

Technology & Innovation

The Solution to Treat the Burden of OsteoArthritis

Prof. Emmanuel Thienpont, MD, MBA, PhD

Cliniques Universitaires Saint Luc - UCL

Brussels, Belgium



What is OsteoArthritis

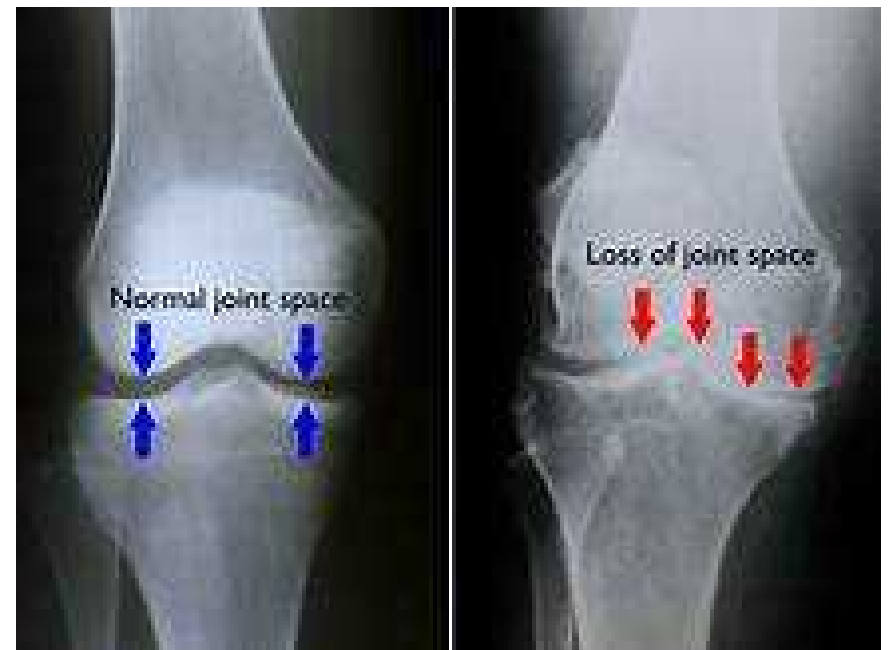
Wear & tear of the joint

Pain – Stiffness - Deformity

Normal Knee



Osteoarthritis



Burden of OsteoArthritis

Growing Burden 673%

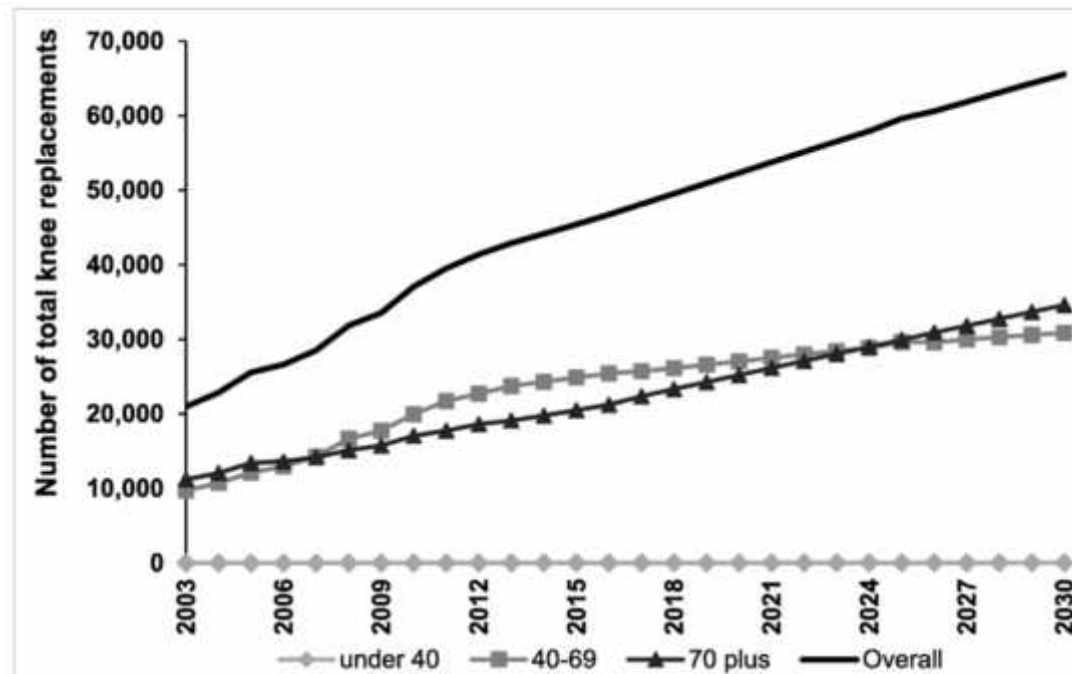


Fig. 1

Growth in number of total knee replacements from 2003 to 2030 under Scenario 1. Number of total knee replacement procedures for 2003–2013 is based on numbers reported to the AOANJRR. Number of procedures from 2014 onwards is based on projections under Scenario 1

