

Multimorbidity: Towards a more Holistic Medical Perspective

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Network and Potential conflicts of interest

- Founder IntelliXESS AG with assignments from Roche Diagnostics International Ltd., Vifor Pharma AG, Medgate AG, Elsevier, AheadHealth, etc.
- Member of the Board of Directors (Supervisory Board) ZurzachCARE AG, Medgate AG, IntelliXESS AG
- Boards: Chairman, Member, Award Jury, e.g. Zurich Academy of Internal Medicine, Walter Siegenthaler Foundation UZH, etc.
- Owner of shares also in companies associated with health care, amongst which 44al AG (Switzerland)
- Organization of Congresses, Meetings, and Symposia
- National and international Advisory Boards: During the last 10 years in anticoagulation, cholesterol treatment, heart failure treatment, hypertension treatment, iron substitution, etc.
- Lecture honoraria from various organizations and companies

International Center for Multimorbidity and Complexity

- Research
- Projects & Publications
- Staff & Open positions

<https://multimorbidity.org>

Narrative arc and learning objectives

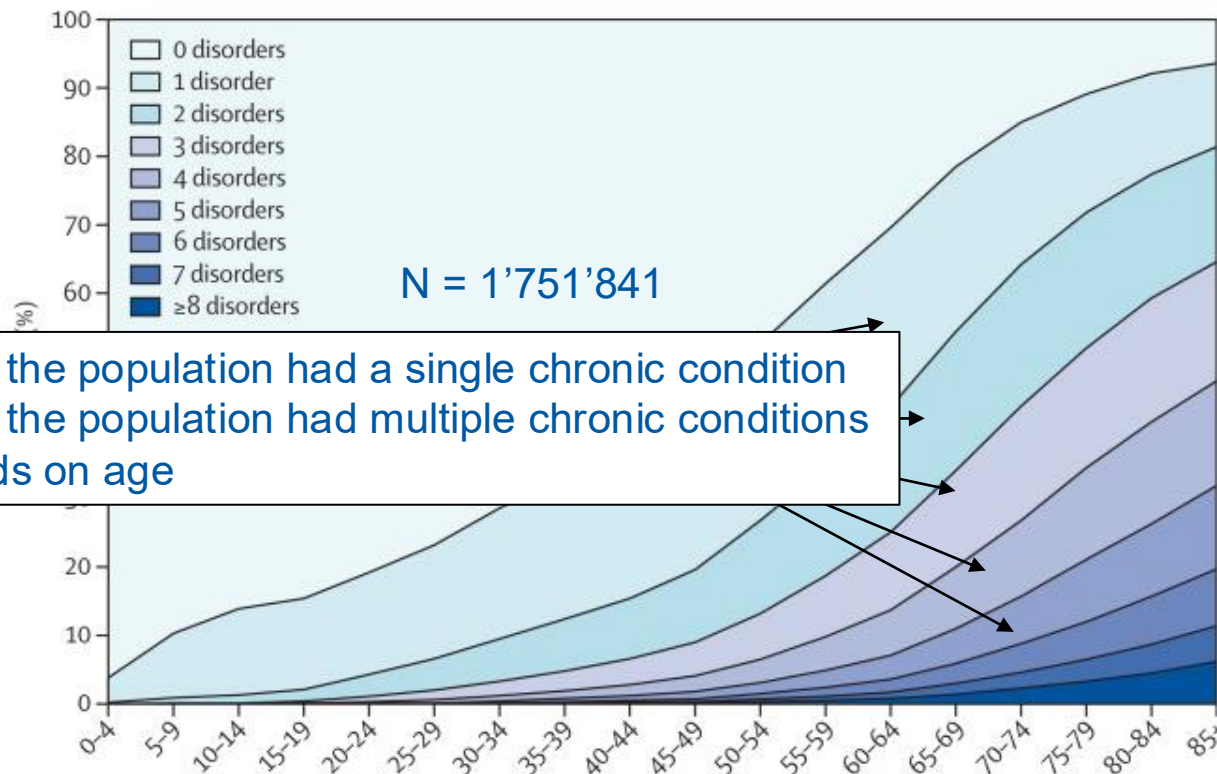
- See the patient as a lived, complex person — not as a list of diagnoses.
- Multimorbidity: Disease — disease interactions (DDI) and corresponding challenges increase nonlinearly.
- Recognize blind spots such as mental health and meaning.
- Consider organizational framework: Advanced Medical Home, care navigation, teamwork.
- Use AI as a governed copilot — sometimes helpful, not a substitute for presence.
- Explore spirituality, kindness and "Havruta" as dimensions of resilience for patients, caregivers, and health care professionals.
- Return to medicine and teachings from «Havruta» for disease-disease interactions and spirituality.

