

# Cochlear Implant Therapy Concept

- German Hearing Center (DHZ) –  
**a part of the ENT-Clinic MHH**

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# The ENT Department in figures

<b>Wards:</b>	<b>3</b>
<b>Beds:</b>	96
<b>Patients:</b>	25.000 outpatients (each year) 6.000 inpatients
<b>Staff:</b>	200
<b>in detail:</b>	30 physicians 69 nurses at wards: 50 at ENT-operation area: 12 at ENT outpatients' clinic : 7 9 educational professionals and speech therapists 27 technical staff engineers and hearing-aid audiologists: 17 medical lab technologists: 10 38 research staff
<b>Cochlear Implants 2015:</b>	410
<b>Middel ear implants 2015:</b>	52

# patients load management

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## Preliminary investigation

Audiometry (tone and speech)

ERA = ABR, SN10, CAP, ASSR, ECoChG, OAE, CT & MRI (\*)

Additional handicaps (\*)

not-otogene speech-development disorders, Syndromale illness (Genetics), Autismus

Additionaly: pedagogic-therapeutic counselling about communication skills, expectations and therapeutic intervention after operation, technical support and counselling

## First fitting

Direct fitting: 2-3 days after implantation

First Fitting: 4-6 weeks after implantation

## Rehabilitation

Starts with preliminary therapeutic investigation and 4-6 weeks after implantation

## After care

Starts after first fitting week

# patients load management - adults

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## First fitting

4-6 weeks after implantation

3 to 5 fitting sessions,

4 single therapy lessons, 2 group therapy lessons,

1 visit to a museum with FM-system

2 visits with ENT-doctor

1 audiometry

1 vestibular diagnostic

## Further interventions are possible

At home with family

With a speech therapist in the home town

In special rehabilitation clinics (about 3 weeks) – depend on the insurance of the pat.

# patients load management - adults

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## **After care: (regular intervals)**

Starts after first fitting week

3 month

6 month

12 month

Once a year

## **Remote Care**

After care with a hearing-aid acusticians near home town (17 center work with DHZ)

## **After care schedule:**

- In patients with residual hearing: audiometry
- Fitting/ tune up
- Speech comprehension tests (numbers, monosyllables, sentences in quiet and noise)
- Visit ENT-doctor

# patients load management - children

## First fitting and Rehabilitation

- 4-6 weeks after implantation
- 3 to 5 fitting sessions (depend on unilateral or bilateral implantation)
- Fitting: Technical professional together with therapeutic professional
- Parent counselling as often as necessary
- First therapeutic intervention to guide the parents how to work with the child at home
- 2 visits with ENT-doctor
- 1 audiometry

