory insurance physicians) database:

patterns before onset? comorbidities?





Algemein Schubereignisse **Immunmodulatorische Therapie** Antikörper Externa Laborbefunde Studien Biobank Visitedokumente

Immunmodulatorische Therapie

Beginn			Ende			Grund für Ende der Therapie	Compliance	
Tag	Monat	Jahr	Medikament:	Tag	Monat			Jahr
	2	2003	Glatirameracetat 20 mg 1xq1		6	2004	Non-Response	1 = bestens
	7	2004	Interferon - Beta 1a (Rebif 22pg)		7	2006	Non-Response	1 = bestens
	8	2006	Interferon - Beta 1a (Rebif 44 pg)	30	3	2007	schwanger	1 = bestens
16	5	2008	Natalizumab		8	2011	schwanger	1 = bestens
14	8	2012	Natalizumab	10	4	2014	JCV-Serologie/PCR posi...	1 = bestens
4	6	2014	Fingolimod					1 = bestens
	2	2012	IVIG		4	2012	Sonstige Gründe	1 = bestens

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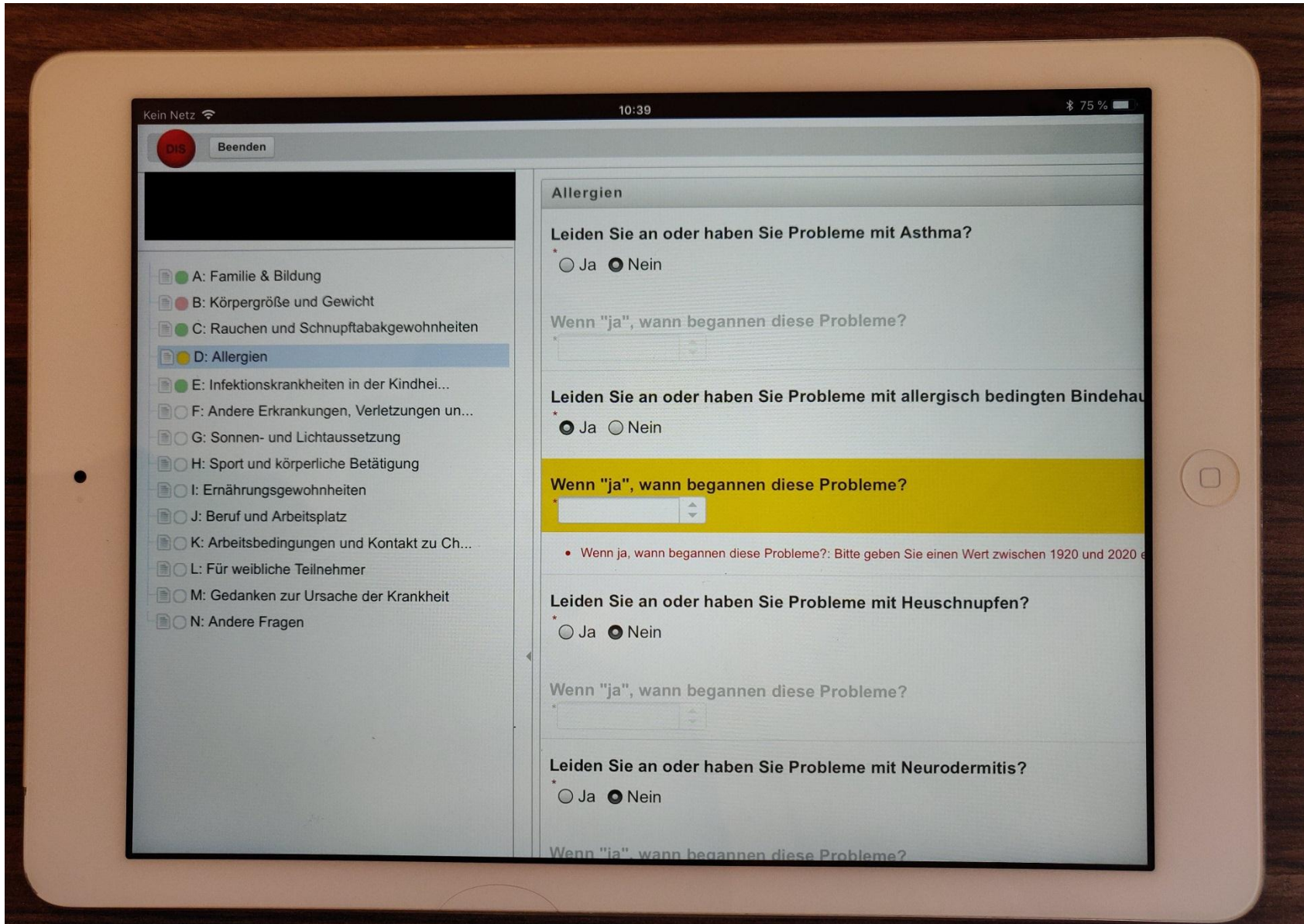
Schub

Tag	Monat	Jahr	Opti...	Opti...	Opti...	Son...	Par...	Gef...	Son...	Glei...	Blas...	Fat...	Dep...	Schi...	Neu...	Epil...	Extr...	Sex...	Dar...	Ataxie	Lhe...	Son...	Nich...	Sympto...
	3	2004	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	7	2004	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	7	2005	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	7	2006	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	3	2008	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	12	2011	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ja
	1	2012	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ja
	3	2012	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ja