Approach

- Disclaimer: I am NOT an expert in spiritual care!
- In part evidence-based: Epidemiology, DDI research, mental health, care models and AI.
- In part experience-based: Clinical work with complex patients and complex systems.
- In part translating thoughts to metaphorical images, drawing from Judaism, and Havruta as one of the lenses for medicine.
- In part: Catching aspects of **CARE** with emotion and humor.
 - Emotions rouse us, keep us awake and help us to remember.
 - Humor sometimes gets better to the core and hidden truth of the **SPIRIT** of an issue (!!!)

**The patient is a
lived complex being,
not «diagnoses»**

Multimorbidity is the most common patient constellation and characteristic.



- 19% of the population had a single chronic condition
- 23% of the population had multiple chronic conditions
- Depends on age

90% of patients admitted to the internal medicine ward via the Emergency department are mostly significantly multimorbid.

Grandma may be multimorbid, but still healthy



Disease Disease Interactions (DDI's)

Definitions of Multimorbidity

- The coexistence of two or more **chronic** conditions in the same individual
- The co-occurrence of multiple **chronic or acute** diseases and medical conditions in one person
- The co-occurrence of multiple **diseases or medical conditions** within 1 person
- Any combination of chronic disease with at least one other disease (acute or chronic) or **biopsychosocial factor** (associated or not) or somatic risk factor
- Comorbidity may be defined as the **total burden of illnesses unrelated to the principal diagnosis**

- 'The complex interactions of several co-existing diseases' (NLM, MeSH*, Year introduced: 2018)
- Denmark 2023: Depending on definition and data source prevalence of 7% versus 29%

