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Alt

Computerized Clinical Decision Support Systems CDSS

Computerisierte klinische Unterstützungssysteme

MEDIZINISCHE
UNIVERSITÄT
WIEN

Brauch’ ma des…?

Brauch’ ma des…?

Wofür?

Brauch' ma des…?

Wofür?

Welche Effekte?

„Ja, dürfen's denn des?“

Kaiser Ferdinand I; Gossip

Quelle: Wikipedia

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Recherche nach Evidenz


physician
decision-support
computer-assisted
support
prescribing
Drug-therapy
order
systems
Medical
prescriber
Therapy
Expert
decision-making
Computer
Reminder
Computerized
provider
Electronic
Decision
clinical
assisted
Diagnosis
Decision-support
Clinical
entry

PubMed

Review

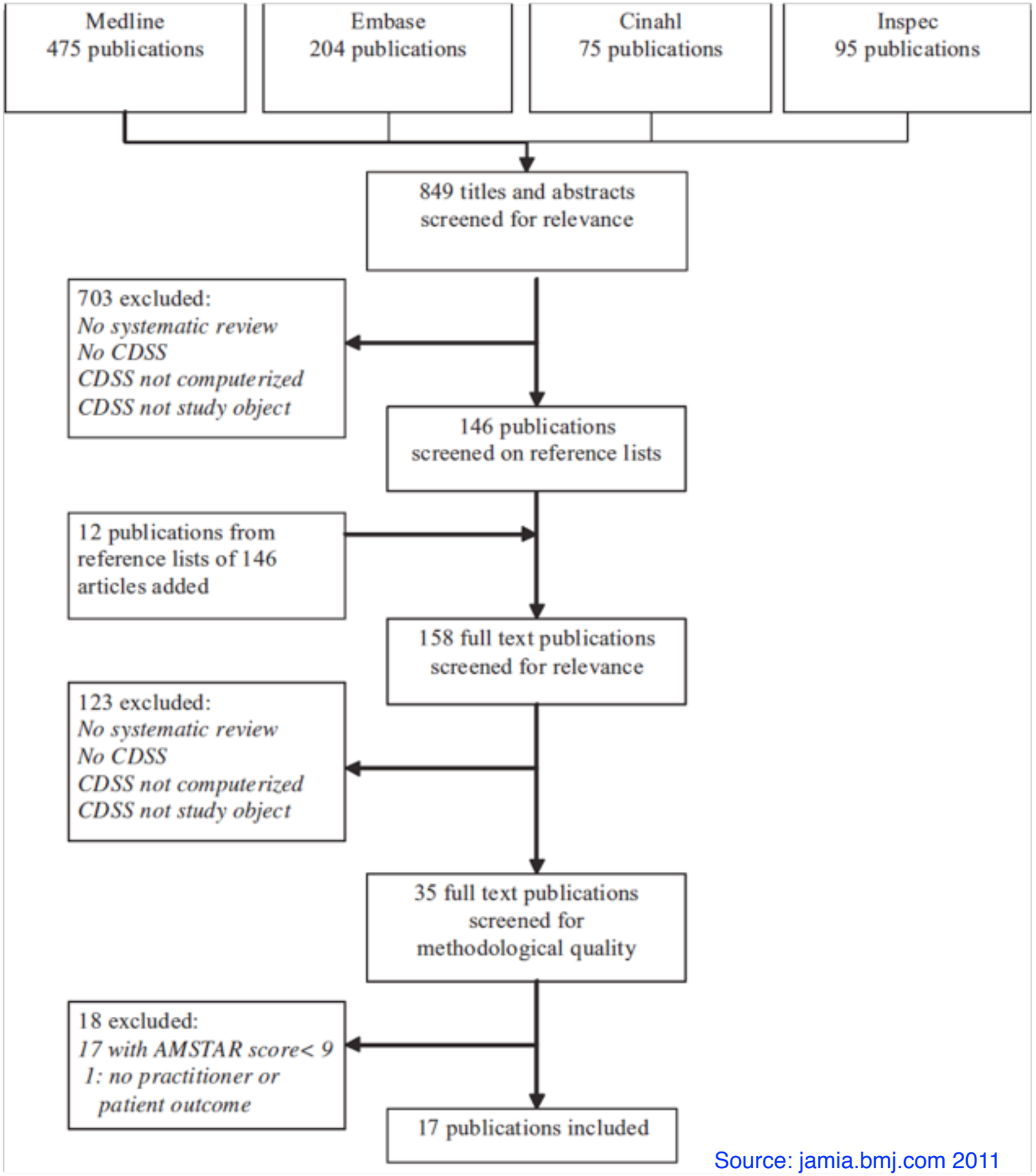
EDITOR'S CHOICE

Effects of clinical decision-support systems on practitioner performance and patient outcomes: a synthesis of high-quality systematic review findings

Monique W M Jaspers,[1] Marian Smeulers,[2] Hester Vermeulen,[2] Linda W Peute[1]

Source: jamia.bmj.com 2011

n=849



Source: jamia.bmj.com 2011

n=17

Table 4 Levels of evidence for clinical decision-support systems (CDSSs) impacting prac
therapy-specific and setting-/patient-population-specific systematic reviews

First author, year	CDSS focus	No of trials and subjects	Conclu
Disease-/therapy-specific systematic reviews			
Montgomery, 1998	Hypertension	Seven RCTs 11 962 patients, 91 practices Note: three unique studies	Practiti Prevent Patient
Chatellier, 1998	Anticoagulant therapy	Nine RCTs 1336 patients	Practiti Drug p Patient
Balas, 2004	Diabetes care	44 RCTs, 31 CDSS focused 6109 patients	Practiti Prevent Patient
Liu, 2006	Acute abdominal pain	One RCT 5193 patients	Practiti Care m Patient
Sanders, 2006	Asthma care	18 RCTs, three uncontrolled trials nine CDSS focused 5757 patients	Practiti Prevent Patient Prevent
Setting/patient-population			
Yourman, 2008	Medication prescribing adults ≥60 years	Five RCTs, one pre-/poststudy, one cohort study, three interrupted time series	Practiti Drug p Patient
Tan, 2009	Effects of CDSS on neonatal care	Three RCTs 282 patients, 27 health professionals	Practiti Drug p

Source: jamia.bmj.com 2011

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Source: jamia.bmj.com 2011

Conclusions by Jaspers et al.

Source: jamia.bmj.com 2011

Conclusions by Jaspers et al.

Few studies have found any benefits on patient outcomes

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Conclusions by Jaspers et al.

Few studies have found any benefits on patient outcomes

There is significant evidence that CDSS can positively impact healthcare providers' performance with drug ordering and preventive care reminder systems

Source: jamia.bmj.com 2011

Conclusions by Jaspers et al.

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Few studies have found any benefits on patient outcomes

There is significant evidence that CDSS can positively impact healthcare providers' performance with drug ordering and preventive care reminder systems

These outcomes may be explained by the fact that these types of CDSS require a minimum of patient data...

Source: jamia.bmj.com 2011

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IT hat eine gesellschaftliche Revolution ausgelöst...

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IT hat eine gesellschaftliche Revolution ausgelöst...

Welchen Beitrag leistet IT zur Patientsicherheit?

IT-unterstützte Patientensicherheit

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In der Medizin passieren Fehler!

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Gartner Study on eHealth 2009

Source: http://www.se2009.eu/polopoly_fs/1.8227!menu/standard/file/eHealth%20for%20a%20Healthier%20Europe.pdf

Gartner Study 2009

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Source: http://www.ortivus.se/Documents/Pdf/Swedish-EU-Presidency-Report-eHealth-for-a-Healthier-Europe.pdf

Gartner Study 2009

- 5 million yearly outpatient prescription errors could be avoided...

Source: http://www.ortivus.se/Documents/Pdf/Swedish-EU-Presidency-Report-eHealth-for-a-Healthier-Europe.pdf

Gartner Study 2009

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Source: http://www.ortivus.se/Documents/Pdf/Swedish-EU-Presidency-Report-eHealth-for-a-Healthier-Europe.pdf

Gartner Study 2009

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- 100,000 yearly inpatient adverse drug events could be avoided... through Computerised Physician Order Entry and Clinical Decision Support.

This would in turn free up 700,000 bed-days yearly, ...almost €300 million

Source: http://www.ortivus.se/Documents/Pdf/Swedish-EU-Presidency-Report-eHealth-for-a-Healthier-Europe.pdf

Gartner Study 2009

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Source: http://www.ortivus.se/Documents/Pdf/Swedish-EU-Presidency-Report-eHealth-for-a-Healthier-Europe.pdf

Gartner Study 2009

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9 million bed-days yearly could be freed up through the use of Computer-Based Patient Records, ...€3,7 billion.

Source: http://www.ortivus.se/Documents/Pdf/Swedish-EU-Presidency-Report-eHealth-for-a-Healthier-Europe.pdf

Patientsicherheit - Patient Safety

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Evidenzbasierte Gesundheitsversorgung

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Evidenzbasierte Gesundheitsversorgung

