Bedrijfsbezoek 4/03: Cochlear

**Intro**

Why only one company in US? <-> a lot in EU:

* Language
* Regulation: in US: FDA (food and drug (?)administration) vs in EU: CE-label (allowed to sell)

But main reason is: Reimbursement   
-> qualificatie voor terugbetaling vroeger 90dB verlies, nu 70dB (en nog wat criteria). Dus dubbel zoveel mensen krijgen nu terugbetaald binnen Europa. => meer kantoren nodig

Hearing loss:

* Prevalence: 5% of world population experiences hearling loss
* Not everybody needs an implant, a hearing aid could already help significantly

How does natural hearing work?

1. Sound -> ear canal

… uitleg op slide

Loud noise => damage to inner ear (sensible hearing loss) (i/t cochlea)

Conductive hearingloss (in canal, …)

“Never too early, never too late”

* Early: implant for children placed at very young age: maximize reduction of information loss (speech-writing-information processing in hearing)
* Late: reduce rapid progression of dementia

**Cochlear implants:**

(1)

Coil-skin-coil: magnet force/type depends on skin (flab) thickness

(2) Bone conduction system:

Connected to the skull 🡪 sound/vibrations transferred to the inner ear

Passive connection to the skull

Metal parts: titanium, screw rigid coupling to the skull: surface treatment of titanium screw

New system: not going through the ear (no risk for infection)

Active connection to the skull

15 years from initial idea to commercialization

Metal parts: titanium

Acoustic implants:

….

**R&D**

-firmware (embedded environment, small amount of resources, limited battery power, memory, … ) (somewhere between hardware and software) vs software (on a pc or larger device)

(Shared)

Input filtering

Sound classifier: quiet environment, listening to music, conversation, …

Mixing

Split into cochlear implants & bone conduction + acoustic implants

**Innovation Focus areas:**

* Hearing outcomes
* Lifestyle
* Connected care
* Hearing indications