### At home:

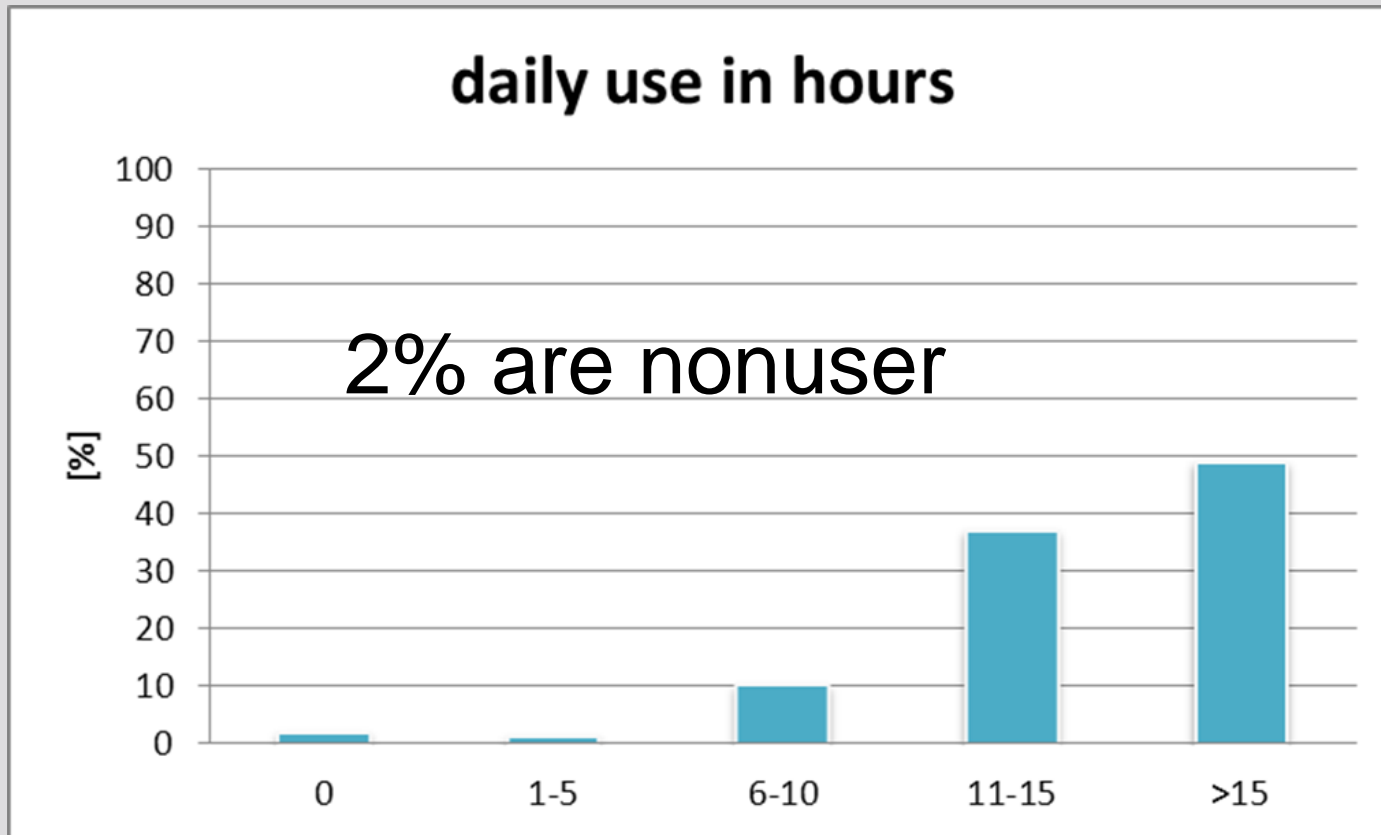
speech and hearing therapy and additional therapy, if necessary, 1-2 x/ weeks,  
Information exchange between therapist , kindergarten, school at home town and DHZ

### DHZ visits (regular intervals):

- Every 8 weeks till first half a year
- Every 3 month till first 2 years
- Every half a year till 18 years of age
- Once a year

# Non use of CI

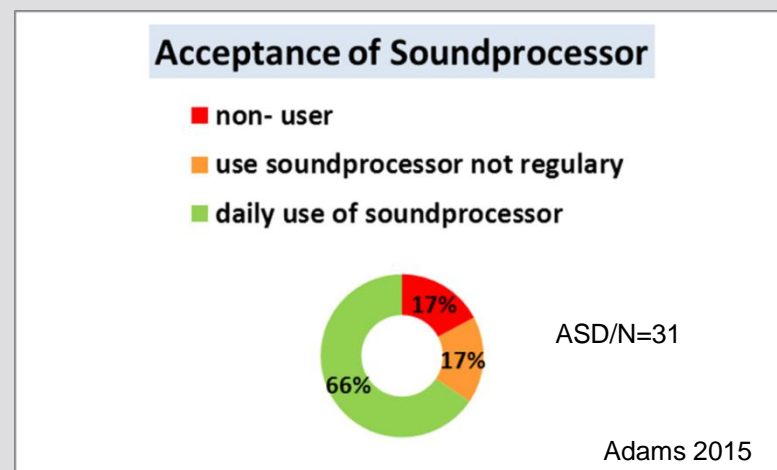
Survey in patients with pediatric cochlear implant, 174 answered





