

Apps für Professionals

kleine Helfer bei der Stationstätigkeit

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Die schöne Welt der medizinischen Apps



Spektrum an medizinischen Apps

- Medizinische / pharmazeutische Nachschlagewerke
 - Arzneimittelinformation
 - Medizinische Textbücher
 - Labordaten
 - Leitlinien
 - EBM-Literatur
- Medizinische / pharmazeutische Rechner
- Diagnose-Apps
- Überwachungs- und Steuerungs-Apps
- Adherence-Apps
- Gesundheits-Apps in der Prävention



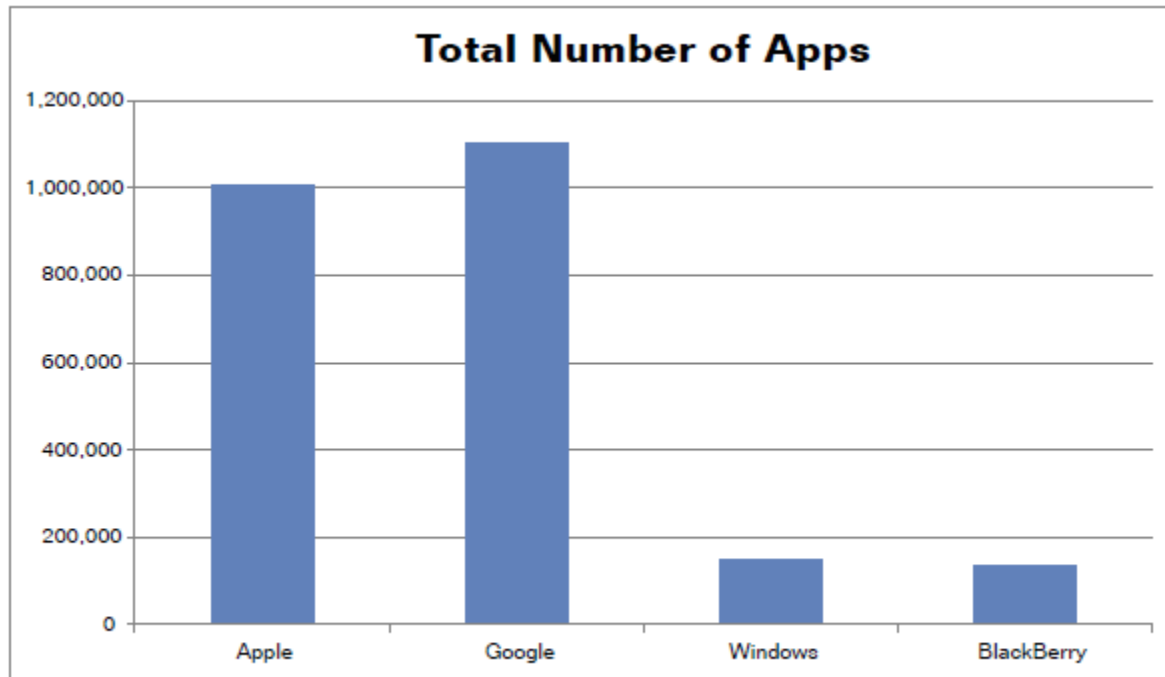
Gebräuchliche Plattformen

➤ Geräte

- Tablets
- Smartphones
- Smartwatch

➤ Betriebssystem

- Apple's iOS
- Google's Android
- Windows Mobile
- Blackberry



*Data current through December 1, 2013.

aus: eReports Evaluating Mobile Medical Applications, ASHP 2014

Die Qual der Wahl wo finde ich gute Apps?

- Clearinghouse für medizinische Apps (Beispiele)
 - NHS Health Apps Library
 - Happtique
 - iMedicalApps
 - NLM's Mobile Applications
- Etablierte kommerzielle Informationsprovider (Truven Health, Wolters Kluwer, Lippincott, etc.)
- Universitäten mit medizinischer / pharmazeutischer Ausbildung (Beispiele)
 - UNC Chapel Hill: Mobile Health & Research Apps at UNC
 - McMaster University: Mobile Apps for Postgrads
 - UMMS: Medical Mobile Apps

... und wie finde ich gute Apps?

