Committee on biomarkers in Phoniatrics
20230621_Introductory meeting

Chair
- *Mieke Moerman – Belgium - present*

Members
- *Abdelgoad Ahmed – Saudi Arabia*
- *Ashaat Neven – Egypt - present*
- *Camesasca Valentina – Italy - present*
- *Farneti Daniele - Italy*
- *Hernandez Villoria Ramon – Venezuela - present*
- *Kaminska Ilona - Poland*
- *Khaydarova Gavkhar – Uzbekistan - present*
- *Oguz Haldun – Turkey - present*
- *Paderno Alberti - Italy*
- *Pedersen Mette – Denmark - present*
- *Uloza Virgilijus - Lithuania*

Please Introduce Yourself

Definition

Biomarker

In 1998, the National Institutes of Health Biomarkers Definitions Working Group defined a biomarker as **"a characteristic that is objectively measured and evaluated as an indicator of normal biological processes, pathogenic processes, or pharmacologic responses to a therapeutic intervention."**
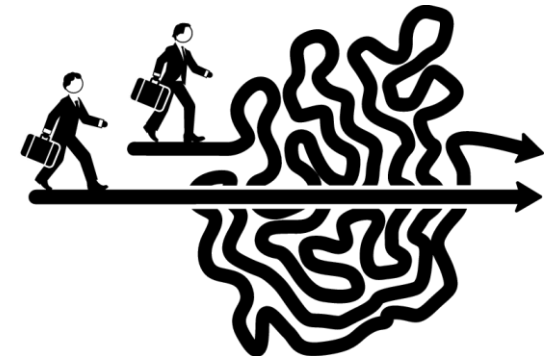
Molecular, histologic, radiographic, or physiologic characteristics are types of biomarkers.

prognostic/predictive value & monitoring value

Definition

Phoniatrics

The medical discipline regarding
communication (voice, speech, language & hearing) and **swallowing** problems

Glottal Function

Voice & swallowing

The three most important and highly relevant functions of the glottis are
to facilitate **ventilation**, facilitate **phonation**, and provide **airway protection**.

Prevalence of swallowing & voice problems

Individuals

1. Dysphagia: 4% adult population

2. Dysphonia: 3-9% of adults

Patients

3. Parkinson: 80%

4. Alzheimer: 84-93%

5. H&N onco: +/- 40%

Prevalence of swallowing & voice problems

Individuals

1. **Dysphagia: 4% adult population**

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3. **Parkinson: 80%**

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5. **H&N onco: +/- 40%**

Country	Population	# Adults (25-65j)	Dysphagia (4% of adults)	Dysphonia (5%*37,5%)
Belgium	11,6M	52%	240K	217K
The Neth	17,5M	52%	364K	328K
Germany	83M	53%	1,80M	1,5M
US	332M	65%	8,6M	6,2M

Region	Population	Parkinson	Alzheimer	H&N onco
Europe	746M	1,2M	9,7M	450K
US	332M	1M	6,2M	66K

Region	Population	Parkinson (80%)	Alzheimer (90%)	H&N onco (40%)
Europe	746M	960K	8,7M	180K
US	332M	800K	5,6M	26K

Voice related biomarkers
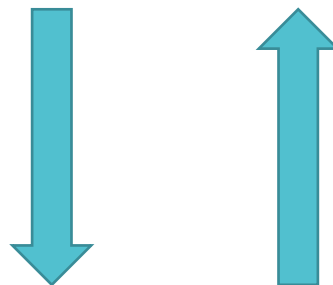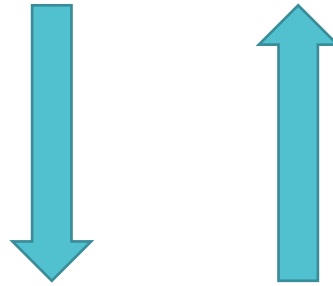
Disease

Voice Change
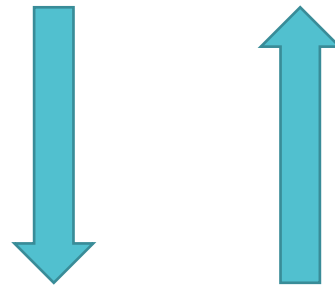
Voice related biomarkers

Disease

Voice Change

- Up to 78% of early stage **Parkinson-patients**
- **NDD:** early diagnostic

but...