# Reasons of non use

- The child did not want a CI
  - Older brother got the CI simultaneously with younger brother
- The timing of the implantation was too late
  - poor performer
  - Wrong suggestions about listening with CI – often in sequ. bilateral patients
- Social pressure (class situation)
  - SSD
- Psychological problems
  - depression, mobbing
- Additional handicaps
  - Autism spectrum disorder



# my vision of CI teams in the next century

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- Not to lose the aim: All patients are individual cases!
- Use of individual length of electrodes, depending on the cochlear length and size
- Easely handling of the speech processor
- Use of safe objective measures in fitting session (remote)
- Fitting (within a certain frame) is possible via Smartphone
  - Important for elderly patients or parents – relatives or nurse can fit the speech processor
- hearing- and speechtherapy is possible in every village
- CI-Center are necessary for whole interdisciplinary network

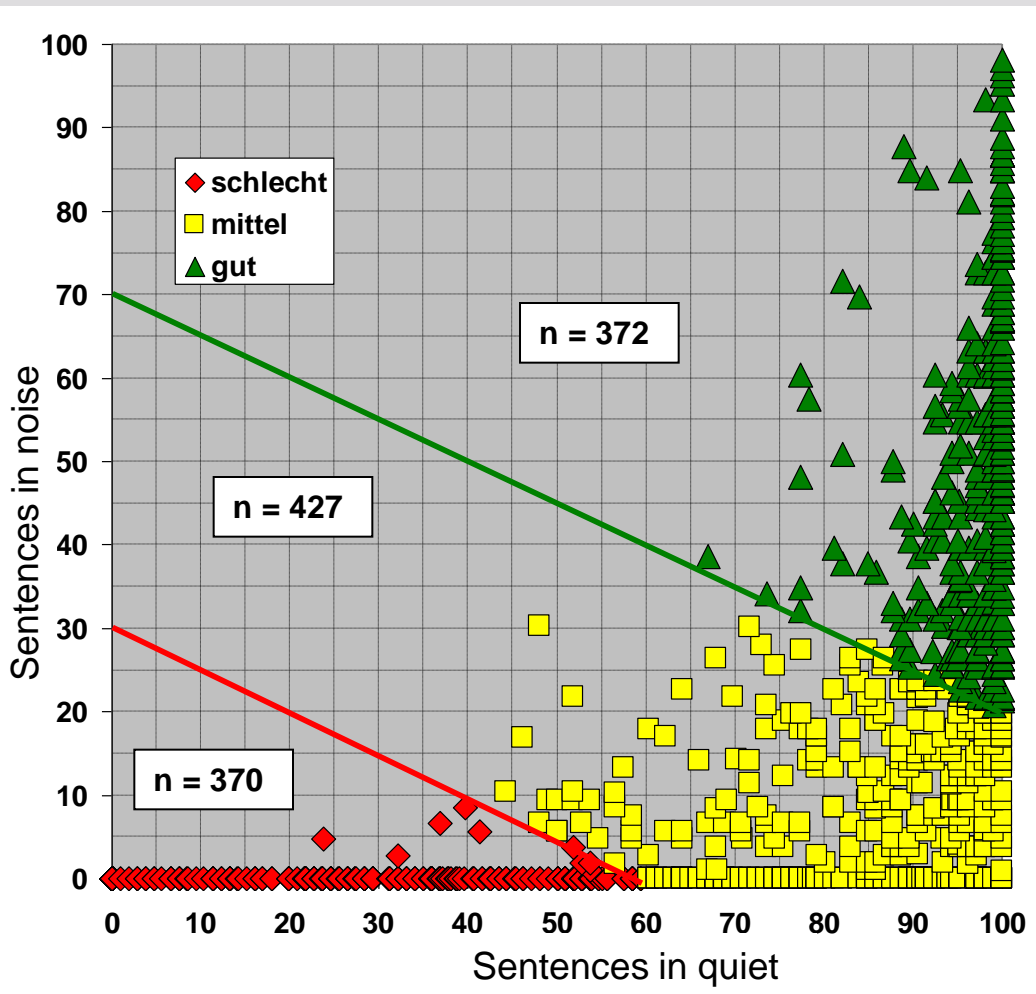
# View to some outcome data: 1206 adults