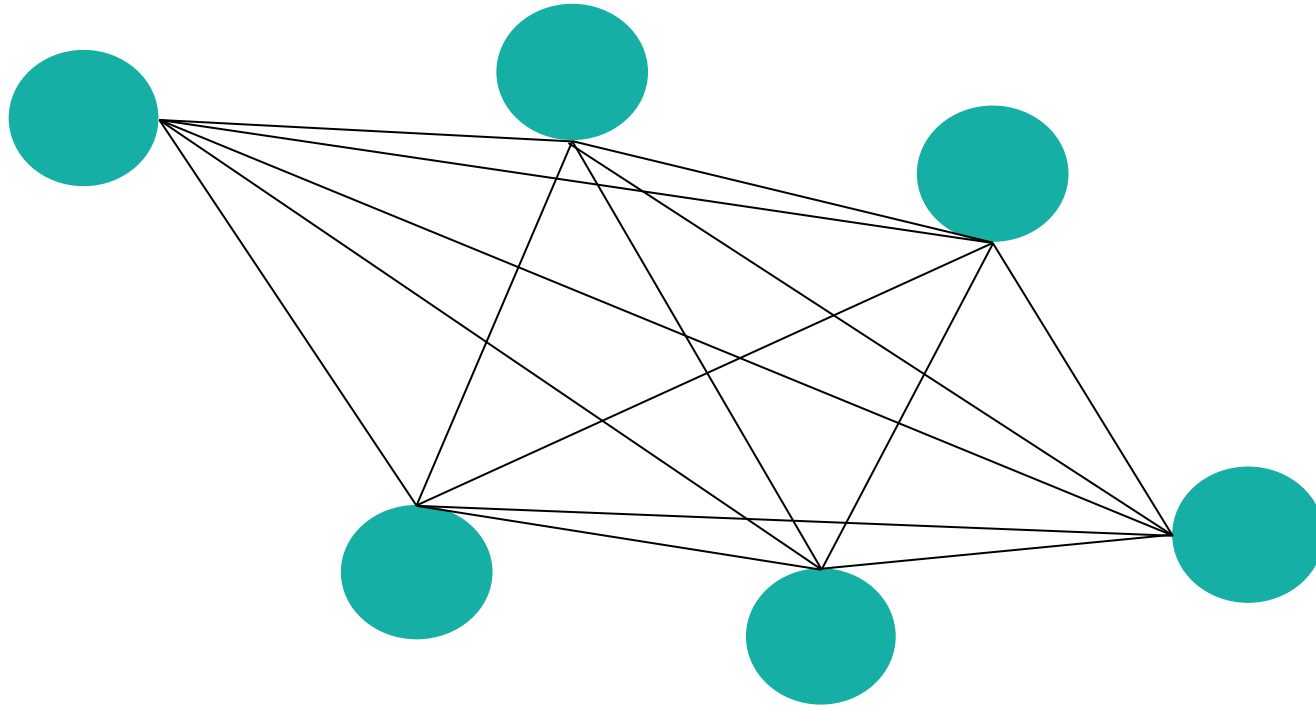
Skou S, et.. Multimorbidity. Nat Rev Dis Primers. 2022 14;8:48. doi: 10.1038/s41572-022-00376-4.

Willadsen TG, et al. Definition and delimitation of multimorbidity.