Reduziertes Risiko der Patienten

Weitere Qualitätsparameter

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Weitere Qualitätsparameter

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Quality of Care

Patient satisfaction, Effectiveness and efficiency of care

Weitere Qualitätsparameter

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Quality of Care

Patient satisfaction, Effectiveness and efficiency of care

Availability

equal access, optimized waiting times

Weitere Qualitätsparameter

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Quality of Care

Patient satisfaction, Effectiveness and efficiency of care

Availability

equal access, optimized waiting times

Empowerment

patient-centricity

Weitere Qualitätsparameter

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Quality of Care

Patient satisfaction, Effectiveness and efficiency of care

Availability

equal access, optimized waiting times

Empowerment

patient-centricity

Continuity of care

coordination among caregivers

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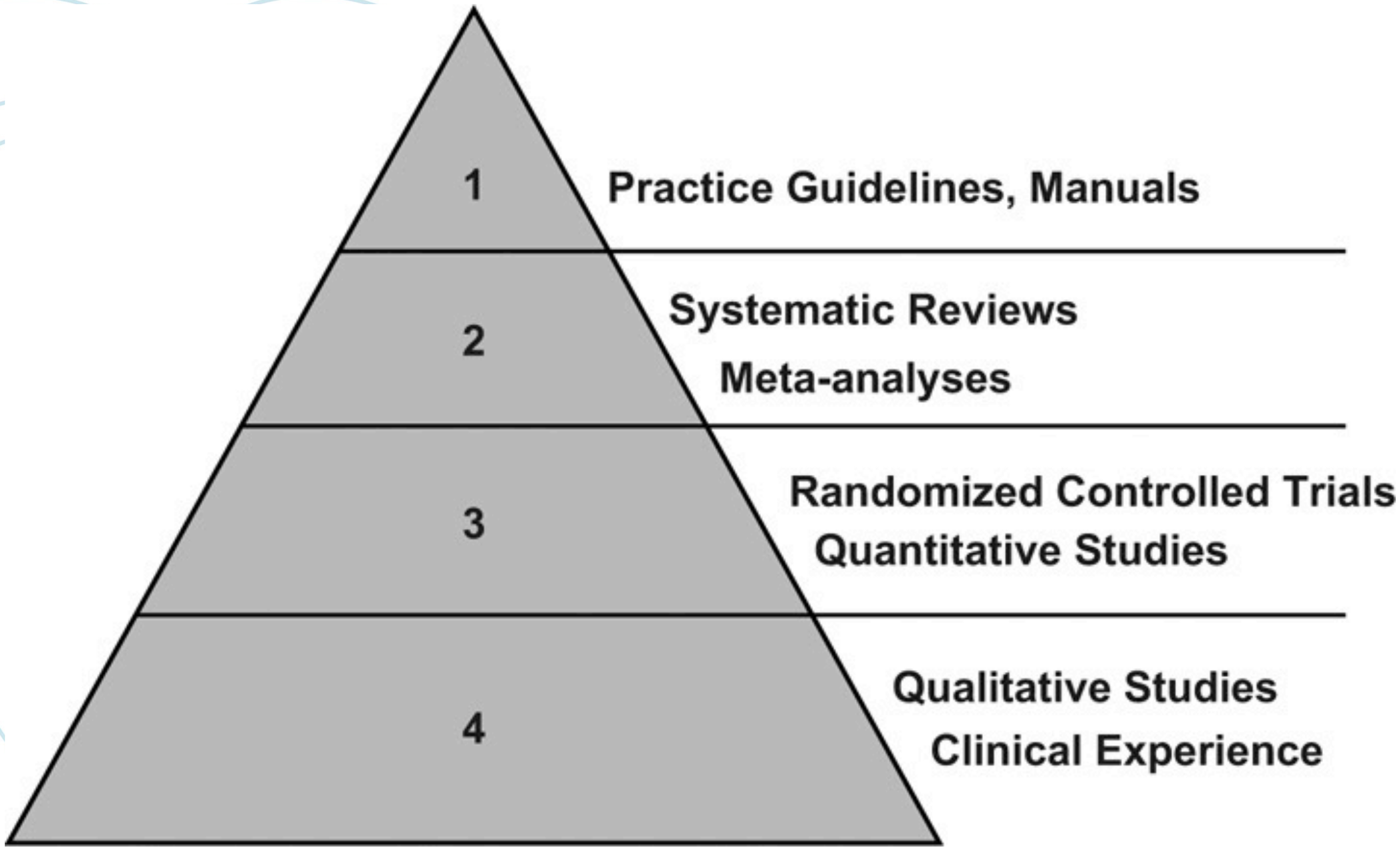
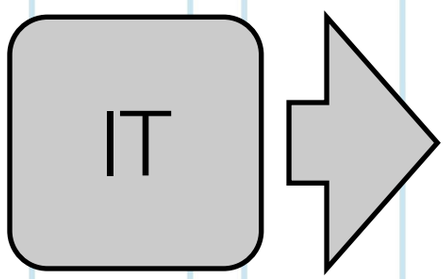
Existiert Evidenz zur Fehlerreduktion durch IT?

Evidenzlevel wissenschaftlicher Studien



Fehlerreduktion durch IT



Fehlerreduktion durch IT

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Fehler oder unerwünschtes Ereignis verhindern

IT

Fehlerreduktion durch IT

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Fehler oder unerwünschtes Ereignis verhindern

IT → Raschere Reaktion nach Eintritt des Fehlers

Fehlerreduktion durch IT

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IT

- Fehler oder unerwünschtes Ereignis verhindern
- Raschere Reaktion nach Eintritt des Fehlers
- Bessere Fehlerverfolgung und Erkennung

Werkzeuge mittels IT

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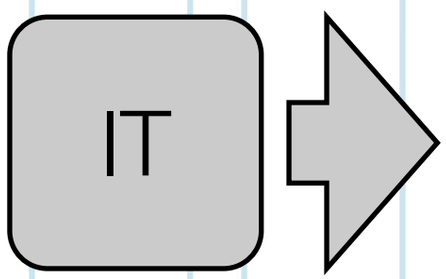

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Bessere Kommunikation

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Bessere Kommunikation

Bessere Verfügbarkeit d. Literatur

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- Bessere Verfügbarkeit d. Literatur
- Bessere Datendarstellung, Reliabilitäscheck

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- Bessere Verfügbarkeit d. Literatur
- Bessere Datendarstellung, Reliabilitäscheck
- Decision Support

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- Decision Support
- Telemedizin

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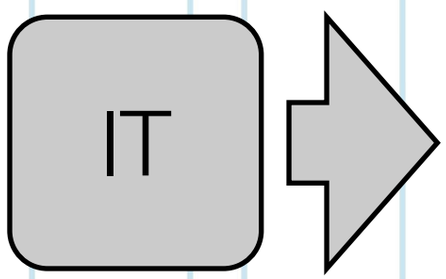

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Bessere Kommunikation

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IT unterstützte Kommunikation

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Petersen LA, Brennan TA, O'Neil AC, Cook EF, Lee TH. Does housestaff discontinuity of care increase the risk for preventable adverse events? Ann Intern Med 1994;

IT unterstützte Kommunikation

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J Perinatol. 2011 May;31(5):311-7. Epub 2011 Jan 27.
Impact of electronic medical record integration of a handoff tool on sign-out in a newborn intensive care unit.

IT unterstützte Kommunikation

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Signifikante Verbesserung der Übergabe durch IT support

IT unterstützte Kommunikation

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IT unterstützte Kommunikation

J Am Med Inform Assoc. 1999 Nov-Dec;6(6):512-22.

Improving response to critical laboratory results with automation: results of a randomized controlled trial.

IT unterstützte Kommunikation

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Improving response to critical laboratory results with automation: results of a randomized controlled trial.

The intervention group had a 38% shorter median time interval until an appropriate treatment was ordered

IT unterstützte Kommunikation

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Improving response to critical laboratory results with automation: results of a randomized controlled trial.

Signifikant kürzere Reaktionszeit

The intervention group had a 38% shorter median time interval until an appropriate treatment was ordered

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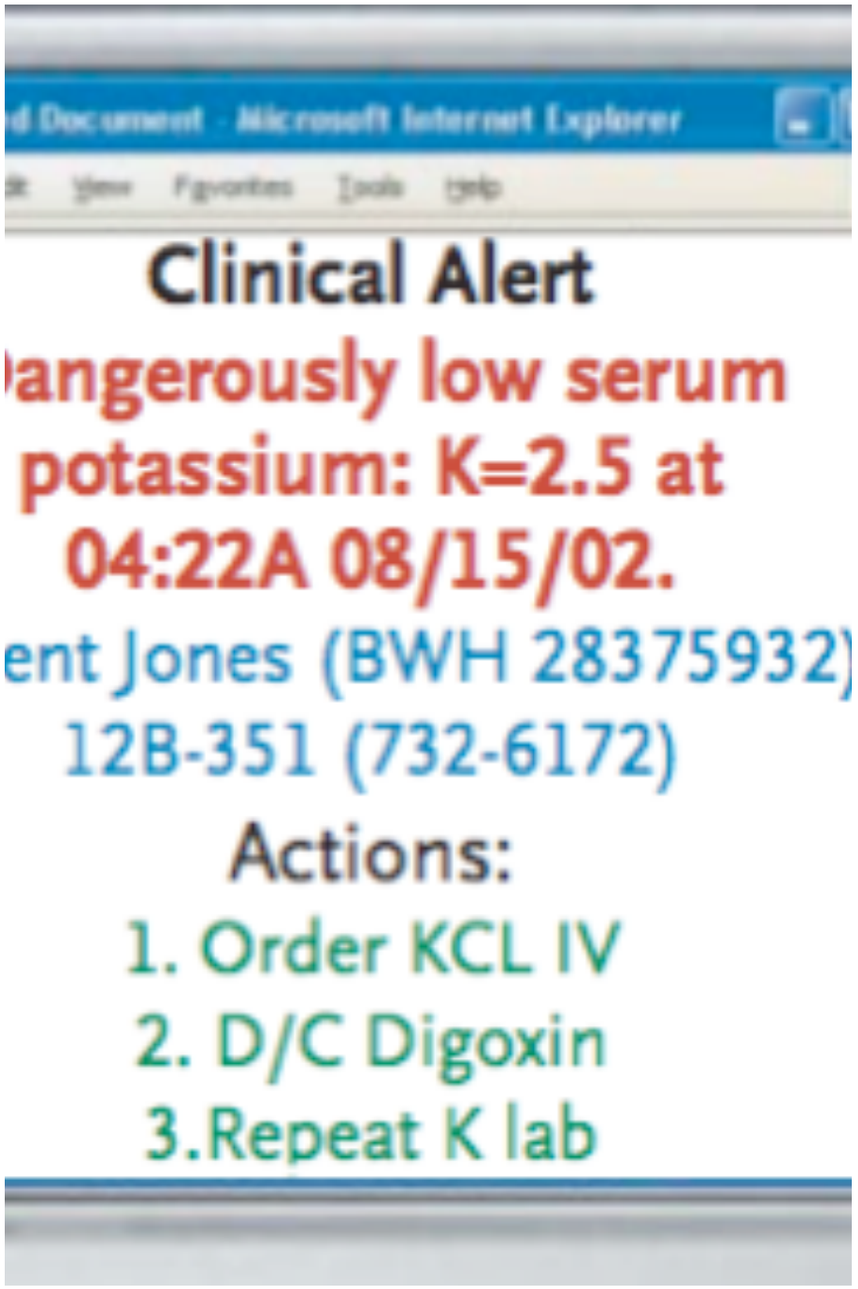
IT unterstützte Kommunikation

Wireless Technology



n engl j med 348;25 www.nejm.org june 19, 2003

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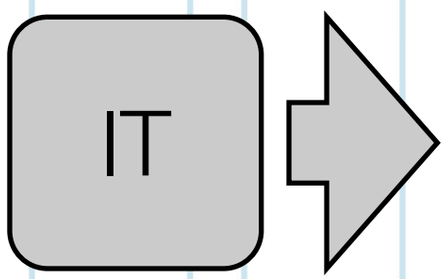

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IT

Bessere Kommunikation

Bessere Datendarstellung, Reliabilitäscheck

Decision Support

Werkzeuge mittels IT

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IT

- Bessere Kommunikation
- Bessere Verfügbarkeit d. Literatur
- Bessere Datendarstellung, Reliabilitäscheck
- Decision Support
- Telemedizin

Errors in Medication Management

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> 44.000 Fehler in einem 735 Betten Krankenhaus mit 6 Mill. verordneten Dosen pro Jahr

Cina JL, Gandhi TK, Churchill W, Fanikos J, McCrea M, Mitton P, Rothschild JM, Featherstone E, Keohane C, Bates DW, Poon EG. How many hospital pharmacy medication dispensing errors go undetected? Jt Comm J Qual Patient Saf 2006; 32: 73–80.

