



# Proactive health risk screening for multiple E-health interventions in primary care patients: Methods, design and reach

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**Research Network AERIAL**

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# Disclosure

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# Background

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- ▶ **Hospitals and general practices are ideal for:**
  - ▶ Screening
  - ▶ Preventive measures
  - ▶ E-Health-interventions
- Provides facilitated access to the majority of the general population
- Evidence für brief interventions for behavior changes in primary medical care (Bertholet et al. 2005, Goldstein et al. 2004)
- Proactive recruitment



# Proactive recruitment

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- ▶ Every person of the target population is approached
- ▶ Higher participation rates
- ▶ More Representative samples (Velicer et al. 2000)
- ▶ Higher rate of participants with no or low motivation for behavior change (Hoving et al. 2007, John et al. 2003, Velicer et al. 2000, Ludden et al. 2015)

But:

- ▶ High expenses / personnel costs
- ▶ Thus: limited effectiveness



# Aim of the study / the studies

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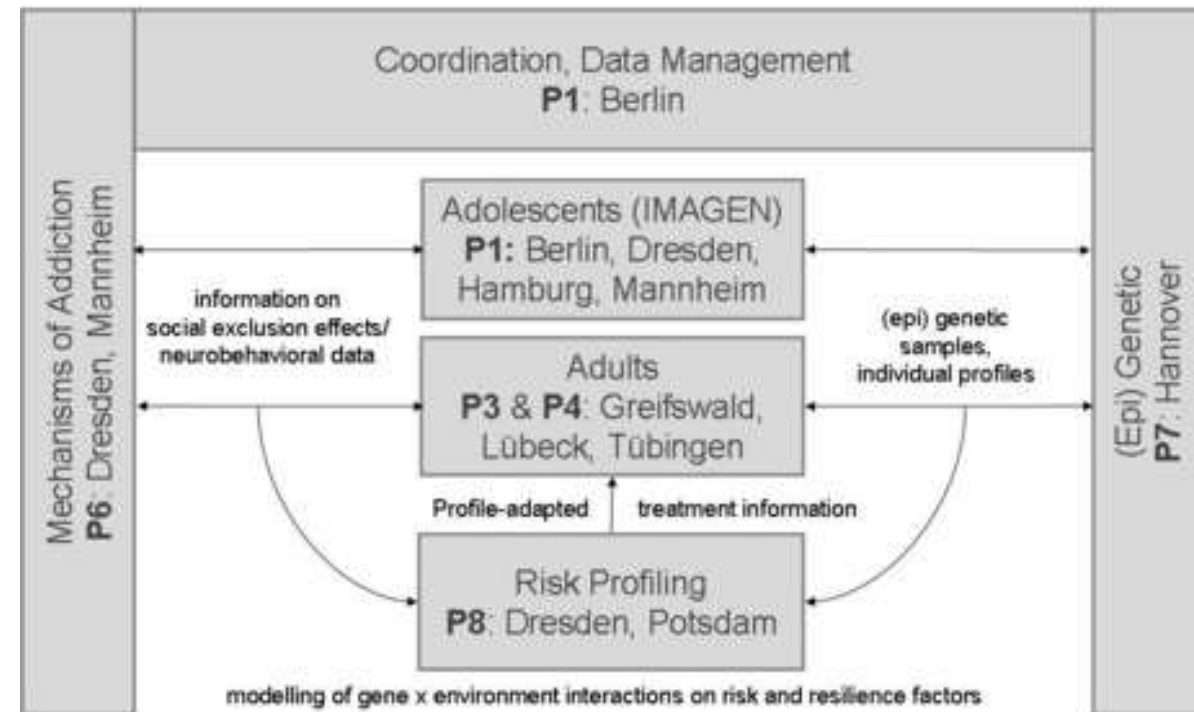
## Systematic proactive screening for multiple health risks

- Improvement of cost-benefit-ratio
- General population engages often in multiple health risk behaviors (Fine et al. 2004, John et al. 2018)
- Multi-behavioral intervention procedures could provide improved health outcomes (higher Public Health impact)



# Research Consortium „Addiction: Early Recognition and Intervention Across the Lifespan (AERIAL)“

- ▶ Funding: German Federal Ministry of Education and Research (BMBF)
- ▶ 6 Projects and nine sites: Berlin, Dresden, Greifswald, Hamburg, Hannover, Lübeck, Mannheim, Potsdam and Tübingen
- ▶ Aims:
  - ▶ Research on new diagnostic and treatment methods for substance use disorders
  - ▶ Implementation and examination of effectiveness of E-Health interventions
  - ▶ Neuronal principals of hazardous alcohol use (IMAGEN).