Kurtz JBJS Am 2007

Problem of Demographics

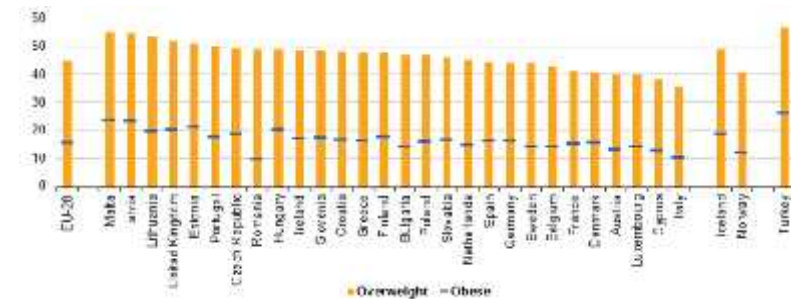
Aging population

Knee OA – female disease

Obesity – increasing mean BMI

Genetics – cartilage quality & alignment of lower limb

Activity level / Past surgeries / Sports trauma



Eurostat 2014

What are the Solutions

Conservative Treatment before End-stage Disease

Grade I-III



Thienpont NEJM 2015

Cost of OsteoArthritis

Pain - Disability – Comorbidity – Expense of treatment

Indirect Costs: lost wages, productivity, home care, ...

1600€

Direct Costs: medical or surgical treatment

1650€

Total Cost: 3250€



What are the Solutions

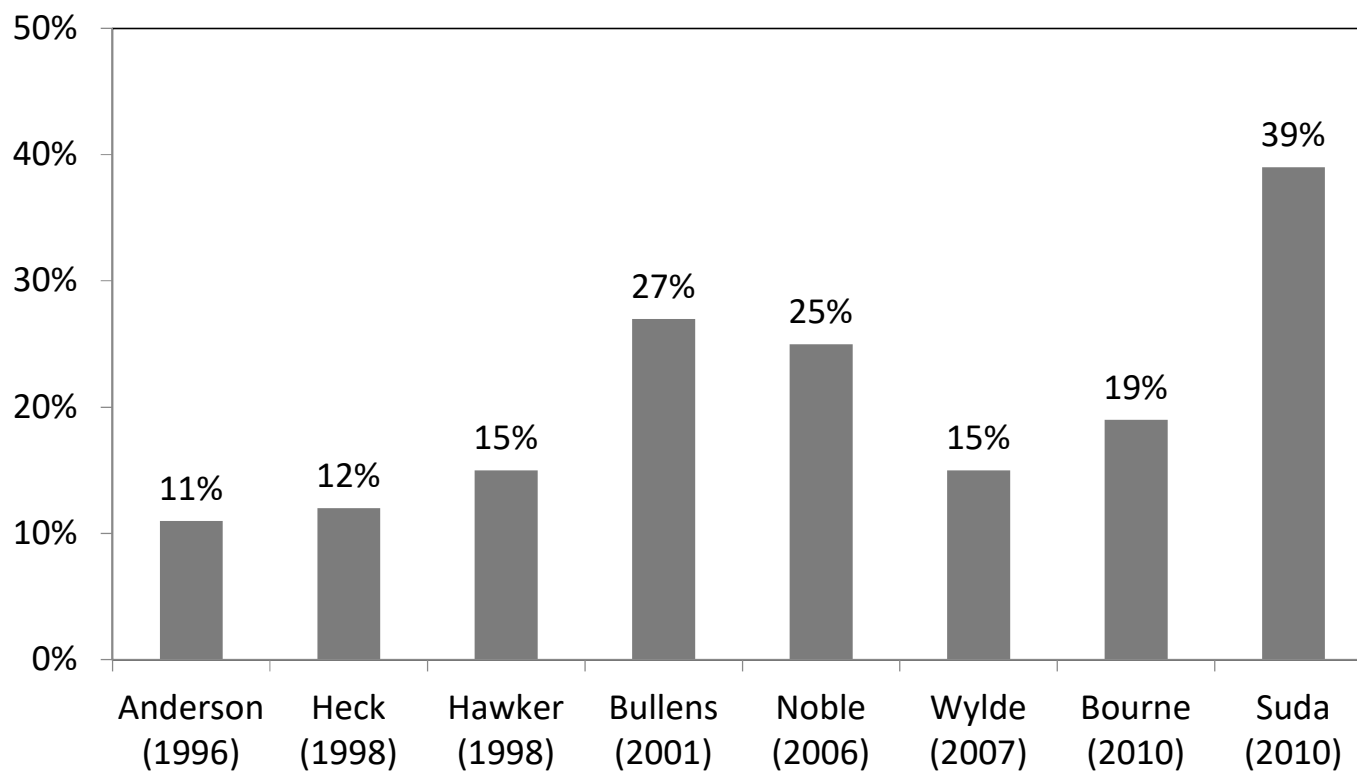
Surgery only for End-stage (Gr IV) Disease



Are TKA's Doing so Well?