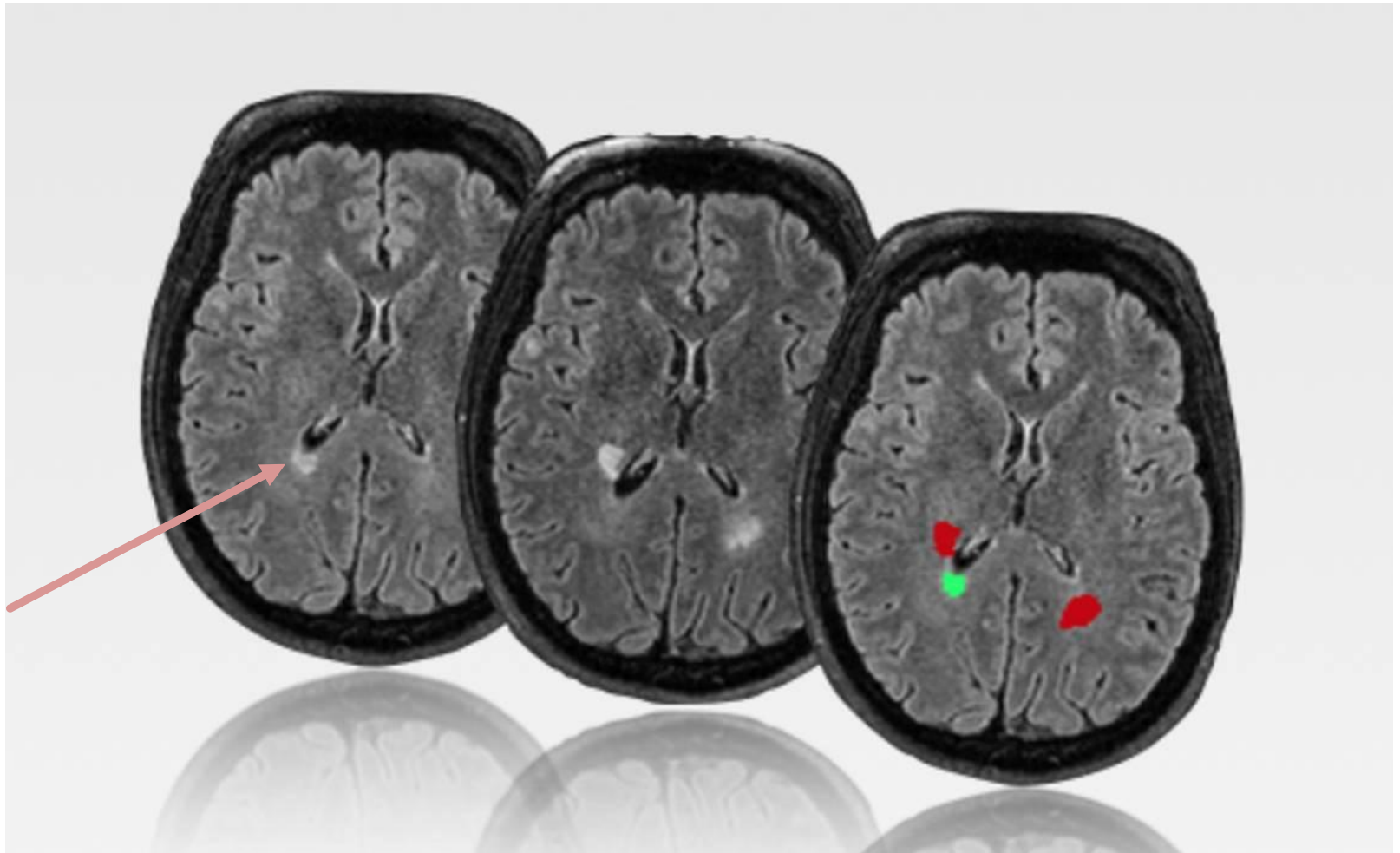
Schubtherapie Kortikosteroide

Tag	Monat	Jahr	Schubtherapie Kortikosteroide	ambulant/stationär	Verabreichung	Dosierung	Ausschleichen	Dauer iv. (Tage)	Dauer oral (Tage)
	3	2004	Präparat unbekannt	nicht bekannt	nicht beka...	andere Dosier...	nicht beka...		
	7	2004	Präparat unbekannt	nicht bekannt	nicht beka...	andere Dosier...	nicht beka...		
	8	2005	Präparat unbekannt	nicht bekannt	nicht beka...	andere Dosier...	nicht beka...		
	12	2011	Methylprednisolon	stationär	iv	1000 mg	nein	3	

Patient Reported Outcomes



Imaging: standardized procedures, image processing



Befund

Erfasste Höhen Kopf
 HWS
 BWS/LWS

Sequenzen 3D-Flair 3D-DIR isoT2 SWI DTI/DWI MPRage MPRage + KM Sonstiges

Bildqualität Gut
 Artefaktüberlagert aber verwertbar
 Nicht verwertbar, Wiederholung empfohlen

Läsionen Kopf [?] nativ
Anzahl spez. [?] 0
 Subkortikal

Spinal erfasst bis

Spinale Läsionen nachweisbar nativ

Spinale Läsionen aus VU bekannt Ja Nein

Sonstiges

Nebenbefunde Kopf

N. opticus rechts [?] Unauffällig Auffällig

N. opticus links Unauffällig Auffällig

PML-typische Veränderungen vorhanden [?] Ja Nein

Liquorsystem altersentsprechend unauffällig Ja Nein

Hirnatrophie visuell vorhanden [?] Ja Nein

Mark-Rinden-Differenzierung erhalten Ja Nein

Sella- und Mastoidregion unauffällig Ja Nein

Orbita symmetrisch Ja Nein

NNH frei Ja Nein

Sonstiges

Structured Reporting MRI

Provided by
Dr. J. Kirschke

Many Thanks to All Members of DIFUTURE!

Day 2

see presentations