Errors in Medication Management

MEDICAL UNIVERSITY OF VIENNA

55% - 83% Reduktion von Medikationsfehlern durch elektronische Systeme mit Entscheidungsunterstützung

1. Lesar TS, Briceland L, Stein DS. Factors related to errors in medication prescribing. JAMA 1997; 277: 312–7.
2. Bates DW, Leape LL, Cullen DJ, Laird N, Petersen LA, Teich JM, Burdick E, Hickey M, Kleefield S, Shea B, Vander Vliet M, Seger DL. Effect of computerized physician order entry and a team intervention on prevention of serious medication errors. JAMA 1998; 280: 1311–6.

Medication management

Stage	True error rate %	Relevant IT system
Prescription	22	CPOE + decision support
Transcription	11	Automated transcription
Dispensing	10	Dispensing robots
Administration	51	Electronic medication administration

Drug Alert

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Clinical Application Suite (4.3.42) Thursday Aug 15, 2002 5:45 PM You are logged in as: Physician 1

Select pt | PATIENT 1 | BWH 11489879 | 42y M | Pt Details

Drug Warning(s) Found — Active Pt: PATIENT 1

Orders | LMR | Results | Handbook | Phone Dir | Help | Feedback | Exit

Active App: ORDERS

DRUG WARNING(S)

Current Order:

NAFCILLIN IV

Warning(s):

Status	Order
New Order	Allergy to : Penicillins Reaction: Anaphylaxis

Message:

Reaction: Anaphylaxis. The patient has a DEFINITE sensitivity to NAFCILLIN.

Keep (override) order | Cancel (D/C) order

Use mouse or arrow keys to select an Order. Alt-K to Keep (override) order. Alt-C to cancel.

Start | Clinical Application Suite (... | 5:49 PM

Physician order entry systems

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Journal of the American Medical Informatics Association Volume 14 Number 1 Jan / Feb 2007

Review Paper ■

Medication-related Clinical Decision Support in Computerized Provider Order Entry Systems: A Review

Gilad J. Kuperman, MD, PhD, Anne Bobb, RPh, Thomas H. Payne, MD, Anthony J. Avery, MB, CHB, DM, Tejal K. Gandhi, MD, MPH, Gerard Burns, MD, MBA, David C. Classen, MD, MS, David W. Bates, MD, MSc

...clinicians accepted 77% of such warnings as appropriate

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SYSTEMATIC REVIEW Open Access

Computerized clinical decision support systems for drug prescribing and management: A decision-maker-researcher partnership systematic review

Brian J Hemens[1], Anne Holbrook[2,3,4], Marita Tonkin[4], Jean A Mackay[1], Lorraine Weise-Kelly[1], Tamara Navarro[1], Nancy L Wilczynski[1] and R Brian Haynes[1,2,3*], for the CCDSS Systematic Review Team

Conclusions

CCDSSs inconsistently improved process of care measures and seldom improved patient outcomes. Lack of clear patient benefit and lack of data on harms and costs preclude a recommendati

Hemens et al. Implementation Science 2011, 6:89

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Hemens et al. Implementation Science 2011, 6:89

Conclusions

CCDSSs inconsistently improved process of care measures and seldom improved patient outcomes.

Lack of clear patient benefit and lack of data on harms and costs preclude a recommendation to adopt CCDSSs for drug therapy management.

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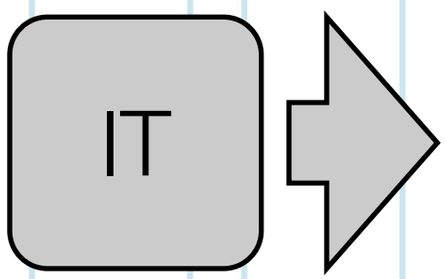

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Bessere Kommunikation

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Bessere Verfügbarkeit d. Literatur

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Bessere Datendarstellung, Reliabilitätscheck

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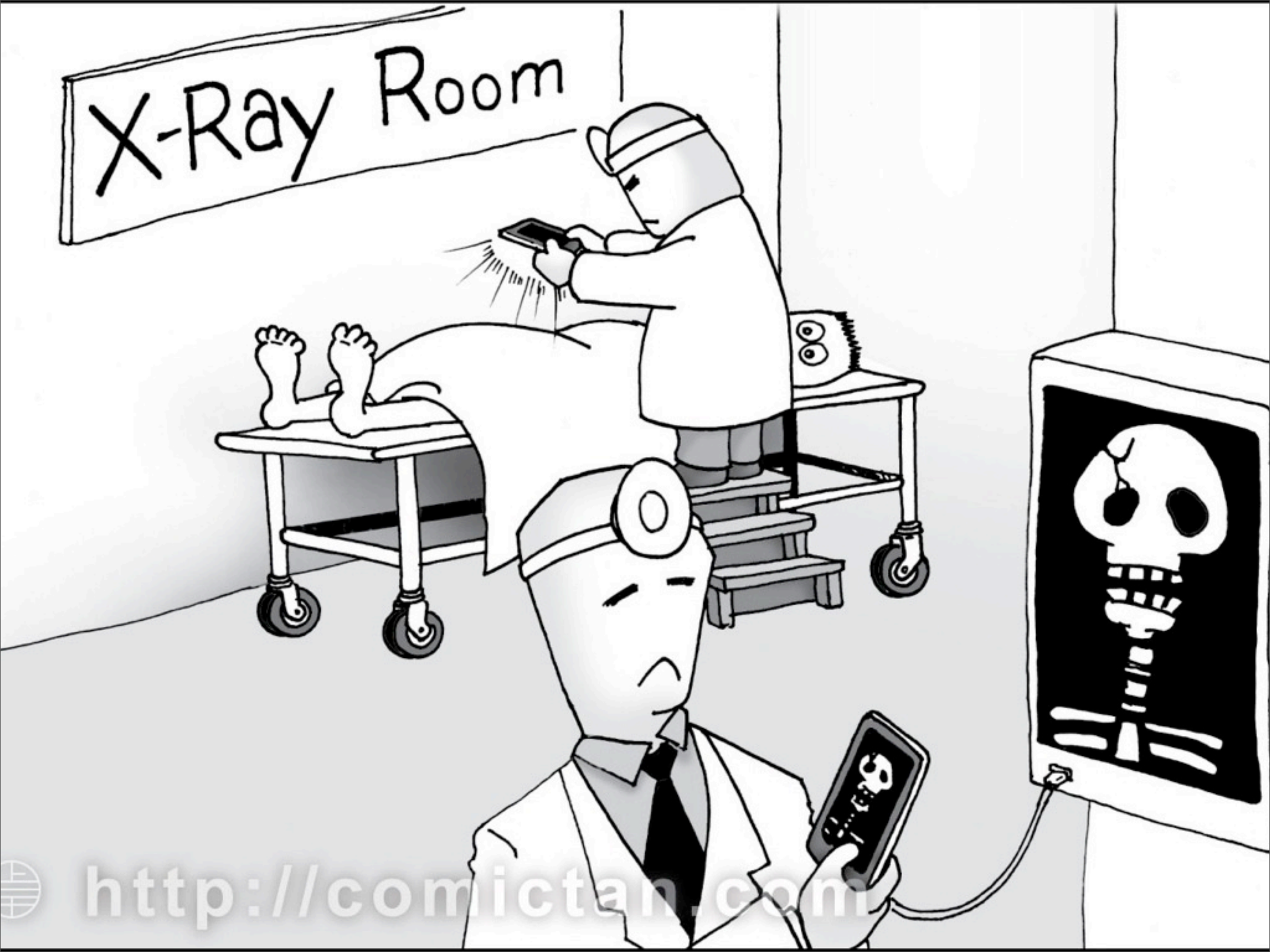

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Smartphones et al. ?

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Smartphones et al. ?

Bis dato wenig Evidenz

Electronic Alerts Versus On-Demand Decision Support to Improve Dyslipidemia Treatment

A Cluster Randomized Controlled Trial

Jacobus T. van Wyk, MD, PhD, MSc, BComm; Marc A.M. van Wijk, MD, PhD; Miriam C.J.M. Sturkenboom, PharmD, PhD, MSc; Mees Mosseveld, MSc; Peter W. Moorman, MD, PhD; Johan van der Lei, MD, PhD

Background—Indirect evidence shows that alerting users with clinical decision support systems seems to change behavior more than requiring users to actively initiate the system. However, randomized trials comparing these methods in a clinical setting are lacking. We studied the effect of both alerting and on-demand decision support with respect to screening and treatment of dyslipidemia based on the guidelines of the Dutch College of General Practitioners.

Methods and Results—In a clustered randomized trial design, 38 Dutch general practices (77 physicians) and 87 886 of their patients (39 433 men 18 to 70 years of age and 48 453 women 18 to 75 years of age) who used the ELIAS electronic health record participated. Each practice was assigned to receive alerts, on-demand support, or no intervention. We measured the percentage of patients screened and treated after 12 months of follow-up. In the alerting group, 65% of the patients requiring screening were screened (relative risk versus control=1.76; 95% confidence interval, 1.41 to 2.20) compared with 35% of patients in the on-demand group (relative risk versus control=1.28; 95% confidence interval, 0.98 to 1.68) and 25% of patients in the control group. In the alerting group, 66% of patients requiring treatment were treated (relative risk versus control=1.40; 95% confidence interval, 1.15 to 1.70) compared with 40% of patients (relative risk versus control=1.19; 95% confidence interval, 0.94 to 1.50) in the on-demand group and 36% of patients in the control group.