# AERIAL - Projects 3 und 4

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## **Tübingen:**

- ▶ Clinical study for the reduction of hazardous alcohol and tobacco use in the general population with an „E-Coach“-assisted computer- or smartphone-intervention (CSI)

## **Greifswald:**

- ▶ Individualized E-Health intervention for patients with problematic alcohol use and depressive symptoms in primary medical care (ITE)

Study duration: 01.02.2015 – 31.01.2019

# Screening Sites:

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In:

- ▶ General practices
- ▶ Hospitals



# Phase II: Proof of concept Study

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- ▶ January 2017 – March 2018
- ▶ Inclusion criterion age: 18 – 64 years
- ▶ 38 general practices, 56 hospital wards + 1 waiting area
- ▶ Screening per tablet computer



# Screening measures

Sociodemographics	Age, sex, marital status, education, occupation
Alcohol consumption	AUDIT (+ exact number of drinks + sex specific binge drinking questions)
Tobacco consumption	Smoking status, cigarettes per day, I. Fagerström item
Depressive symptoms	Screening questions of the CIDI, if applicable PHQ-8
Health status	Self assessment (I. item Short-Form 36)
Fruit and vegetable intake	WHO questions (consumption per day)
Physical activity	Godin and Shephard Leisure-Time Physical Activity Questionnaire
BMI	Self-reported height and weight

## ➤ Allocation to studies via automatic scoring algorithm

Study	1	2	3	4	5
Site	Greifswald	Tübingen	Tübingen	Greifswald	Lübeck
Study name	<b>ActiLife</b> [preventive E-Health intervention for depressive symptoms]	<b>R.S.</b> [E-Coach for smoking reduction]	<b>CS-I</b> [E-Coach for reduction of harmful alcohol and tobacco use]	<b>ITE</b> [E-Health intervention for probl. alcohol use and co-occ. depressive symptoms]	<b>ART-COPE</b> [Alcohol-related treatment: a consumer's perspective]
Study design	2-armed RCT	3-armed RCT	3-armed RCT	2-armed RCT	Interview study
Inclusion criteria	Subsyndromal depressive symptoms, major depression or dysthyma	Daily smoking of at least 1 cigarette/day	Harmful alcohol consumption (>12/24gr or binge drinking) <b>and</b> Daily smoking of at least 1 cigarette/day	Harmful alcohol consumption (>12/24gr or binge drinking) <b>and</b> Subsyndromal depressive symptoms, major depression or dysthyma	Moderate to severe alcohol dependence (AUDIT ≥ 20)
Exclusion criteria	Severe episode of major depression (past 12 months) Harmful alcohol consumption AUDIT ≥ 20 No Email/SMS	Depressive symptoms Harmful alcohol consumption AUDIT ≥ 20 No Email	Depressive symptoms AUDIT ≥ 20 No Email	Severe episode of major depression (past 12 months) AUDIT ≥ 20 No Email/SMS	---