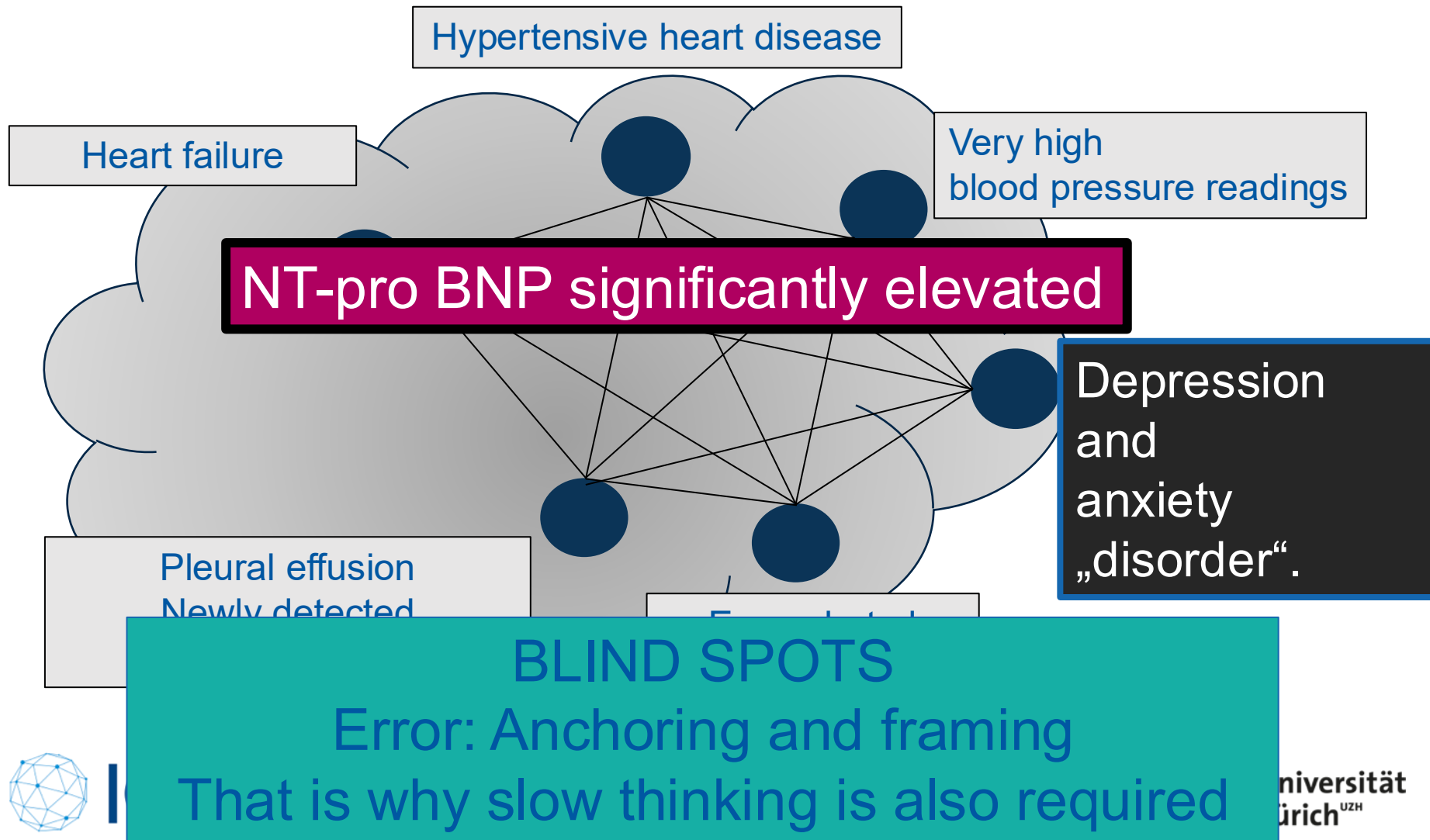
Ugeskr Laeger. 2023;185(42):V05230340.

*MeSH (Medical Subject Headings): NLM vocabulary thesaurus used for indexing articles for PubMed

Complexity grows at a supralinear rate.



Intuitive, quick thinking has its limits: A complex patient with shortness of breath



Back to our patient with SOB: Diagnosing needs education and books!