Conclusion—The alerting version of the clinical decision support systems significantly improved screening and treatment performance for dyslipidemia by general practitioners. (***Circulation*. 2008;117:371-378.**)

LESSON OF THE WEEK

Information technology cannot guarantee patient safety

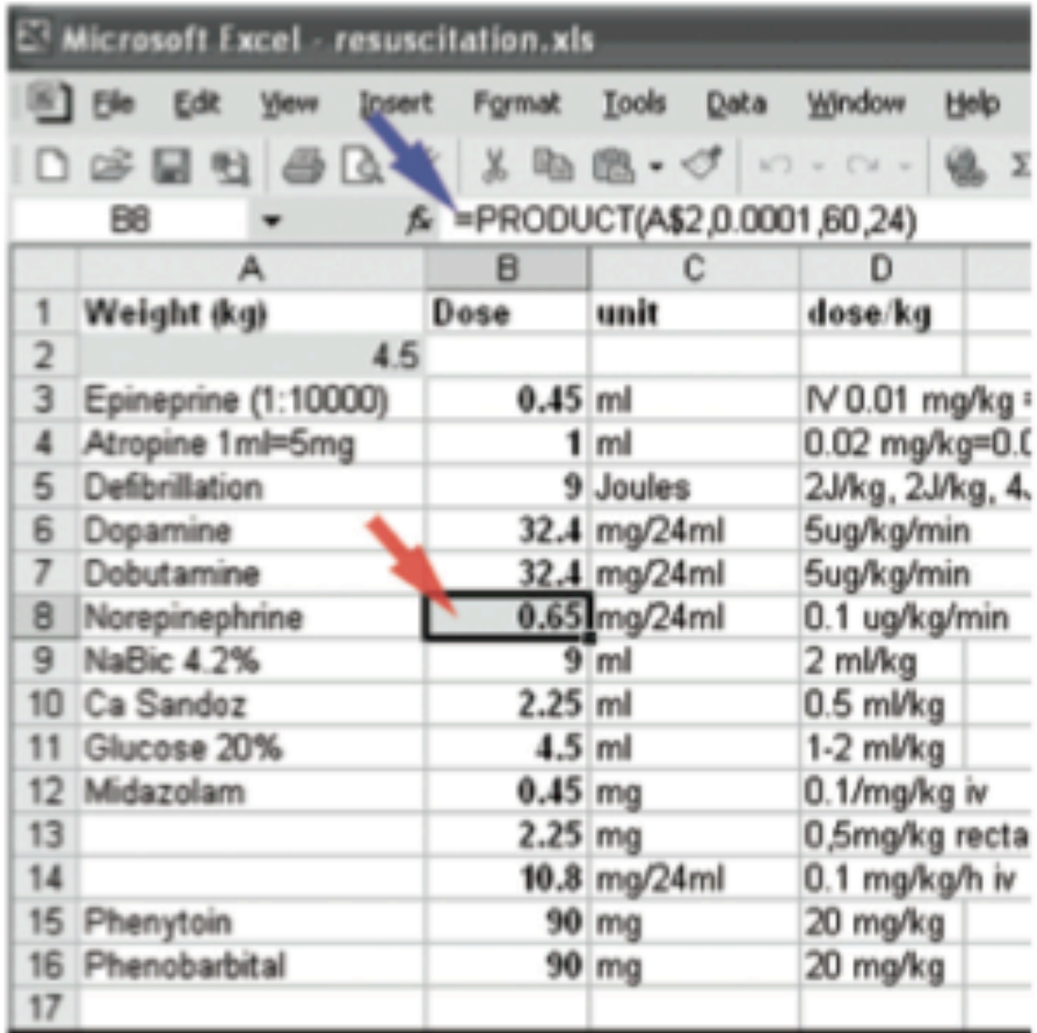
Saskia N de Wildt,[1] Ron Verzijden,[2] John N van den Anker[3], Matthijs de Hoog[1]

Human error and software inadequacy can combine to make drug doses calculated on handheld computers unreliable

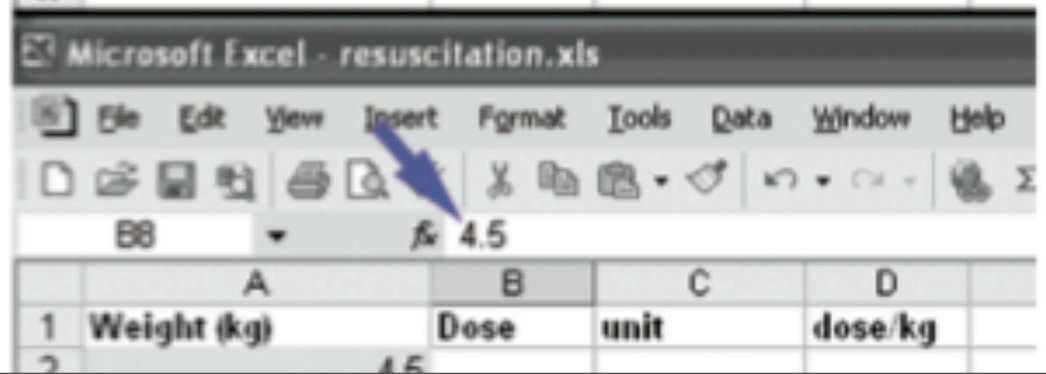
Information technology tools, such as those used to calculate drug doses and infusion rates, can help reduce adverse events and prevent errors.[1] Drug dosages for children are usually calculated on the basis of weight. Calculations are especially prone to error and delay in crisis situations such as resuscitation. In such settings, computer based tools may improve clinical care, although human error can still occur, as illustrated by this case report.

Case report

A 3 month old infant who arrived at the emergency department of a small regional hospital had clinical signs of meningococcal sepsis with petechiae, purpura, and shock. The infant was subsequently transferred to our paediatric intensive care unit. During transfer the patient was given infusions of dobutamine and noradrenaline by the transferring intensivist. The con-



	A	B	C	D
1	Weight (kg)	Dose	unit	dose/kg
2	4.5			
3	Epineprine (1:10000)	0.45	ml	IV 0.01 mg/kg =
4	Atropine 1ml=5mg	1	ml	0.02 mg/kg=0.(
5	Defibrillation	9	Joules	2J/kg, 2J/kg, 4,
6	Dopamine	32.4	mg/24ml	5ug/kg/min
7	Dobutamine	32.4	mg/24ml	5ug/kg/min
8	Norepinephrine	0.65	mg/24ml	0.1 ug/kg/min
9	NaBic 4.2%	9	ml	2 ml/kg
10	Ca Sandoz	2.25	ml	0.5 ml/kg
11	Glucose 20%	4.5	ml	1-2 ml/kg
12	Midazolam	0.45	mg	0.1/mg/kg iv
13		2.25	mg	0,5mg/kg recta
14		10.8	mg/24ml	0.1 mg/kg/h iv
15	Phenytoin	90	mg	20 mg/kg
16	Phenobarbital	90	mg	20 mg/kg
17				



	A	B	C	D
1	Weight (kg)	Dose	unit	dose/kg
2	4.5			

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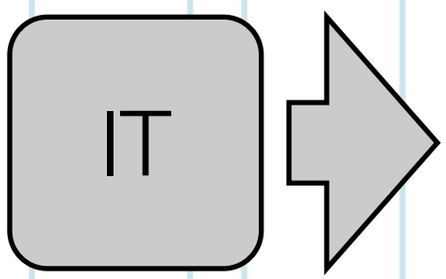

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Bessere Kommunikation

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Bessere Kommunikation

Bessere Verfügbarkeit d. Literatur

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Bessere Kommunikation

Bessere Verfügbarkeit d. Literatur

IT → Bessere Datendarstellung, Reliabilitätscheck

Werkzeuge mittels IT

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IT

Bessere Kommunikation

Bessere Verfügbarkeit d. Literatur

Bessere Datendarstellung, Reliabilitäscheck

Decision Support

Werkzeuge mittels IT

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- Bessere Verfügbarkeit d. Literatur
- **Bessere Datendarstellung, Reliabilitäscheck**
- Decision Support
- Telemedizin

Bessere Datendarstellung, Check Systeme

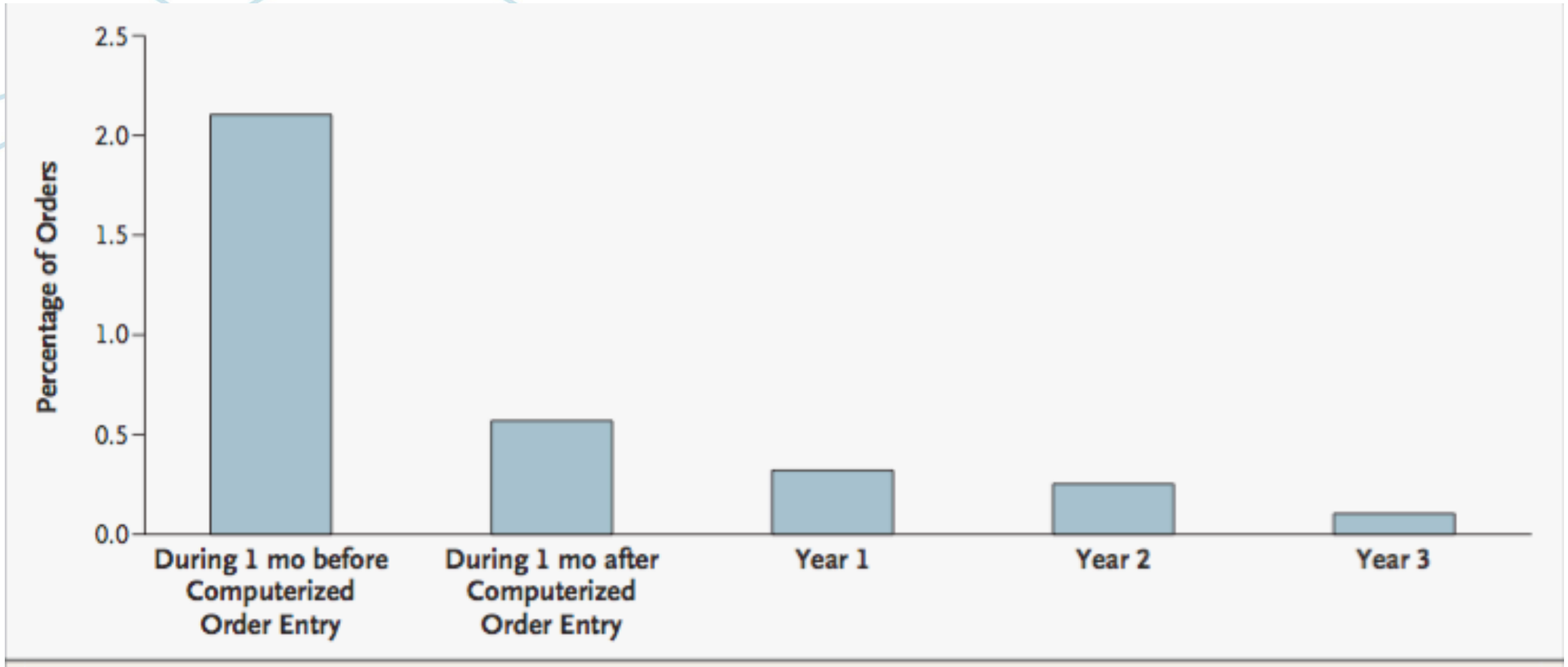

Figure 2. Percentage of Medication Orders with Doses Exceeding the Maximum.

Data are the percentage of orders for doses exceeding the medication-specific recommended maximal dose according to year, after the implementation of a computerized system for order entry by physicians.[25] The application suggested a default dose and displayed only potentially appropriate options, but it did not check for overly high doses. Even so, the percentage of orders exceeding the recommended safe maximum fell by more than 80 percent over a three-year period.

Sittig DF, Stead WW. Computer-based physician order entry: the state of the art. J Am Med Inform Assoc 1994;1:108-23.