## Phase II: Proof of concept study - Results

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January 2017 - March 2018



## Screening participation rates

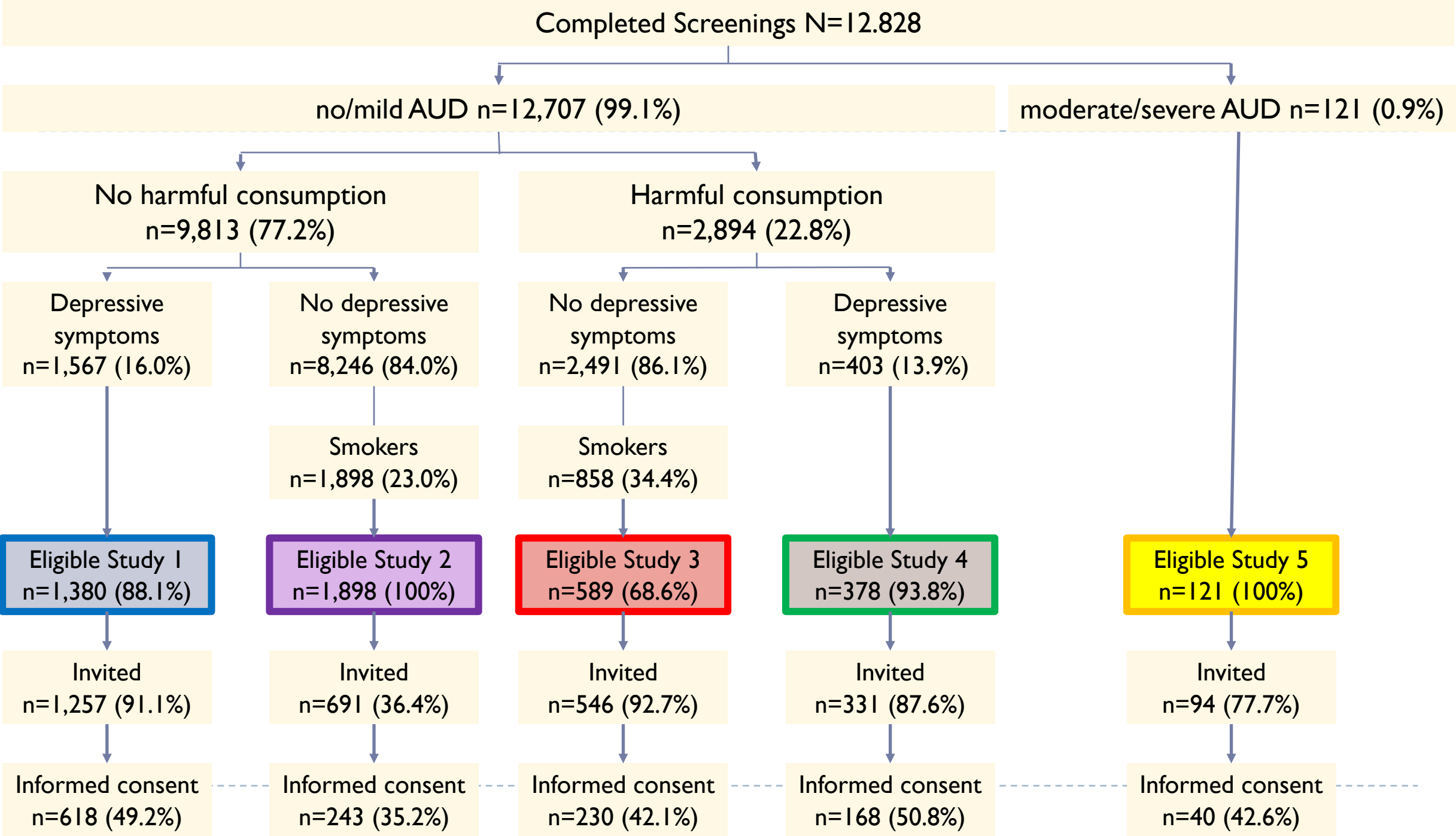
	General practices		Hospitals	
Registered patients	17,111	(100%)	15,432	(100%)
Eligible for screening	8,723	(56.3%)	7,196	(58.2%)
Refused screening	1,478	(16.9%)	678	(9.4%)
Screening conducted	7,245	(83.1%)	6,518	(90.6%)
Screening completed	6,661	(91.9%)	6,167	(94.6%)

- Screening participants were younger than non-participants (OR=0,96, CI=0,96-0,97)
- Lübeck and Greifswald: Screening participants were more often female than non-participants (OR=1,59, CI=04-2,42 and OR=1,47, CI=1,03-2,09, respectively)

# Study participation

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- ▶ **34% (4,366 of 12,828) → inclusion criteria for one of the five studies**
  - ▶ Reasons for exclusion: Screening not within recruitment period of the study (n=1,190)
  - ▶ Not reached after screening (n=168)
  - ▶ Language problems (n=1)
  - ▶ Technical problems iPad algorithm study 2 (n=88)
- ▶ **2,919 (66.9%) of the eligible screening participants were invited for one of the studies**
- ▶ **Participation rates: 35.2% - 50.8%**