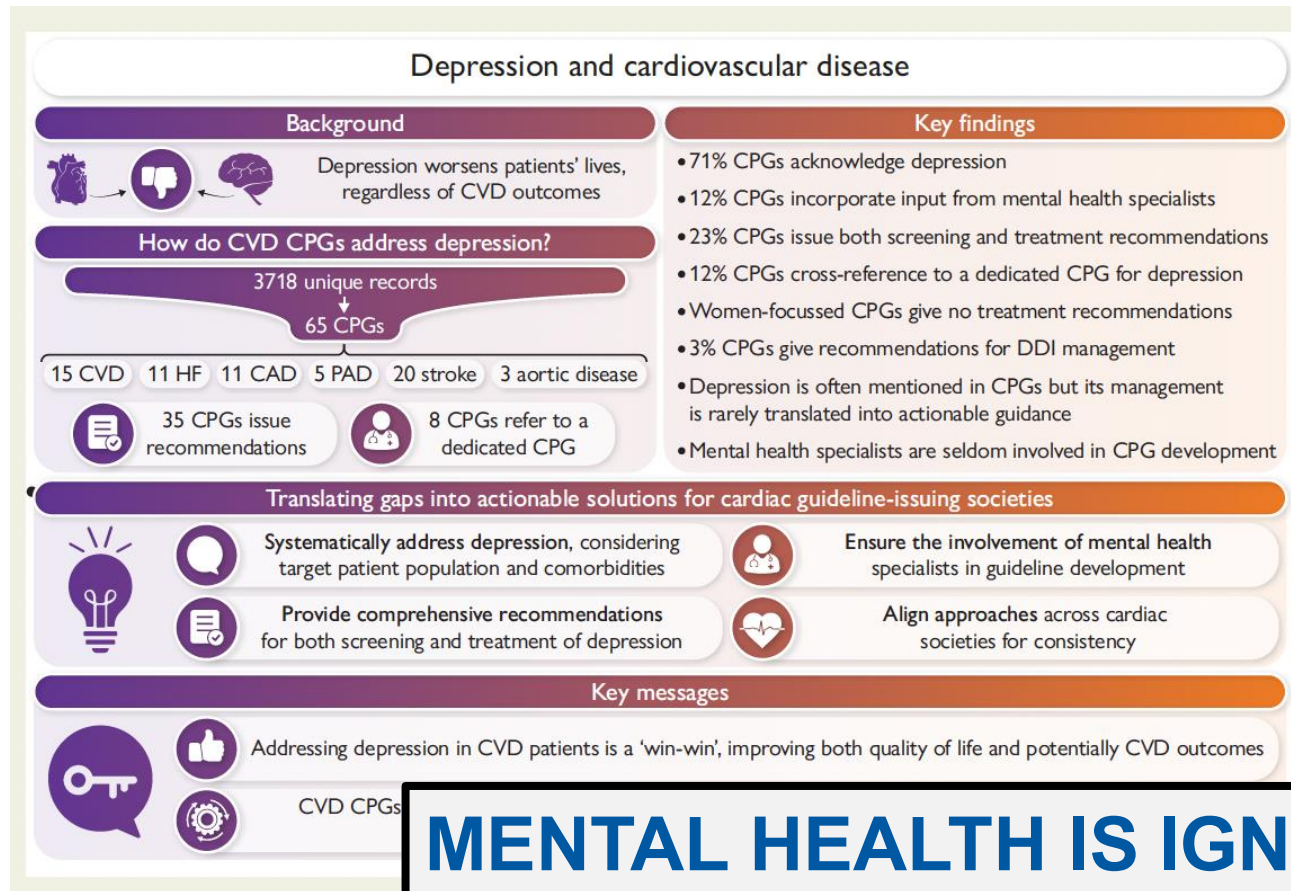
obstruktive Lungenkrankheiten	▶ erhöhte Atemwegswiderstände durch Stenosen der oberen Atemwege ▶ Asthma bronchiale ▶ chronisch obstruktive Lungenerkrankung
restriktive Lungenkrankheiten	▶ infiltrative Lungenkrankheiten ▶ Lungenfibrose ▶ Zustand nach Lungenresektion
vaskuläre Lungenkrankheiten	▶ Lungenembolien ▶ pulmonaler arterieller Hypertonie ▶ pulmonaler Rechts-links-Shunt
kardiovaskulär bedingte Dyspnoe	
Herzkrankheiten	▶ systolische und/oder diastolische Störung der Ventrikelfunktion ▶ Herzklappenerkrankungen ▶ Shuntvitien ▶ Herzrhythmusstörungen
extrapulmonale, nicht kardiale Ursachen der Dyspnoe	
extrapulmonale Restriktion	▶ ausgeprägte Adipositas ▶ Kyphoskoliose ▶ neuromuskuläre Erkrankungen mit Zwerchfelllähmung
weitere Ursachen	▶ hypobare Hypoxie (Höhenaufenthalt) ▶ ausgeprägte Anämie ▶ metabolische Azidose ▶ Schwangerschaft