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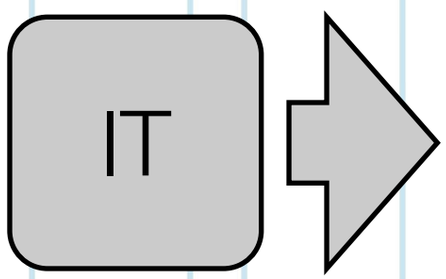

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Bessere Kommunikation

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Bessere Kommunikation

Bessere Verfügbarkeit d. Literatur

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- Decision Support
- Telemedizin

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An eigenen Beispielen


Allgemeines Krankenhaus der Stadt Wien
–Universitätskliniken–

IT-Projekt AKIM

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IT-Projekt AKIM

MEDICAL UNIVERSITY OF VIENNA

IT-Projekt AKIM

MEDICAL UNIVERSITY OF VIENNA

AKH Die menschliche Größe

AKIM Routine

MEDIZINISCHE UNIVERSITÄT WIEN

AKIM Wissenschaft

IT-Projekt AKIM

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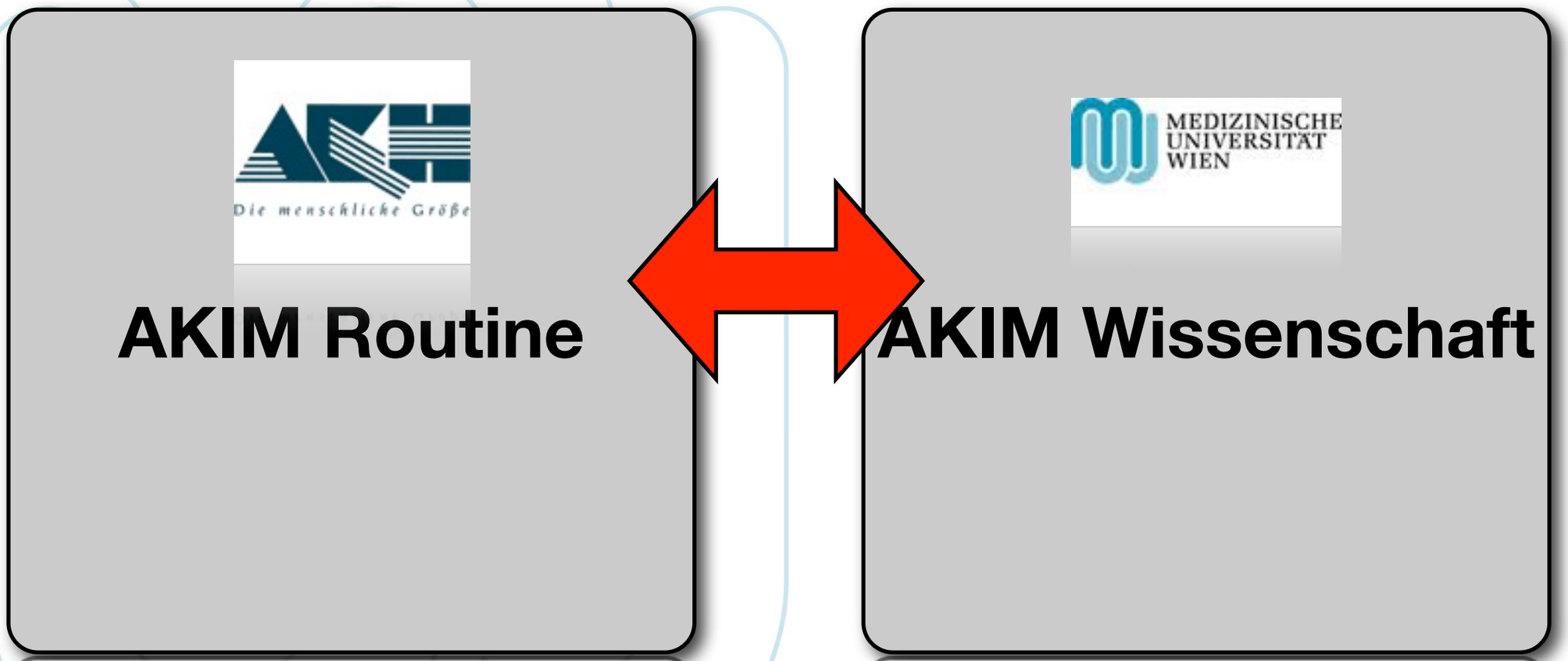

IT-Projekt AKIM

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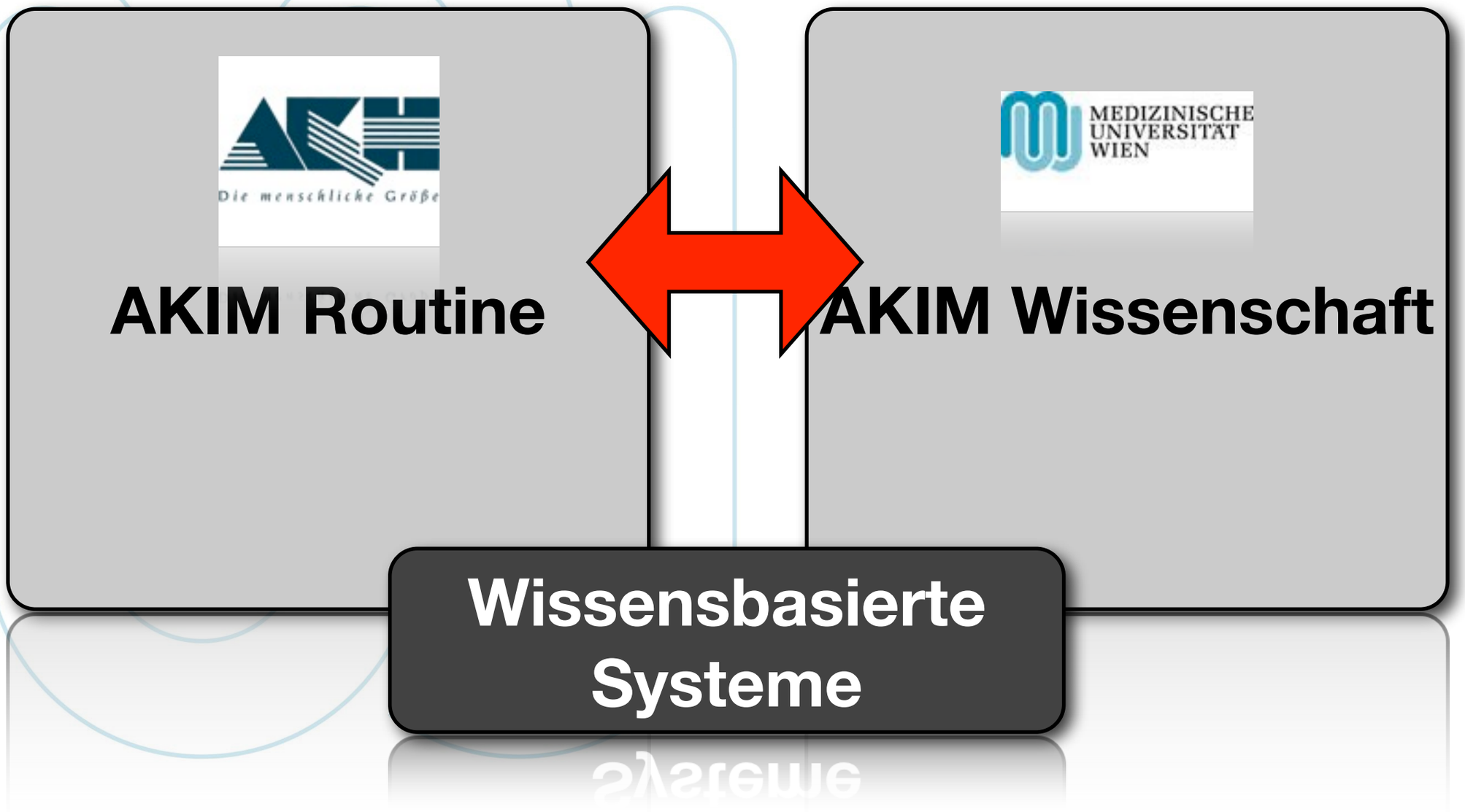

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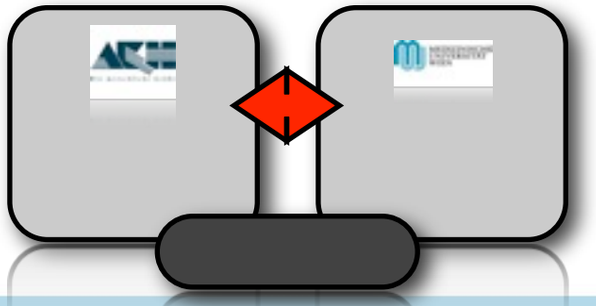
Mehr Sicherheit bei onkologischer Chemotherapie

Gefördert durch den Medizinisch-Wissenschaftlichen Fonds des Bürgermeisters der Bundeshauptstadt Wien

Projekt # 10097

Computerunterstützte Checklisten im Bereich der onkologischen Chemotherapie. Ein Beitrag zu Erhöhung der Prozessqualität und Patientinnensicherheit.