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- 91,7 % of the patients would choose implantation again
- the expectations of 64,7 % of the patients are fulfilled or better than that
- 66,5 % can use telefon
- 54,1 % like listening music
- only 26,2 % of the patients use accessories, partly or often (FM, audio cable, induction)
- more than half of the patients do never (or very seldom) change the loudness or the microphone sensitivity
- the subjective evaluation of the patients outcome is similar to the objectiv measurement.



# View to some outcome data: adults



1169 from 1206 patienten were classified in 2010

Classification in performance classes:

**f(sentence quiet) = sentence quiet + 2\*sentence noise**

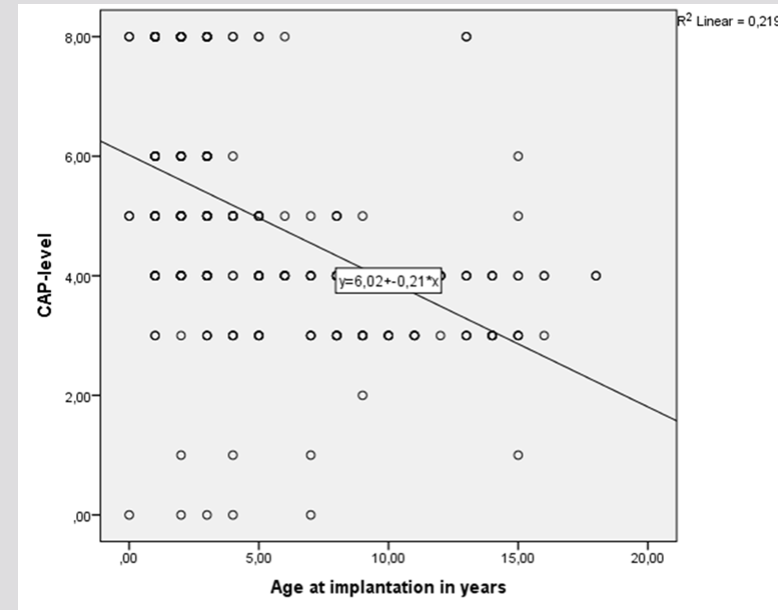
bad :  $f(\text{sentence quiet}) < 60$   
middle:  $60 \leq f(\text{sentence quiet}) \leq 140$   
good:  $f(\text{sentence quiet}) > 140$