- Publikationen über Evaluationen medizinischer Apps
- Beurteilung von
 - **Relevanz** der enthaltenen Information
 - **Objektivität** der enthaltenen Informationen (z.B. Angabe der Datenquellen, Zitierweise, Sponsoring, Interessenkonflikt der Autoren)
 - **Aktualität** der enthaltenen Informationen
 - Funktionalität
 - Design und Benutzerfreundlichkeit
 - Datensicherheit

APPENDIX 1: WORKSHEET FOR EVALUATING MOBILE MEDICAL APPS

Determine Relevance	<i>Is this an app worth taking the time to review? If the answer to any of these questions is "No," it may be better to look at other apps.</i>
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Based on the app store description:

1.	Does the app provide information that will benefit you as a clinician or help you in your daily activities?	Yes	No (Stop)
2.	Are you willing to pay or subscribe to the services provided by the app?	Yes	No (Stop)
3.	Does the app claim to accomplish any of the following:		
a.	To be used as an accessory to a regulated medical device?	Yes	No
b.	To transform a mobile platform into a regulated medical device?	Yes	No
	If Yes to any of the above, is the app cleared by the FDA?	Yes	No (Stop)

Determine Quality	<i>If the answers to questions 1 and 2 above are "Yes," then continued assessment of the app is mandatory.</i>
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4.	Information Accuracy		
a.	Is the information provided accurate and verifiable?	Yes	No (Stop)
b.	Is the information cited within the app or developer website?	Yes	No
c.	Is the information updated regularly?	Yes	No
5.	Authorship and Objectivity		
a.	Are the authors of the app identified in the app or via the developer website?	Yes	No
b.	Do the authors disclose any conflicts of interest?	Yes	No
c.	Do the authors have the clinical background to be trusted in the integrity of the app?	Yes	No

Determine Functionality	<i>If the app is clinically meaningful with supported information, the following should be reviewed for continual use:</i>
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6.	App Stability		
a.	Does the app download and install correctly?	Yes	No
b.	Does the app perform correctly and is stable? Is it free from any crashing, freezing, or other technical problems?	Yes	No
7.	App Support		
a.	Is the app continually updated based on software updates?	Yes	No
b.	Is there a mechanism in place to contact developers with any technical issues?	Yes	No
8.	Design and Usability		
a.	Is the app easy to use and navigate?	Yes	No
b.	Is there a mechanism or guide on how to use the app?	Yes	No

Determine Security	<i>If relevant to personal practice and data protection is important to user preference, the following should be assessed:</i>
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9.	App Access		
a.	If applicable, does the app offer the ability to password protect any sensitive information stored within?	Yes	No
10.	App Data Utilization		
a.	Does the app explain what information is collected from the user and what is done with it?	Yes	No

aus: eReports Evaluating Mobile Medical Applications, ASHP 2014

Checklisten für die schnelle Suche

Table 6: Checklist for evaluating mobile drug information and medical reference apps

Criteria	Assessment		Description
Usefulness	<input type="checkbox"/> Yes	<input type="checkbox"/> No	App will be useful in daily practice
Accuracy	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Clinical content is based on evidence and is verifiable
Authority	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Developers are reputable and qualified
Objectivity	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Content is fair, balanced, and unbiased
Timeliness	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Content is current and will be updated regularly
Functionality	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Functions well with no technical glitches
Design	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Design elements help make the app easy to use
Security	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Protects user data and is free of malicious software
Value	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Price is appropriate considering the content and features

aus: eReports Evaluating Mobile Medical Applications, ASHP 2014

Table 7: Checklist for evaluating mobile medical calculators

Criteria	Assessment		Description
Usefulness	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Calculator will be useful in daily practice
Accuracy	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Performs calculations accurately, formulas for equations are verifiable, and results are explained appropriately
Authority	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Developers are reputable and qualified
Timeliness	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Content is current and will be updated regularly
Functionality	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Functions well with no technical glitches
Design	<input type="checkbox"/> Yes	<input type="checkbox"/> No	User interface makes the calculator easy to use
Value	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Price is appropriate considering the content and features