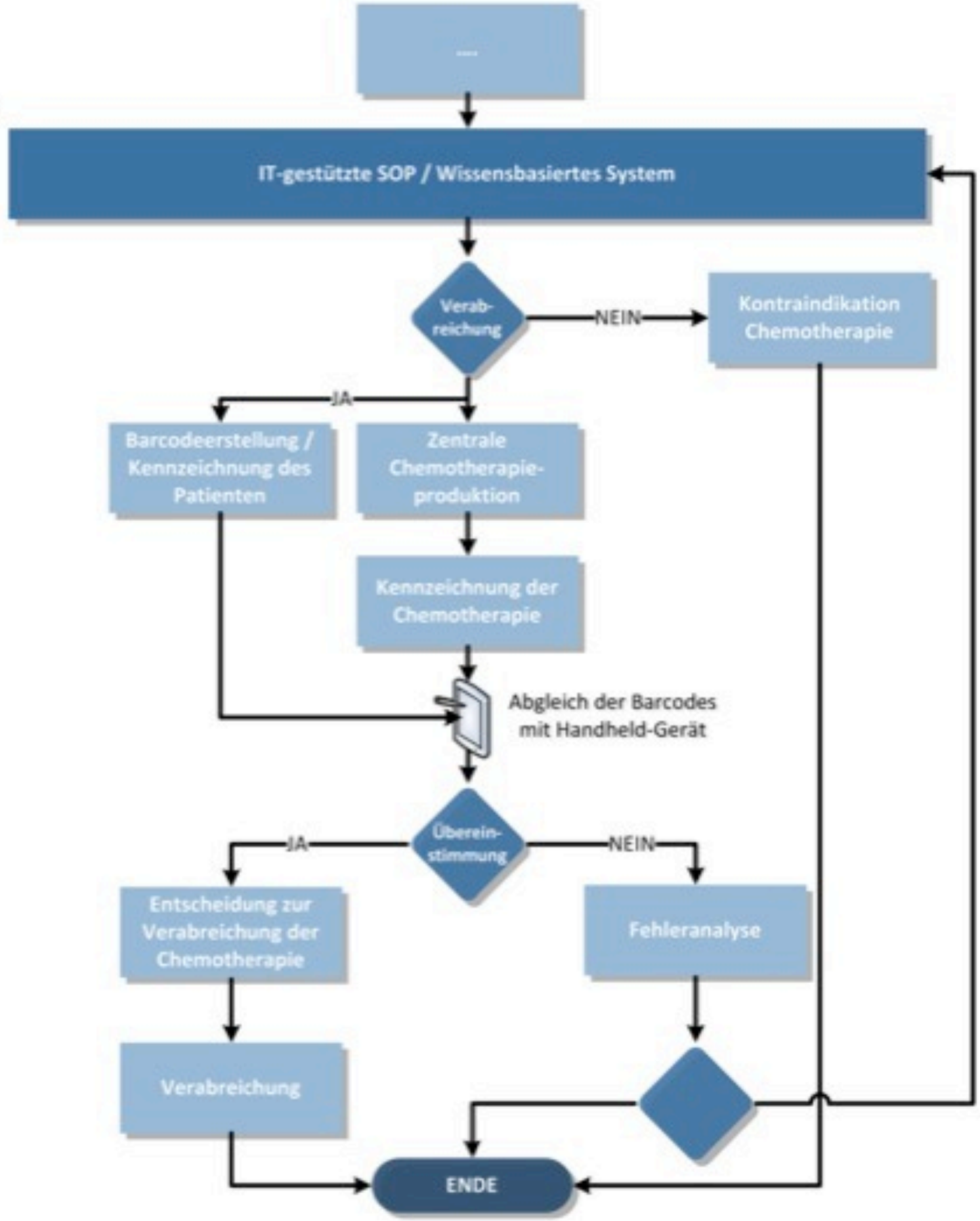


Medizinische Behandlungsfehler

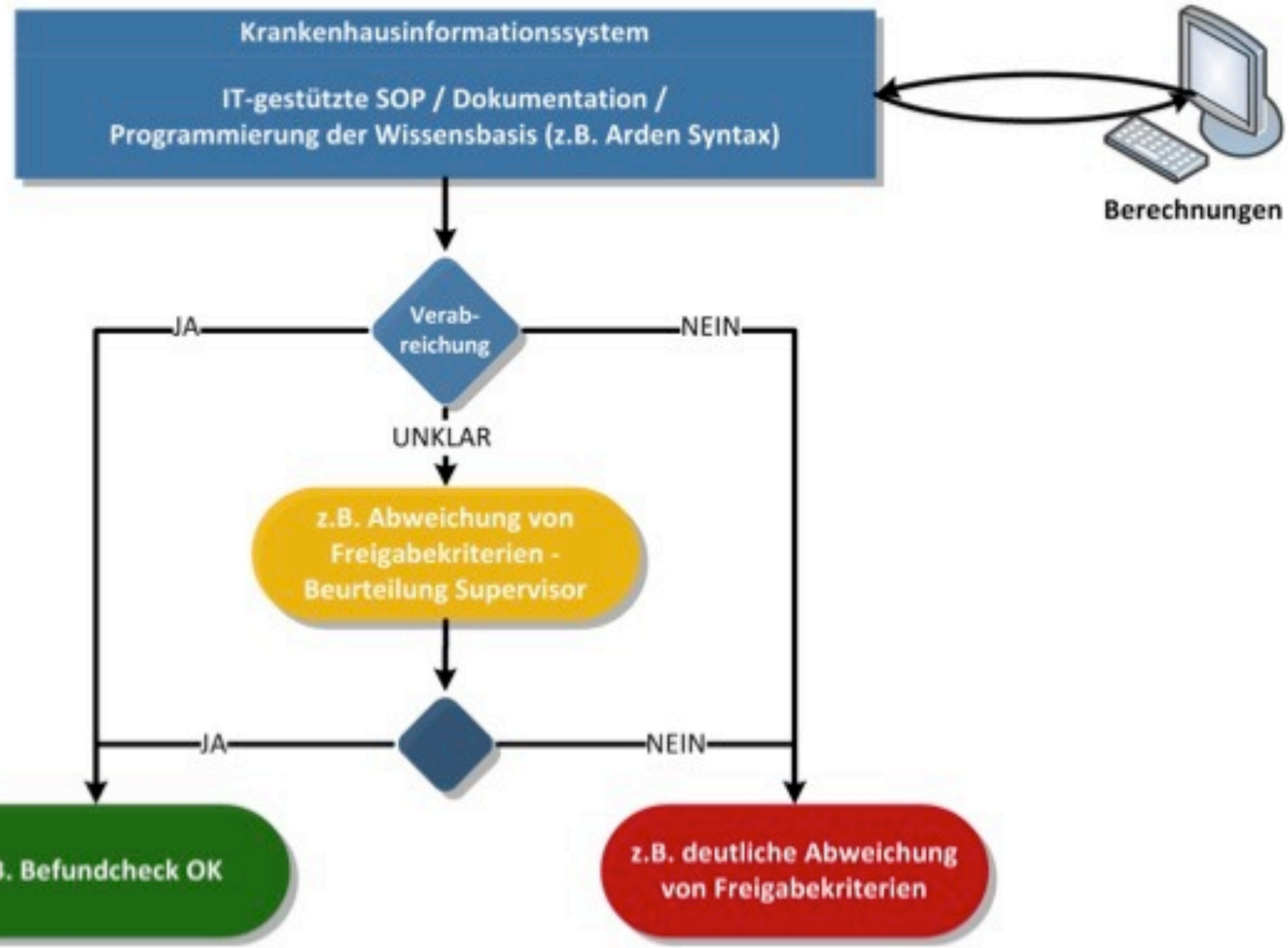
- exzessiver Anstieg der Morbidität, Mortalität, Kosten[1]
- USA: ca. 44.000 - 98.000 Menschen sterben jährlich aufgrund von Behandlungsfehlern[2]
- ca. 50 % dieser Fehler sind
- häufigste Ursache für medikationsfehlerinduzierte Todesfälle: Chemotherapeutika[3]
- bei ca. 4 % aller verabreichten Chemotherapien treten Fehler auf[4]
- ca. 50 % der vermeidbaren Arzneimittelschäden während Medikamentenverschreibung

[1]Ford, C. Study of Medication Errors on a Community Hospital Oncology Ward. Journal of Oncology Practice, 2006. 2(4): p. 149-154.
[2]Kawamoto, K. Improving clinical practice using clinical decision support systems: a systematic review of trials to identify features critical to success. BMJ, 2005. 330(7494): p. 765.
[3]Phillips, J. Retrospective analysis of mortalities associated with medication errors. Am J Health Syst Pharm, 2001. 58(19): p. 1835-41.
[4]Gandhi, T.K. Medication safety in the ambulatory chemotherapy setting. Cancer, 2005. 104(11): p. 2477-83.

Geplanter Workflow zur Verbesserung der Patientensicherheit



Workflow: Berechnung in der Wissensbasis



Dokument Bearbeiten Springen System Hilfe

SOP Dermatoonk. ändern: [redacted] Status: IA

Folgestatus Folgestatus

[redacted]

Fall/Aufenthalt | Druckadressaten | Dokumentstatus | Externe Ärzte | Kontaktdaten

Patient: Patlfr.: [redacted] **Bek./OE:** Station 17H

Fall: Gesamter Patient

Bewegung: Gesamter Patient

AKIM Viewer

Prä-Chemotherapie Checkliste

Verabreichung

Patientenaufklärung

Bestätigung zur Verabreichung

Allgemeines

Schema: SOP Nr. 2 - Dacarbazine 800mg - in klinischer Validierung

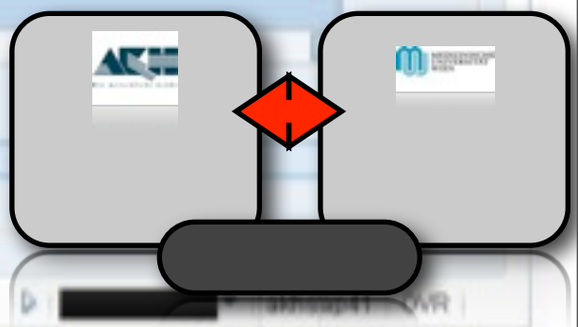
Prä-Chemotherapie Checkliste

Text	Bemerkung	04.05.2011	28.04.2011	14.04.2011
Verabreichungen			2	1
Labor			28.04.2011	14.04.2011
Blutbild				
Erythrozyten	> 4.0 T/l		4	4.5
Hämoglobin	> 12.0 g/dl		12,1	12.3
Leukozyten	> 3.0 G/l		3	2.8
Thrombozyten	> 100 G/l		105	98
Metaboliten				
Creatinin	< 1.2 mg/dl		1.2	1.3
Entzündungsparameter				
CRP	< 1 mg/dl		0,8	0.9
Allgemeinzustand				
ECOG State			1	1
Wissensbasiertes System		Prüfen	Prüfen	Prüfen
Empfehlung			Befundcheck OK	Beurteilung OA
Status				
Erklärung				
Sonstiges				
Bemerkung				
Freigabe				
Storno				

Risikoinformationen

Typ	Bezeichnung	Bemerkung

angelegt: 14.04.2011 09:57:21 freigegeben:



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Mehr Entscheidungssicherheit bei der Interpretation von Tumormarkern