# Selected findings:

## Characteristics screening participants (n=12,828)

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- ▶ Ø age: 41.7 years, 52.7% female, 71.7% married, 42.5% >10 y. school
- ▶ Alcohol consumption:
  - ▶ AUDIT sum score: Ø 3.3 (SD 3.9)
  - ▶ Harmful alcohol consumption: 23.5% (n=3,011)
- ▶ Smoking:
  - ▶ Daily smokers: 27.1% (n=3,477)
  - ▶ Cigarettes per day: Ø 15.8 (SD 11.7)
  - ▶ Years of smoking: Ø 20.9 (SD 12.5)



# Selected findings:

## Characteristics screening participants (n=12,828)

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- ▶ **Depressive symptoms:**
  - ▶ Subsyndromal depression: 15.7% (n=2,020)
  - ▶ Major depression: 8.6% (n=1,098)
- ▶ **Insufficient fruit and vegetable intake: 94% (n=12,060)**
- ▶ **Physical Inactivity: 36.2% (n=4,639)**
- ▶ **BMI**
  - ▶ >25 and <30: 30.7% (n=3,937)
  - ▶ >30: 21.4% (n=2,740)
- ▶ **Total number of health risks:  $\bar{X}$  2.6 (SD 1.1)**

## Selected findings:

### Comparison General practice - hospital

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Participants of the GP sample are:

- ▶ Younger (37.8 vs. 45.9 years,  $p < .001$ )
- ▶ More often female (59.0% vs. 46.0%,  $p < .001$ )
- ▶ Better educated (>10 y. school: 51.3% vs. 32.9%,  $p < .001$ )
- ▶ More often never smoker (40.7% vs. 34.1%,  $p < .001$ )
- ▶ More physical active (inactive: 33.0% vs. 39.5%,  $p < .001$ )
- ▶ More seldom obese (17.6% vs. 25.4%,  $p < .001$ )

But:

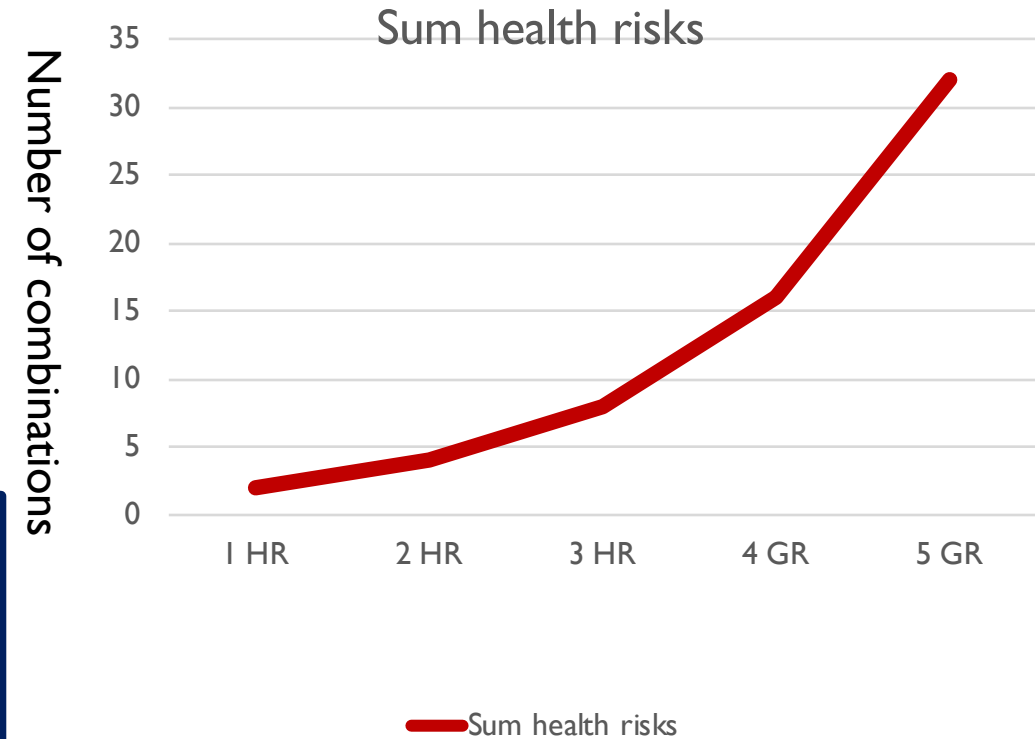
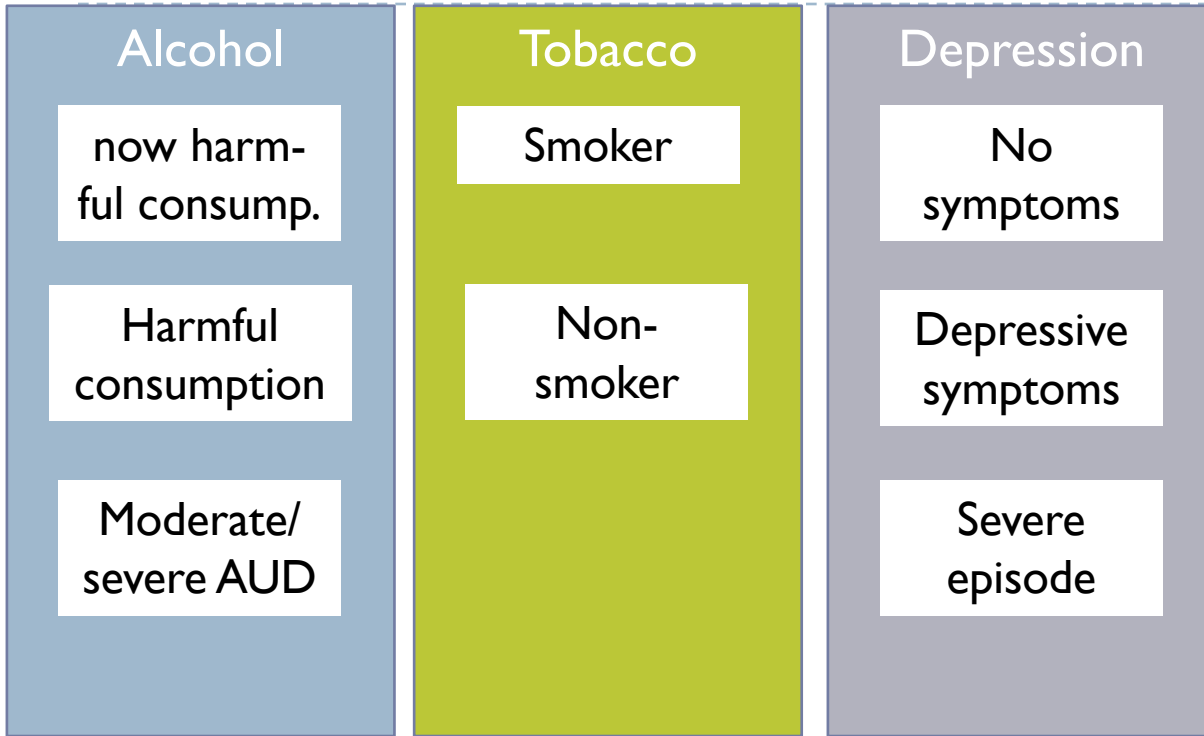
- ▶ More often depressive
  - ▶ Subsyndr. depression (18.9% vs. 12.4%,  $p < .001$ )
  - ▶ Major depression (10.4% vs. 6.6%,  $p < .001$ )

# Conclusions I

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- ▶ With proactive recruitment, the reach of patients for E-Health interventions without motivation to change can be increased significantly
- ▶ Most patients showed more than one health risk: 83% 2 risks, 51% 3 risks
- Screening procedures should address different health risks simultaneously
- Improvement of efficiency of Recruitment (personnel, time, setting, patients)
- Building of synergies

# Example combination possibilities



- Data processing solutions are essential
- Tablet-computer based screenings
- Algorithm-based assignment

# Conclusions II

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- ▶ Participation rates in the proactive screening were very good, in the interventions rather low
  - The more stigmatised the health risk, the lower the participation rate (1. smoking, 2. harmful alcohol consumption, 3. depression)
- OR
- The more impaired, the higher the need for an intervention (1. depression, 2. harmful alcohol consumption, 3. smoking)
- ▶ **More research is necessary in terms of:**
  - ▶ Increasing participation rates, de-stigmatization
  - ▶ Reasonable combination of different health risks in E-Health interventions
  - ▶ Implementation and integration of screening und intervention in the routine of hospitals and practices

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**Thank you for your attention!  
In case of questions, critique, suggestions:**

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