Auswahl von Apps – Chancen und Risiken

Nutzen

- Steigerung der Versorgungsqualität
 - Schnelle Information/ Recherche im Entscheidungsprozess
 - Möglichkeit zur Einbindung des Patienten
 - Adhärenzförderung
- Unterstützung der Therapie
 - Mobile Überwachung und Steuerung med. Geräte
 - Aufzeichnung von Daten (z.B. Blutzuckerwerte)

Risiken

- Schlechte technische Qualität
- Schlechte inhaltliche Qualität
 - Fehlinformationen mit der Folge einer Fehlbehandlung: ungeeignete, nicht genügend wirksame oder übertrieben durchgeführte Therapie
 - fehlerhafte Berechnungen (z.B. TPN, MELD, etc.)
 - fehlerhafte Diagnosen (z.B. Hautkrebsscreening)
- Fehlerhafte / fehlgeleitete Bedienung

Beispiel: Medizinische Rechner

Table 3. Accuracy of medical calculating apps.

Name of app	CHADS ₂	Child-Pugh	Wells' PE score	4T Score	ABCD2	BMI	CIWA-Ar	Corticosteroid conversion	HAS-BLED	Creatinine	MELD	TIMI-STEMI	TIMI-NSTEMI
Calculate by QxMD	100%	100%	100%	100%	100%	100%	—	100%	100%	100%	100%	100%	100%
CliniCalc	100%	100%	100%	100%	100%	100%	—	100%	100%	100%	100%	100%	100%
Epocrates	—	—	—	—	—	100%	—	100%	—	100%	80%	—	—
MedCalc	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	90%	100%	100%
MedCalcs	100%	100%	100%	—	100%	100%	—	—	100%	100%	80%	100%	100%
Medical Calculator	100%	90%	100%	—	100%	100%	—	—	—	100%	80%	100%	100%
Medical Tools	100%	100%	100%	—	—	100%	100%	100%	—	—	80%	—	100%
MediCalc	—	100%	—	—	—	100%	—	—	—	100%	100%	—	—
MediMath	100%	70%	100%	—	100%	100%	—	—	—	100%	80%	100%	100%
Mediquations	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
MedScape	100%	—	100%	—	—	100%	—	100%	—	100%	100%	100%	100%
MedSolve	100%	100%	100%	—	—	100%	—	—	—	—	80%	100%	100%
Medical Calculator													
Skyscape Medical Resources	100%	100%	100%	—	—	—	—	—	—	—	90%	—	100%
UpToDate	100%	100%	100%	—	—	100%	100%	100%	—	—	100%	—	100%

Evaluation of the Accuracy of Smartphone Medical Calculation Apps *J Med Internet Res* 2014; 16(2):e32

Beispiele für gute medizinische Apps

AM-Datenbanken:

englisch: LexiComp

AHFS Drug Information

NICE BNF / BNF for Children

deutsch: Rote und Gelbe Liste

Arznei aktuell

Arzneimittel Pocket

Interaktionen: Medscape

LexiInteract



Beispiele für gute medizinische Apps

Spezial-Datenbanken:

englisch: LactMed

AIDSinfo Drug Database

Liverpool HIV/HEP iChart

Dialysis of Drugs Mobile App

CDC Influenza Mobile App/TravWellapp

deutsch: Emryotox

ZAK® - Zugelassene AM für Kinder

CRM App Reisemedizin



Beispiele für gute medizinische Apps

Therapie-Apps:

UpToDate

Dynamed

5-Minute Clinical Consult-Serie

@Hand-Serie

The Washington Manual-Serie

NICE Guidance App

Cancer Therapy Advisor app

Medscape

Labormedizin Pocket



Beispiele für gute medizinische Apps

Medizinische Rechner:

Calculate by QxMD

Mediquations

Medscape

Medizinische Literatur und Info:

QxMD Read

Journal Club

Medscape's MedPulse



Fazit

Mobile Geräte mit entsprechenden Apps können sehr gute Hilfsmittel sein

aber:

Keine Software bzw. App kann den gesunden Menschenverstand ersetzen!

und

Die App ist nur so verlässlich wie die zugrundeliegende Datenbasis!