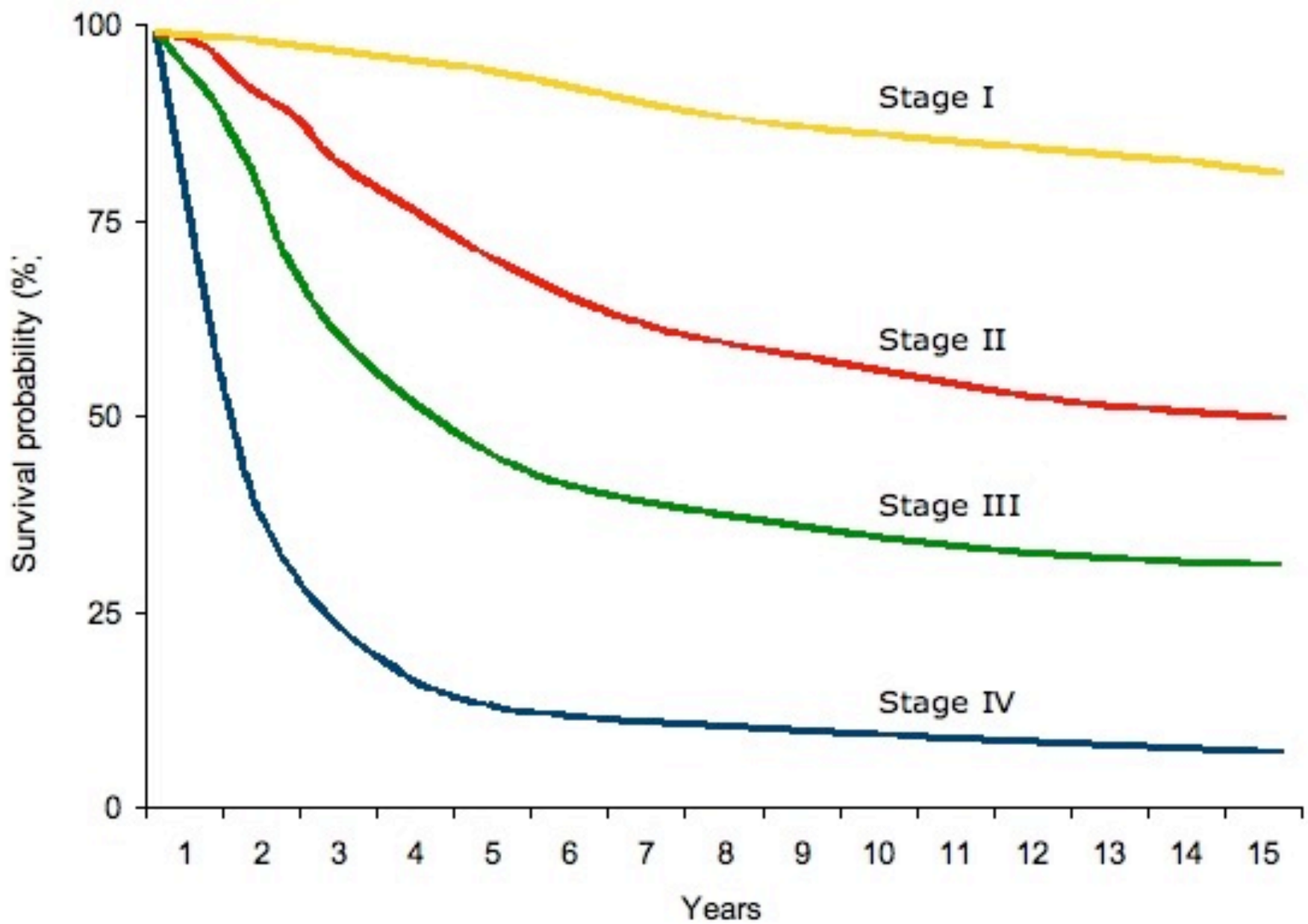
Ein wissensbasiertes System zur klinischen Entscheidungsunterstützung bei malignem Melanom – eine Pilotstudie während des Einsatzes unter Routinebedingungen

Scheibboeck Ch.[1,2], *Binder M.*[1]

[1]Univ.Klinik für Dermatologie, Abteilung für Allgemeine Dermatologie, Medizinische Universität Wien

[2]Technische Universität Wien, Fakultät für Informatik

Melanoma Survival according to Stage



2.4.1 T-Klassifikation

T	Dicke (mm)	Ulzerations-Status/Mitosen
Tis	nicht anwendbar	nicht anwendbar
T1	≤ 1.00	a: Nicht ulzeriert und Mitosen < 1/mm² b: Ulzeriert oder Mitosen ≥ 1/mm²
T2	1.01 – 2.00	a: Nicht ulzeriert b: Ulzeriert
T3	2.01 – 4.00	a: Nicht ulzeriert b: Ulzeriert
T4	> 4.00	a: Nicht ulzeriert b: Ulzeriert

Tabelle 4 - Erklärungskomponente T-Klassifikation

2.4.2 N-Klassifikation

N	Anzahl metastatischer Lymphknoten	Ausmaß der Belastung durch LK-Metastasen
N0	0	nicht anwendbar
N1	1	a: Mikrometastasen* b: Makrometastasen†
N2	2 - 3	a: Mikrometastasen* b: Makrometastasen† c: In-Transit-Metastasen/ Satelliten ohne Lymphknoten-Metastase
N3	≥4 Lymphknoten-Metastasen, Lymphknoten-Pakete oder Kombination von In-Transit- / Satelliten-Metastasen mit Lymphknoten-Metastasen	

Tabelle 5 - Erklärungskomponente N-Klassifikation

*Mikrometastasen werden nach Sentinel-Lymphknoten-Biopsie diagnostiziert
†Makrometastasen sind klinisch nachweisbare nodale Metastasen, die pathologisch bestätigt wurden.

2.4.3 M-Klassifikation

M	Lokalisation	Serum LDH
M0	Keine Fernmetastasen	nicht anwendbar
M1a	Fernmetastasen der Haut, subkutane oder nodale Metastase	Normal
M1b	Lungen-Metastase	Normal
M1c	Alle anderen visceralen Metastasen Jede Fernmetastase	Normal Erhöht

Tabelle 6 - Erklärungskomponente M-Klassifikation

Dokument Bearbeiten Springen Umfeld System Hilfe

MM AJCC anlegen: [redacted] Status: IA

[redacted]

Fall/Aufenthalt
Druckadressaten
Dokumentstatus
Externe Ärzte
Kontaktdaten

Patient: **PatIlr.:** [redacted] **Dok.OE:** Station 17H
Fall: **FallIlr.:** [redacted] **Fall-Art:** stationär
Aufn.: 07.03.2011
Hauptdiagnose: nicht erfasst
Bewegung: Gesamter Fall

Einrichtung: AKH Wien
Akt.OE: Station 17H

AKIM Viewer

AJCC Stadieneinteilung (Melanom)

Allgemeines

AJCC Stadieneinteilung (Melanom) - in klinischer Validierung

Datum der Untersuchung: 27.05.2011
Datum der Entfernung des Tumors: 12.04.2002

T-Klassifikation

Tumordicke [mm]: 1,00
Ulceration: n.a. ja nein
Mitoserate [Anzahl/mm²]: 02

N-Klassifikation

Anzahl metastasierter Lymphknoten: 00
- Micro
- Macro
- In-transit / Satelliten ohne metastsierte Knoten

M-Klassifikation

- nicht viscerale Metastasen
- Lungenmetastasen
- Viscerale Metastasen

Das Tumorstadium nach TNM ist:

T1bN0M0 (IB)

weiteres Procedere

- n.a.
- keine weiteren Maßnahmen
- Erneute Erhebung Tumormarker
- Bildgebende Diagnostik anfordern

Laborwerte

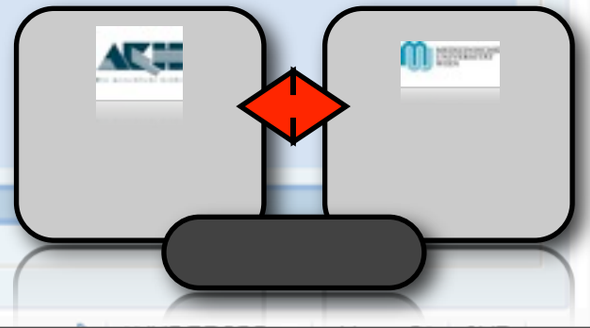
LDH [U/l]:	0147	von:	30.03.2011
MIA [ng/ml]:	9,00	von:	
S100ß [µg/l]:	0,40	von:	

Sonstiges

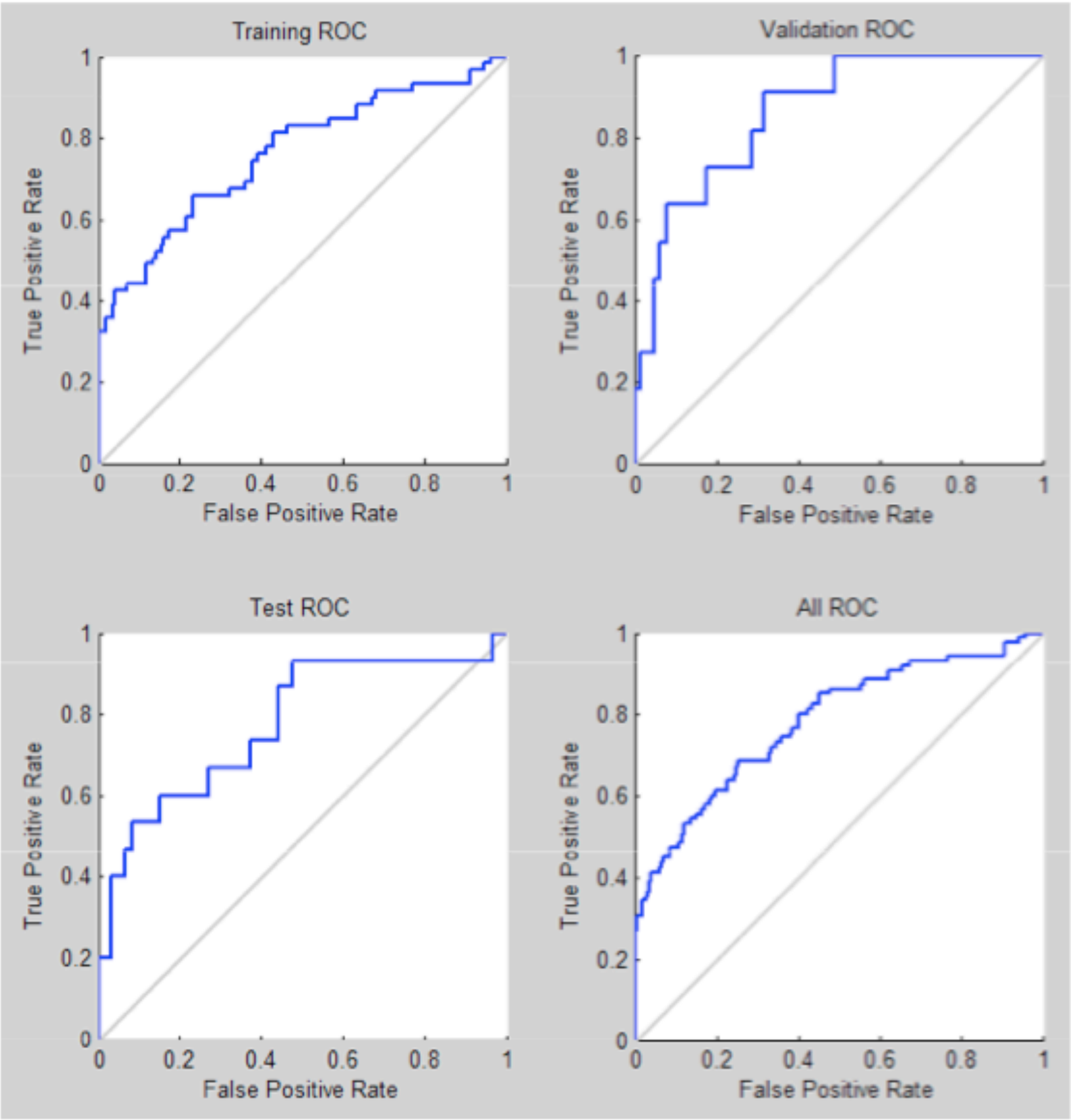
Risikoinformationen

Typ	Bezeichnung	Bemerkung

angelegt: 27.05.2011 09:37:25 Dipl.Ing. Scheibböck Christian freig.:



Receiver Operating Characteristics (ROC)



Data sets = 493 patients

Area under the curve (AUC) = 0.769

Standard Error = 0.031

Asymptotic 95% Confidence Interval = 0.709 – 0.830

Asymptotic Sign. = <0.0001

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Bessere dermatologische Fachbetreuung von Intensivpatienten

