



Decision support in primary and secondary outpatient care

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HEALCLOUD

Introduction

Application of medical decision support promotes quality of medical care through enhancing prevention, diagnosis, therapy and patient safety and therefore such IT developments serve higher societal needs

Practising physicians in primary care (family medicine) and outpatient secondary care (private practitioner specialists and polyclinics) are in the need for IT-enabled medical decision support during their daily activities and clinical research curriculum to leverage their skills and their 'rapport' aimed at building and maintaining an optimal patient-doctor relationship

Especially GPs constitute to some extent a neglected medic subpopulation regarding such IT support

Healcloud #1

Next-generation medical practice management system for general and private practitioners offering

device-independent zero-installation policy

mobile usage

state-of-the-art UX, ergonomic UI

industry-standard data security

Free for medical users: Most probably the single one free EHR system available to include medical logic / decision support !

Healcloud #2

The screenshot shows the Healcloud web application interface. The browser address bar displays the URL <https://staging.healcloud.com/#/dashboard/patients>. The page header includes the Healcloud logo, the user name "Dr Ethan Steele | MedW1", and a "Goza" label. The left sidebar contains navigation links: PATIENTS, MESSAGES, SCHEDULE, MY DRAFTS, LIBRARY, REPORTS, SICK LEAVE, QUERIES, SUPPORT, HELP, SETTINGS, and SIGN OUT. The main content area features a patient list table with columns: Name, Insurance ID, DOB, Contact Info, and Accessed. The table lists 10 patients, including János Kís, Cohen David, Lyons Gabriel, Burgess Lucas, Kovács Miklós, Aiden Richard, Horváth Ádám, Bauer Chloe, and Barrett Emma. At the bottom right, there is a footer with the text "core: bae24fa-1493391985" and "web: adf178a-1493391924".

Name	Insurance ID	DOB	Contact Info	Accessed
János Kís		Male	No available phone number.	Feb 17, 2017 10:43:40 PM
Cohen David	123456797	Mar 10, 1972 Male	Austria, 1010 Vienna Opernring 18 2/3 +43 987 654 3219	Mar 13, 2017 2:40:58 PM
Lyons Gabriel	123456791	Sep 2, 1976 Male	Austria, 1010 Vienna Opernring 13 4/1 +43 987 654 3213	Jan 20, 2017 11:24:20 AM
Burgess Lucas	123456789	Nov 2, 1974 Male	Austria, 1010 Vienna Opernring 11 2/3 +43 987 654 3211	Jan 20, 2017 11:25:01 AM
Kovács Miklós	123456795	May 3, 1974 Male	Hungary, 1111 Budapest Szent Gellert ter 1 4/1 +36 987 654 3221	Feb 6, 2017 9:47:41 PM
Aiden Richard	123456799	Jan 12, 1972 Male	Austria, 1010 Vienna Opernring 16 4/1 +43 987 654 3217	Jan 20, 2017 11:25:52 AM
Horváth Ádám	123456793	Jul 6, 1964 Male	Hungary, 1111 Budapest Szent Gellert ter 2 2/3 +36 987 654 3215	Jan 20, 2017 11:26:17 AM
Bauer Chloe	123456790	Oct 2, 1980 Female	Austria, 1010 Vienna Opernring 12 3/2 +43 987 654 3212	Jan 20, 2017 11:28:17 AM
Barrett Emma	123456798	Feb 11, 1972 Female	Austria, 1010 Vienna Opernring 19 3/2 +43 987 654 3220	Jan 20, 2017 11:27:18 AM

Healcloud #3

The screenshot shows the Healcloud web application interface. The browser address bar displays the URL: <https://staging.healcloud.com/#/dashboard/patient/5881d8df0c60db0006649f2d/summary>. The page header includes the Healcloud logo, the name "Dr Ethan Steele | MedW1", and a "New encounter" button. The left sidebar contains navigation links: PATIENTS, MESSAGES, SCHEDULE, MY DRAFTS, LIBRARY, REPORTS, SICK LEAVE, QUERIES, SUPPORT, HELP, SETTINGS, and SIGN OUT. The main content area is titled "Summary" and features a patient profile for Mr. Burgess Lucas (DOB: 1974-11-02, ID: 123456789). Below the profile, there are sections for "Known allergies" (listing N2510 Nephrogen diabetes insipidus) and "Diseases". The right sidebar contains tabs for "DIAGNOSIS", "RISK FACTORS", "FAMILY HISTORY", and "NOTES". The "DIAGNOSIS" tab is active, showing "Latest diagnoses" (Allergies, No allergies), "Previous medications" (Past treatments, Herniated disk (Apr 13)), and "Alerts" (Patient has no alerts). A red box highlights the "Alerts" section, and an arrow points to it from the text "Main area for medical decision support messages / informations".