Blind Spot
Frequent
Prevalent
Overlooked

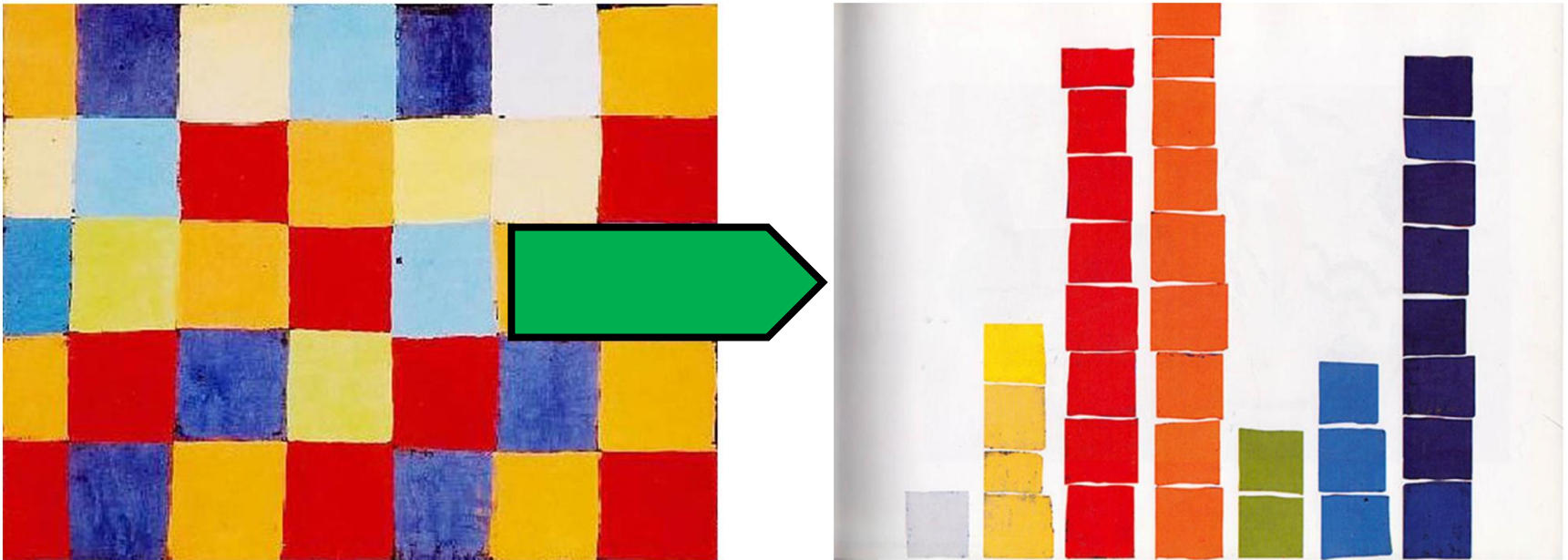
Not so rare
Always overlooked

Intuitive, fast thinking has limits:
Complex Patient with Shortness of Breath

Depression & Cardiovascular Disease: Mind the Gap



Klee at long last properly arranged !



Potential Solutions: Advanced Medical Home for Multimorbidity

Comprehensive, coordinated, continuous care



ICMC

THE ADVANCED MEDICAL HOME: A PATIENT-CENTERED, PHYSICIAN-GUIDED
MODEL OF HEALTH CARE



**Universität
Zürich**^{UZH}

https://www.acponline.org/sites/default/files/acp-policy-library/policies/adv_medicalhome_patient_centered_model_healthcare_2006.pdf

Coordinated Care: Medicine is a team effort also because of multimorbidity



THE ADVANCED MEDICAL
ICMC

Urologist
PATIENT-CENTRED
MODEL OF HEALTH CARE



**Universität
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How could AI help health care professionals?

- Support decision-making with knowledge from other specialties — an interdisciplinary copilot.
- Flag probable, rare or overlooked diagnoses and risks.
- Strengthen safety architecture — with human-in-the-loop governance.
- Care-navigation agents, communication, follow-up and safety checks (AI-Agents).
- Reduce administrative workload and senselessness for health care providers to return to the core and spirit of care.

Semantic analytics: what does someone with depression say?