Telemedizin an der Intensivstation – eine Pilotstudie

Franz Ratzinger[1], Beatrice Birkenberg[2], Georg Fischer[3], Jessika Weingast[1], Michael Hiesmayr[2], Michael Binder[1]

[1]Klinische Abteilung für Allgemeine Dermatologie, Universitätsklinik für Dermatologie, MedUni Wien

[2]Universitätsklinik für Anästhesie, Allgemeine Intensivmedizin und Schmerztherapie, MedUni Wien

[3]Institut für Medizinisches Informationsmanagement und Bildverarbeitung, MedUni Wien

Telemedizinische Diagnostik

Bild A

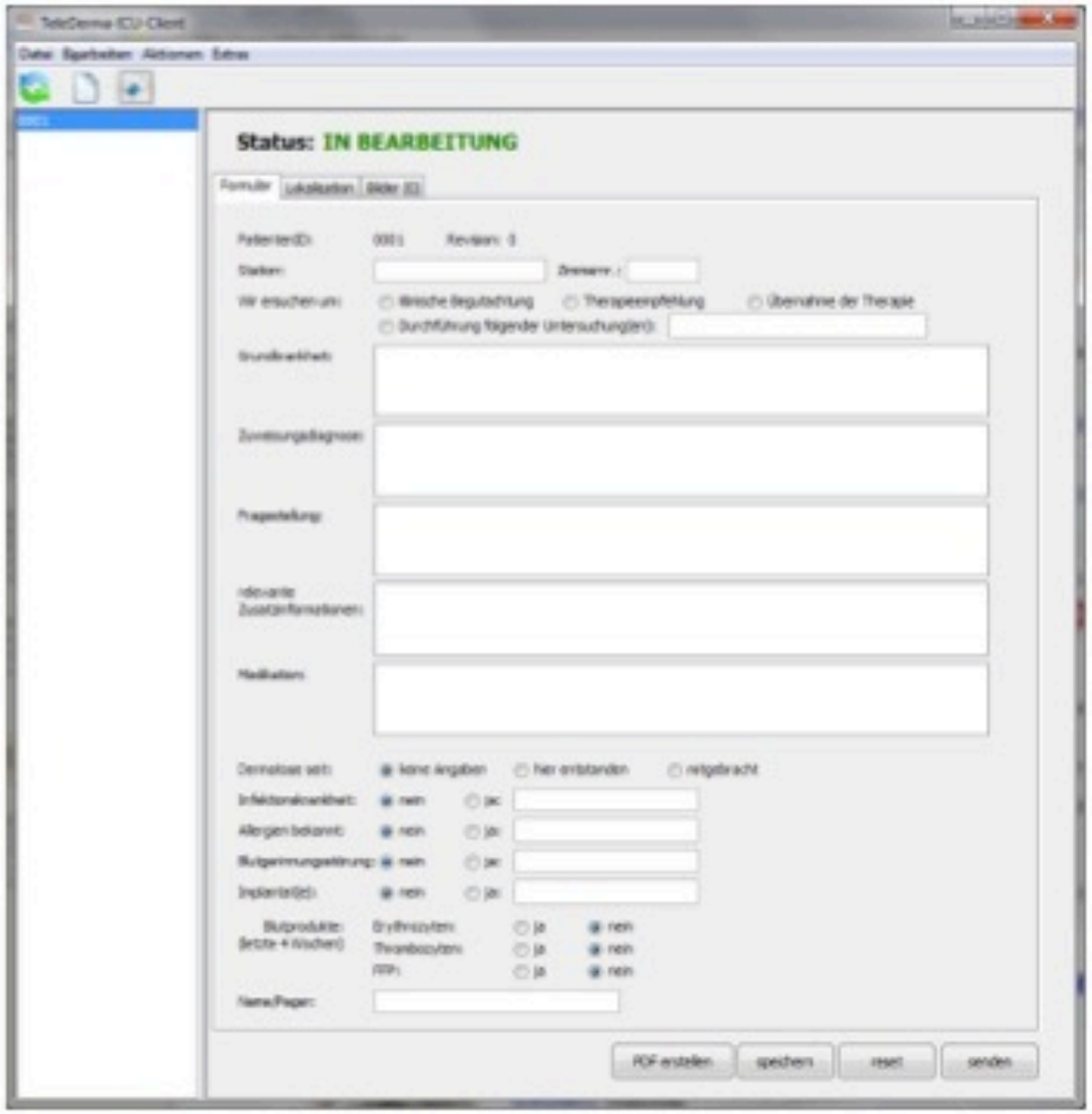


Bild B

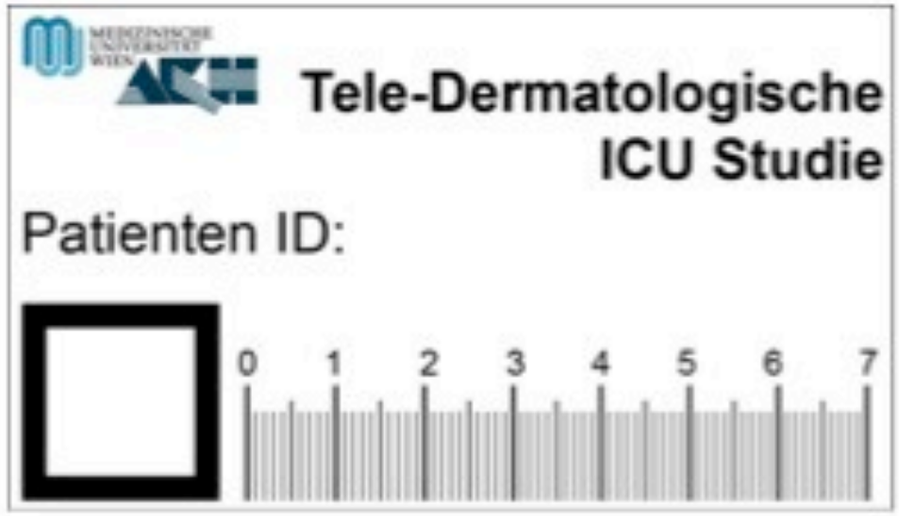


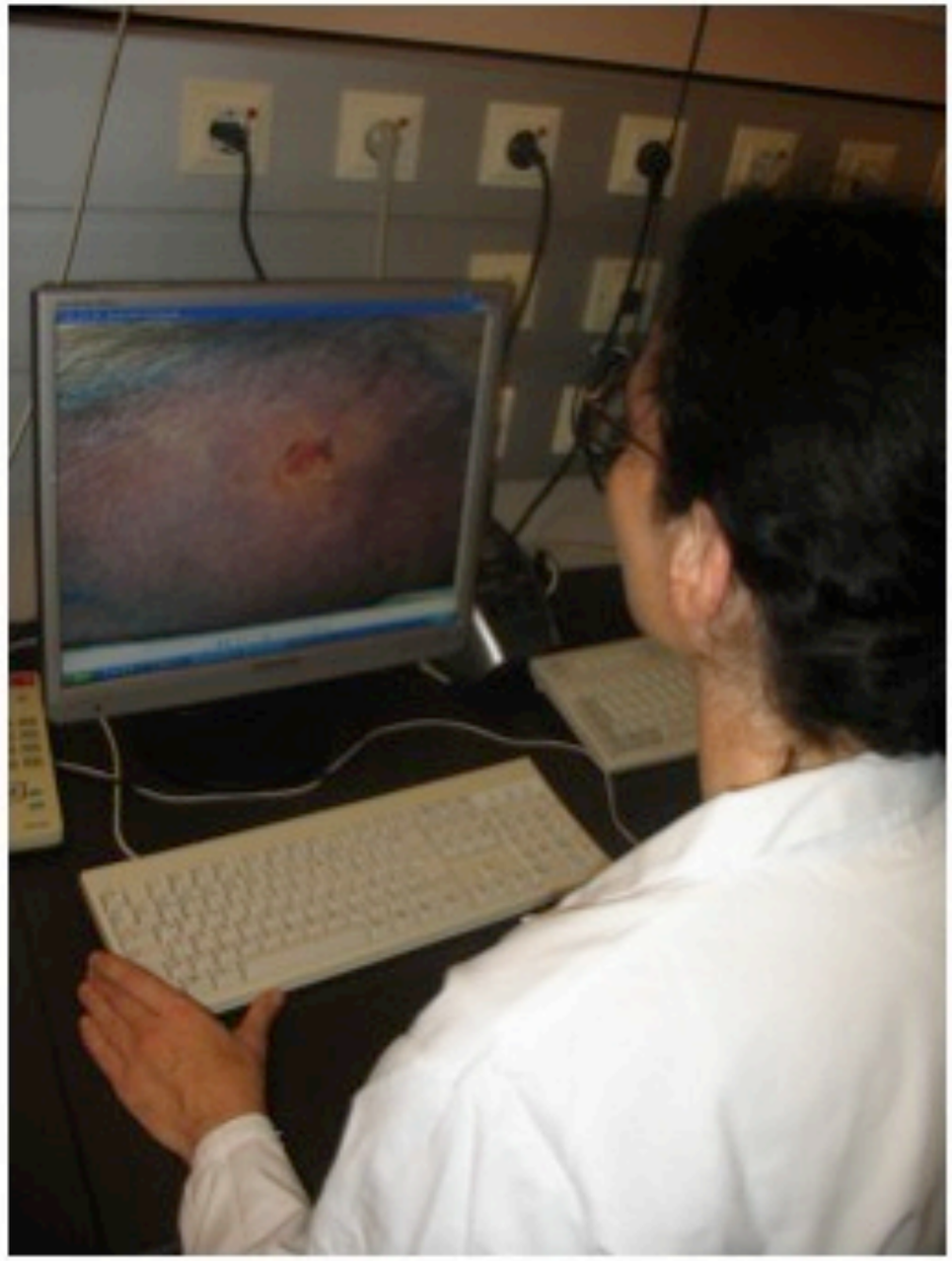
Bild A: Hauptmenu des Telemedizin-ICU Clients zur Erstellung einer Konsilliarzt-Zuweisung (sowohl für den Konsiliararzt als auch für den Teledermatologen).

Bild B: Etikett mit Maßstab zur Identifizierung der Studienteilnehmer am Bild und zur Erleichterung der telemedizinischen Diagnostik.

Beispielbild I

Purpura fulminans, im Rahmen einer Sepsis

Telemedizinische Konsultation



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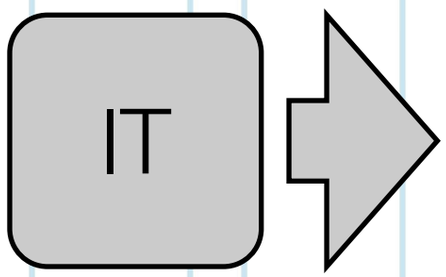

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Dank an die telemedizinische Forschungsgruppe @ MedUniWien besonders

Barbara Hofer, Franz Ratzinger II, Christian Scheibböck, Stefanie Weber, Jessika Weingast u.v.m. alphabetical order