Healcloud

Secure <https://staging.healcloud.com/#/dashboard/patient/5881d8df0c60db0006649f2d/summary>

Dr Ethan Steele | MedW1

Mr. Burgess Lucas
1974-11-02 (42)
123456789

+ Add photo

Known allergies

Diseases
N2510 Nephrogen diabetes insipidus

Summary Personal Results History Drafts Documents Nursing activities

New encounter

DIAGNOSIS
Latest diagnoses

Allergies
No allergies

RISK FACTORS
Previous medications

Past treatments
Herniated disk (Apr 13)

FAMILY HISTORY
Prostate cancer in paternal line

NOTES
Test patient. Not actual data. For illustrative purposes only.

Alerts
Patient has no alerts

Main area for medical decision support messages / informations

Healcloud #4

HEALCLOUD

Dr Ethan Steele | MedW1

PATIENTS

MESSAGES

SCHEDULE

MY DRAFTS

LIBRARY

REPORTS

SICK LEAVE

QUERIES

SUPPORT

HELP

SETTINGS

SIGN OUT

Mr. Burgess Lucas

1974-11-02 (42)

123456789

+ Add photo

Known allergies

Diseases

N2510 Nephrogen diabetes insipidus

SummaryPersonalResultsHistoryDraftsDocumentsNursing activitiesNew encounter

VISIT DATA 18:50 PM 05/06/2017

Supply: Doctor's office

Type of supply: Treatment without sick leave

Diary nr 20170506001

Payment category: Hungarian national insurance

Date May 6, 2017

EU data sheet: Not filled!

Edit

ExaminationReferralPrescriptionSick leaveAmbulant voucherOther

Complaints

Complaints

Status

Status

Diagnosis

Therapy

Therapy

Notes

Notes

Left-arm blood pressure

/

Hgmm

Right-arm blood pressure

/

Hgmm

Pulse

/min

Height

cm

Weight

kg

Waist size

cm

SCREENINGS

+ Add screening

Search

VACCINATIONS

Edit

6

Diagnostic Decision Support Tools (DDSTs) #1

DDSTs are Healcloud's proprietary implementation of
medical decision support

DDSTs pertain to selected “high value” therapeutic areas (TAs)

Aim of DDSTs

- to help the physician forming an initial diagnosis,
including risk assessment / stratification

- to support the caring physician - thus promoting safety and
efficacy of patient care - by
 - planning follow-up visit schedule and
 - tracking treatment success attaining therapeutic target
outcomes

Diagnostic Decision Support Tools (DDSTs) #2

Development of DDSTs occurs on two echelons:

Medical

Technical

Definition - Medical echelon:

Explain core medical concepts related to the respective TA

Feature cumulative knowledge from international guidelines

The information contained therein can be used by the Healcloud physician user community, either as a reading exercise of the complete document and/or as a context-sensitive / field-level pop-up help

Diagnostic Decision Support Tools (DDSTs) #3

Implementation - Technical echelon:

Translate the medical-professional text into an IT solution

Framework: Model-View-Controller

Model = Hierarchical, adaptive (dynamic) database

View = Featuring entities from the database as input sheets

Controller = Algorithms for patient / procedure flow:
medical logic (automated actions, alerts, etc.)

Combination of programming tools

Traditional: e.g. MongoDB, JavaScript, HTML5/CSS

AI: Medexer ArdenSuite



Diagnostic Decision Support Tools (DDSTs) #4

The operation of DDSTs is based on

Value metrics, extracted from HealCloud databases
captured by the doctor as input parameters,
via screen forms (input sheets) and / or
contained within core databases, e.g. in national drug
formularies

Medical logic

to stratify patients according to selected criteria
(e.g. risk stratification, patient selection for clinical
research)

processes for follow-up visit planning, tracking trend of
treatment indicators, etc.

Rationale for selection of TAs

BioPharma ***industry*** indicators

- Medicines in development

- pipeline patterns

- number of drug candidates

- Sales figures

Competence of the caring ***physician*** in the given TA

(N.B. primary care, outpatient secondary care)

Patient ***population*** considerations

- Epidemiology

- Availability and accessibility of patients in primary or private secondary care (specialist outpatient) segments

High-impact TAs

Diabetology

Cardio- and cerebrovascular medicine

- Hypertension

- Myocardial infarction

- Stroke

Lipidology

Respiratory system

- Chronic obstructive pulmonary diseases (COPD)

- Asthma bronchiale

Algiatry: Pain management (oncological + non-oncological)

Autoimmune diseases

- Rheumatoid arthritis (RA)

- Inflammatory bowel disease (IBD): Crohn's disease + Colitis ulcerosa

The DTOC(Q) paradigm

Healcloud, enabled by DDSTs, allows evaluation of clinical care along the following domains:

Diagnosis

Therapy

Outcome

Cost

(Quality: Policy compliance)

The logo for HEALCLOUD features a light blue cloud shape with two white, stylized human figures inside, positioned as if holding hands. The text "Thank you very much for your kind attention!" is centered over the cloud in a bold, black, sans-serif font.

**Thank you very much
for your kind attention!**

HEALCLOUD