Voice related biomarkers

Disease

Voice Change

- Up to 78% of early stage **Parkinson-patients**
- **NDD:** early diagnostic
- **Alzheimer, cognitive** diseases: often combined with language, verbal fluency, word finding difficulties, semantic errors
- **MS** & **Reumatoid arthritis**: voice and phonatory behaviour (DBS!): >> articulation, respiration & prosody
- **Mental health & emotions**: acoustics & linguistics
- **Cardiovasc & diabetes**
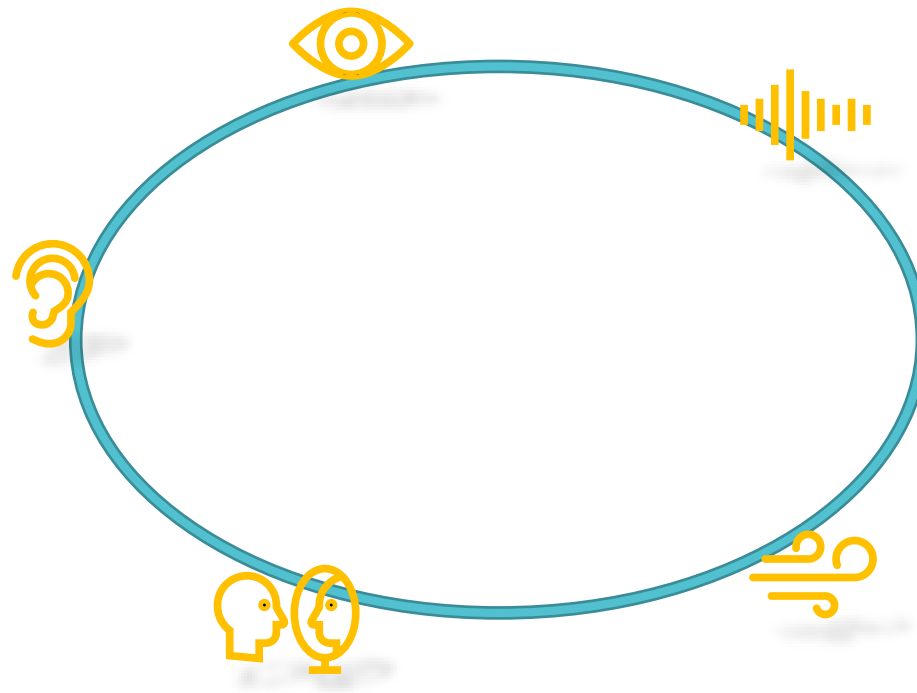- **Covid, resp condition**

Voice related biomarkers

Disease
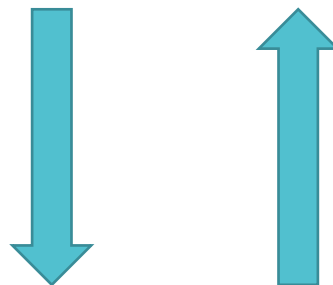
Voice Change

Voice Change (lit) ≠ **Voice / glottal function**

Multidimensionality

Acoustics alone is not sufficient.
Linguistics, semantics & vocabulary, ... do not reflect glottal function.
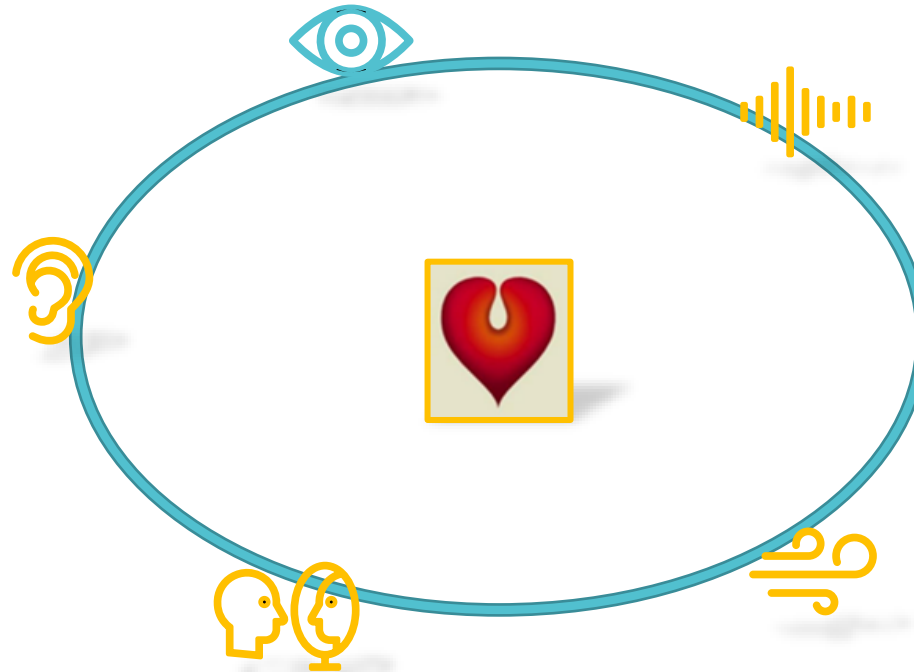
Clinical BM_Glottal Function

MEDTECH

Screening

Triage

Assisted diagnosis & therapy

Severity assessment

DIGITECH

IT driven medical guidance, analysis & automation

Tangible follow up

Self-management

Personalized guidance

Virtual testing
Available/Affordable/Accessible

Defining course & settings

WP1: literature Ramon Gavkhar Neveen
- Status as of today
- Defining unmet needs/challenges

WP2: digital clinics / virtual testing Valentina
- Multidimensional model in clinical practice (e.g. aerodynamics)
- Pilots (data input) & controlled trials
- Validation (Parkinsons?)