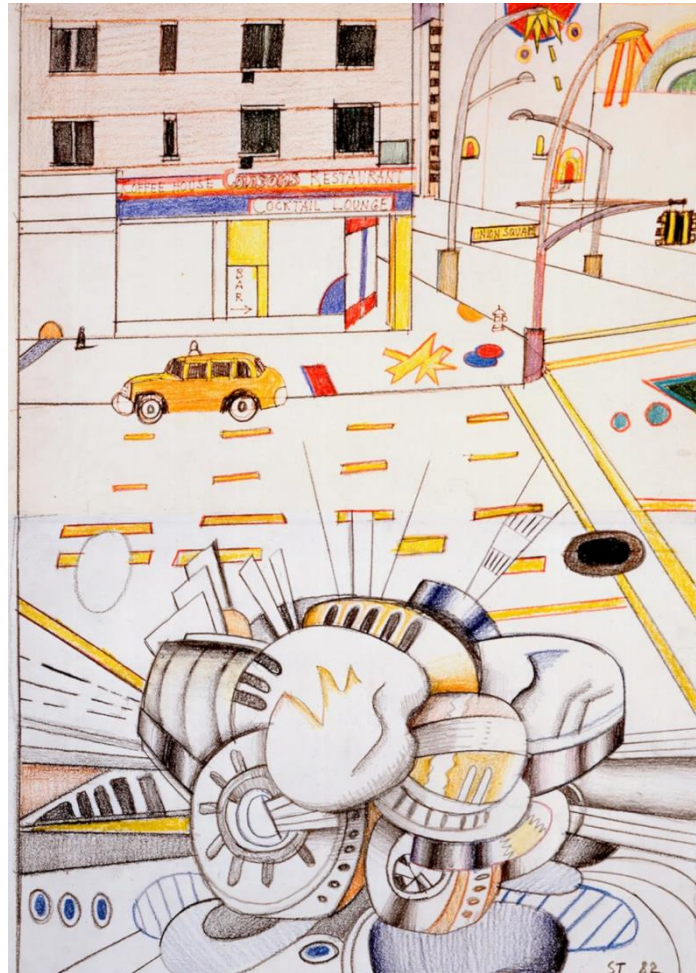
- Computer-assisted language assessment may detect mental-health signals in patients' own words.
- In the cited study, 411 participants described their mental health; NLP and machine learning were compared with depression and anxiety scales.
- Correlations with PHQ-9, GAD-7 and PSWQ-8 were significant, especially for cognitive and emotional symptoms.
- Does AI better identify depression because it has more «soul» and because we have lost our soul?
- HOW ARE YOU???
- Future: complex analytics including pitch, analytics of mimics and movements (entropy, ADHS, ADD), etc.

Performance of HI and AI (Large Language Models)



Is the database well-curated?
Concerning Multimorbidity
it can't be well-curated because
there is no data!!!

Summarizing the current evidence and handling of Disease-Disease Interactions



Steinberg Saul Union Square, 1982
Coloured paper, crayon and graphite on paper
48.3 x 34.9 cm

From interactions to meaning: Spirituality, kindness and the Advanced Medical Home

**Traditional Judaism:
Dialogue between
realities and beyond**

Dialogue in method and principle:

Havruta, חברותא

- In Judaism, **dialogue** is a fundamental principle, God and humans **connect across hierarchy** and humans and humans **connect**.
- An analytical concept, developed in antiquity, is the method of **Havruta** (חברותא), an Aramaic word meaning "**companionship**".
- In traditional **Havruta** learning usually two persons discuss an issue in a disciplined encounter between the divergent certainties concerning the same matter. Thus, the discussants develop divergent perspectives into a complex decision framework.
- Einstein: matter is also energy, i.e., the "Havruta" of matter and energy.
- Freud: Conscious and unconscious are distinct, yet interacting forms of human existence "Havruta". Dreams are bridges or ladders to the unconscious.
- Can we measure all dimensions that may in some way be Havruta to us, even unknowingly.