# outcome influence factors in children:

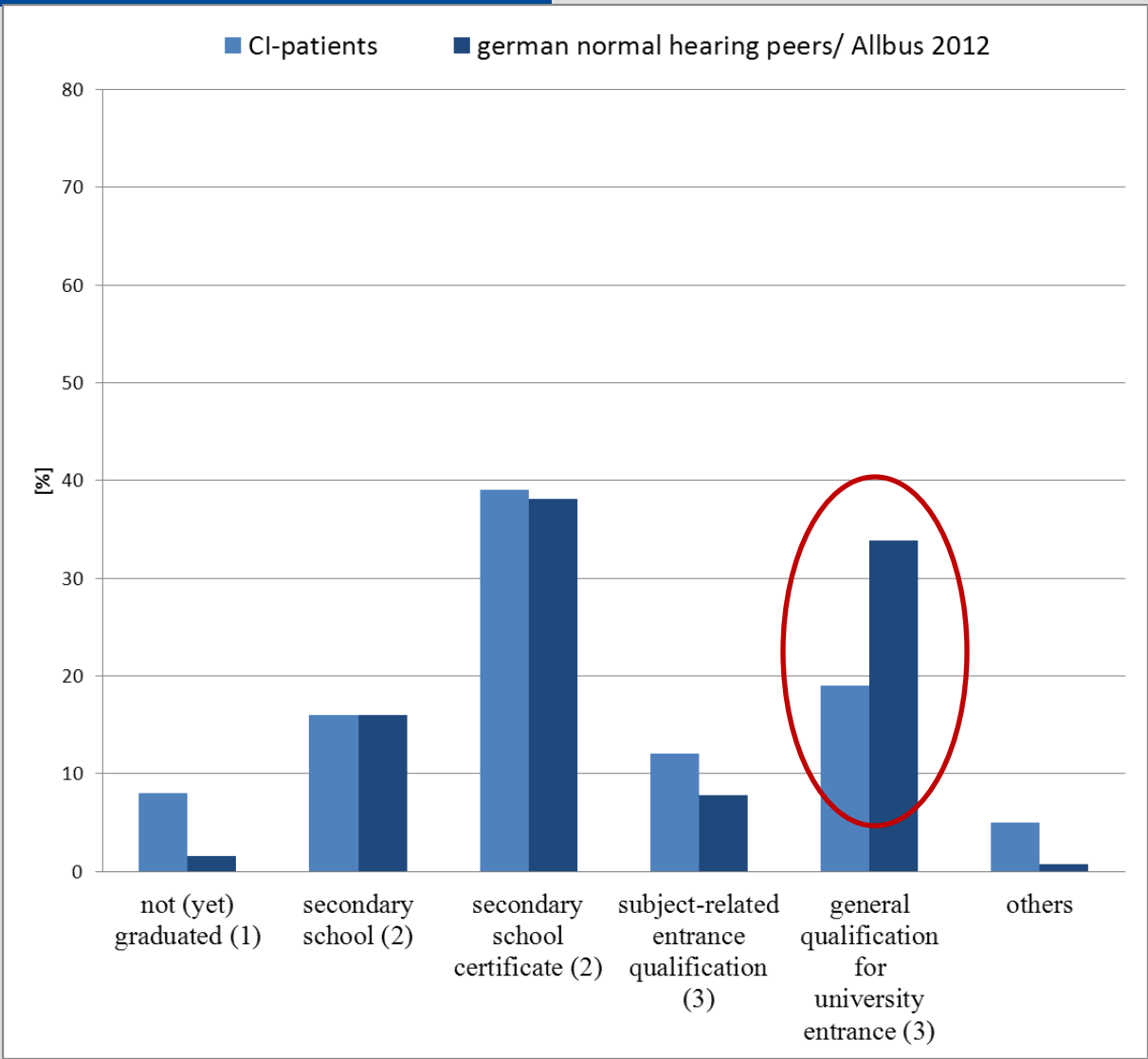
all significant

- Native speaker
- additional handicap
- Implantation < 3 years
- Mainstream institution
- Use of spoken language
- Understanding of spoken language
- Reading skills
- Writing skills