WP3: technical Ramon Gavkhar
- Acoustic requirements
- IT/GUI/Data requirements
- AI / Deep learning / convolutional networks

WP4: reports & publications Neveen Mette Valentina
- Position statement 2024
- Clinical reports
- Technical reports

WP5: funding: Haldun & Mieke
- Michael James Fox Foundation?
- European subsidies?

Reflections??

Who is willing to contribute to what?

Committee meetings:
- every 2 or 3 months?
- Timeslot preference?
- Rotating ppt presentations / reporting?

OTHER THOUGHTS?

Conclusions 1

The UEP Biomarkercommittee is a growing **dynamic** and **enthusiastic** group that is willing to work togehter around establishing a **clinical (hybrid) biomarkermodel of the glottal function**. The first goal is to develop a **virtual testing** based on the multidimensional voice assessment protocol (P. Dejonckere et al 2000).

To achieve these goals, the biomarkercommittee divides the work in **working pacakages** (WP). These WP are closely linked to each other and must not be seen seperately. The findings of one WP is a very valuable input for another WP. Members are invited to commit to one or more working packages (in the former slides the preference of those present are marked in blue; for those not having been able to attend, please send an email with your preferenec to the chair, Mieke Moerman). If needed, associate members can be involved.

The committee recommends to designate **a lead per WP** (please communicate to each other). The lead is supposed to motivate the contributors, to align initiatives and then report on behalf of the WP on the bimonthly biomarkercommittee meetings. Each lead is given the opportunity to go into more detail using a ppt presentation in a rotating schedule

Conclusions 1

Starting form **September 2023** on the UEP biomarker committee wil meet (virtually) **every 2 months**. The exact date and timeslot varies according to the various timezones and is defined through a **Doodle**.

You are kindly invited to fill out this link:
https://doodle.com/meeting/participate/id/bWqQr9Ee

Meanwhile, please send your picture, affiliations, preferred WP & function (lead or contributor) to Mieke Moerman. As such we can provide the UEP office with the exact information for the website.
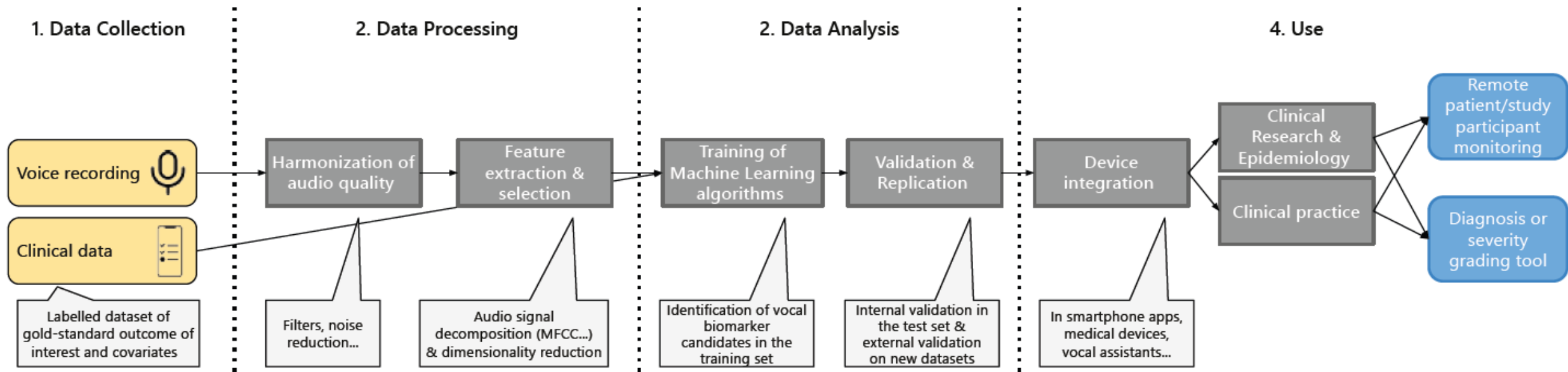
Fig. 1. Pipeline for vocal biomarker identification, from research to practice.

From Fagherazzi G, Fischer A, Ismael M, Despotovic V: Voice for Health:
The Use of Vocal Biomarkers from Research to Clinical Practice. Digit Biomark 2021;5:78-88. doi: 10.1159/000515346

Some refer

What are Biomarkers?

Kyle Strimbu and **Jorge A. Tavel, M.D.**
Division of Clinical Research, National Institute of Allergy and Infectious Diseases National Institutes of Health, Bethesda, MD

Abstract

Purpose—This article provides working definitions and a conceptual framework to understand the roles of biomarkers in clinical research.

Recent findings—The definitions of the terms discussed in this article—medical signs, symptoms, biomarkers, surrogate endpoints, clinical endpoints, validation—are still under discussion, as are their relationships to each other, but broad consensus has developed in the past decade and a half about the necessity of distinguishing between, in particular, surrogate and clinical endpoints.

Summary—This article outlines the major definitions of the key terms in this field and considers select cases where misunderstandings about the terms led to flawed research conclusions.

Keywords

Biomarkers; surrogate endpoints; clinical endpoints