Dreams give spiritual perspectives during transitions

- Jacob's dream, **מְגִיעַ הַשָּׁמַיִמָּה... סֵלָם מַצֵּב אֶרֶצָה... וַיַּחְלֵם**, places a ladder between earth and heaven. The dream of the ladder move a current reality to future history, prophecy and meaning. A dream can be light during the night.
- Talmud Berakhot 55a: **חֲלֵמָא דְּלֹא מִפְשָׁר כְּאִגְרָתָא דְּלֹא מִקְרִיא** — “an uninterpreted dream is like an unread letter.”
- **Clinical analogy:** Blind spots such as fear, depression, suffering, despair, spiritual distress, and the subconscious can be ‘unread letters’ if ignored.

First Book of Moses, 28;12
Talmud Bavli 55a

Bridges and ladders connect worlds



Kindness and Medicine: And the crooked shall be made straight וְהָיָה הָעָקָב לְמִישׁוֹר

- **Lament is allowed:** Psalms, Job and Lamentations do not suppress suffering; they give it words and language, also language to patients that may not be able to express it.
- **No one rescues himself alone:** Talmud, Berakhot 5ב **אין חבוש מתיר עצמו מבית האסורים** — “a prisoner cannot free himself from prison.” This is an excellent basis of multidisciplinary care, psychotherapy, family support and spiritual care.
- **Kindness is a pillar of the world:** Mishnah, Pirkei Avot 1:2, “Three pillars keep the world alive: Torah, Avodah and **Gemilut Chassadim**” (learning, service and **loving kindness**)
- **Kindness:** Reduces fear, anxiety, depression, despair (evidence-based). Kindness is not sentimentality; It reduces uncertainty, fear, invites the patient’s narrative and reveals hidden priorities. It generates trust.
- **PS:** Mind the difference between «friendliness» and «kindness».

Kindness and Medicine: And the crooked shall be made straight וְהָיָה הָעִקָּב לְמִישׁוֹר



The book of Isaya/Yeshajahu 44:4

Hospital Scene on a Friday in January 2024

From Havruta back to DDI:

Two perspectives and the bridge (n = 3)

- Havruta: two people confront a text, question or conflict from different angles.
- In multimorbidity, the studied 'text' or rather narrative is the patient's lived situation, for example a DDI.
- **At Least Three truths:** Perspective **1**, perspective **2**, and **3** the bridge between them.
- Clinical Havruta: physician, patient, family, specialists, nurses and spiritual care find a best possible solution together.
- **Goal: Decisions that are medically, holistically, and personally sound and meaningful for patients, care givers, family, friends, and their health care professionals.**

Medical Havruta: Closing the circle

- **חברותא** Havruta: Two people confront a text, a narrative, a question or a conflict from different angles.
- **THREE truths:**
 - Perspective 1
 - Perspective 2
 - The Bridge between them
- **חברותא** Havruta for DDI: Complex patients managed by structured dialogue among disciplines, patient, family and where appropriate spiritual care.
- Spiritual Care: What does it mean to the patient, his caregivers, **AND HEALTH CARE PROFESSIONALS.**

Summary: Take-home messages

- **Multimorbidity is the norm in health care; single-disease logic creates fragmentation, risk and burden.**
- **Complexity grows through interactions: disease–disease, drug–disease, mental health, social context and spiritual distress/resources.**
- **Advanced Medical Home gives structure: patient-centered, physician-led, team-based, comprehensive, coordinated and continuous.**
- **AI can support detection, interaction checks, navigation and workload reduction — only with curated data, governance and human judgment.**
- **Spirituality, kindness and resilience matter when they are respectful, patient-centered dimensions of care.**
- **A holistic medical perspective is not less scientific: it is science held in relationship and responsibility (what a wonderful word, if you look at it literally).**

Thank you very much for your attention!

<https://multimorbidity.org>