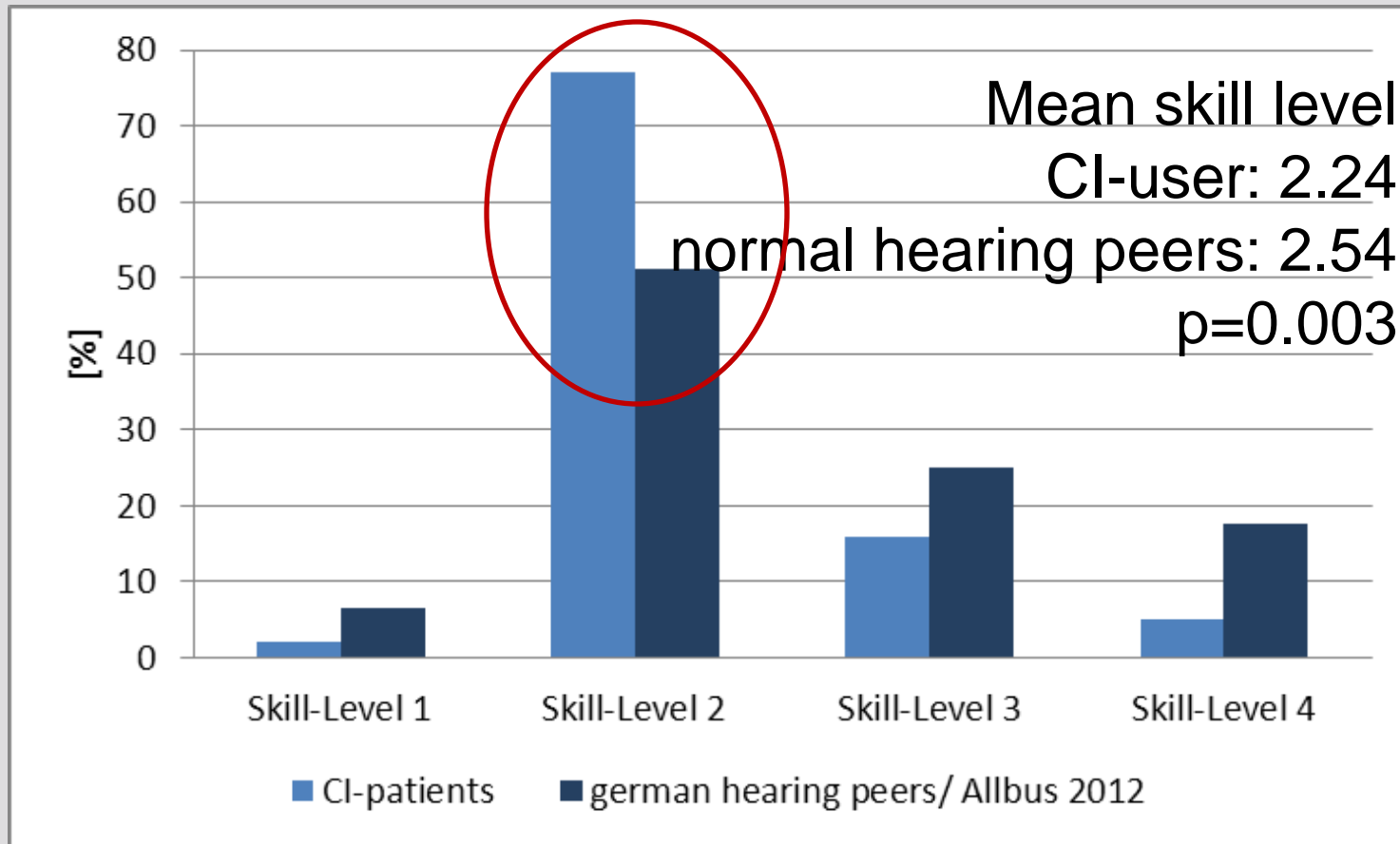
# International Standard Classification of Education

## Type of school (ISCED-97-level)



# International Standard Classification of Occupation

ISCO-88 skill-levels



# ISCO-88 skill-levels

	<b>ISCO-88 major group</b>	<b>ISCO-88 skill-level</b>
1	Legislators, senior officials and managers	-
2	Professionals	4
3	Technicians and associate professionals	3
4	Clerks	2
5	Service workers and shop and market sales workers	2
6	Skill agricultural and fishery workers	2
7	Craft and related workers	2
8	Plant and machine operators and assemblers	2
9	Elementary occupations	1
0	Armed forces	-



# Thank you for your attention!



ENT Clinic

Chair: T. Lenarz, PhD, M.D.

ENT Physicians

Biologists, Engineers, Pedaogigcs

Diagnostics

Surgical Therapy

DHZ

Science

Conservative therapy Th.

Oncocology / surgery

Sleep laboratory

Plastic Surgery

Rhinology a. Allergology