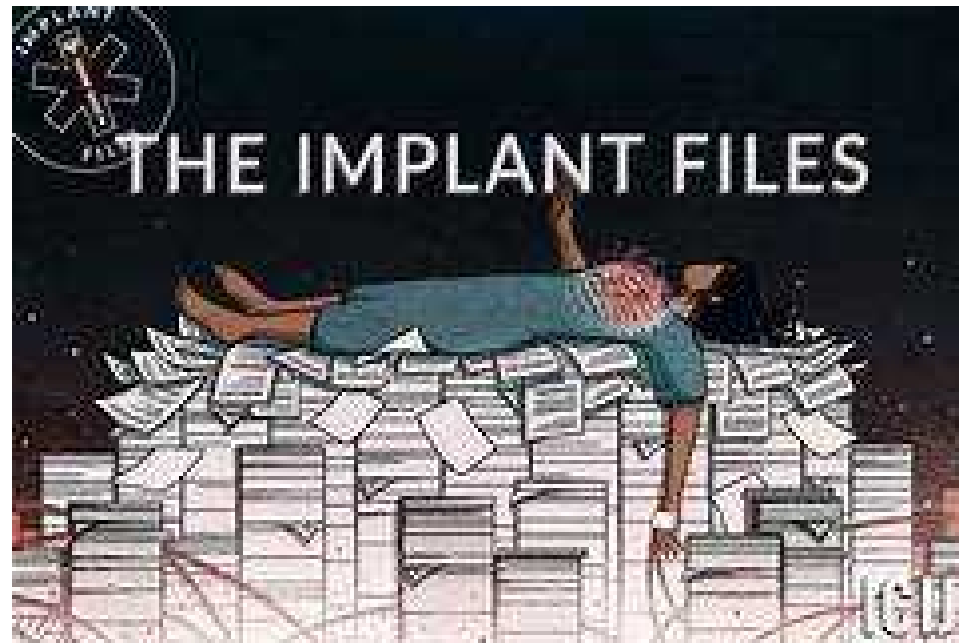
On average 1 out of 5 patients is dissatisfied

Percent of Patients Not Satisfied after TKA



Are TKA's Doing so Well?

We need and want Safe Implants



Cost of revision TKA

25000€

What are the Solutions

Patient-Specific Surgery



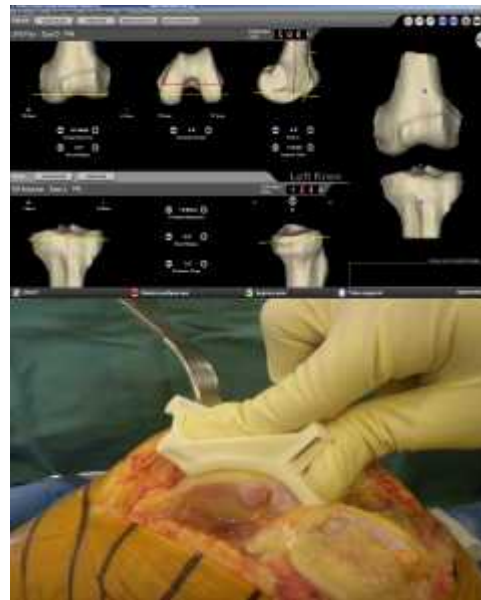
Need for Technology & Innovation

Patient-Specific Surgery

Patient-specific diagnosis

Patient-specific surgical technique

Patient-specific implant



What is Missing Today?

Definition of Experts



What is Missing Today?

Accreditation of Arthroplasty Centers



Accréditation platine pour les Cliniques universitaires Saint-Luc

Accréditation Canada International (ACI), un organisme internationalement reconnu, vient de décerner aux Cliniques universitaires Saint-Luc une accréditation générale niveau Platine, un résultat exceptionnel qui souligne l'excellence de la qualité et de la sécurité des soins aux Cliniques. Saint-Luc constitue le premier hôpital général à obtenir un tel niveau d'accréditation en Belgique. (... lire la suite)

What is Missing Today?

Quality Criteria for Implants

ODEP/NOV/MORE

The screenshot displays the ODEP website interface. At the top, the ODEP logo is followed by the text "Orthopaedic Data Evaluation Panel". A red navigation bar contains the phone number "0845 345 9991" and the email "enquiries@odep.org.uk". Below this, a dark navigation bar lists links: "Products", "ODEP Explained", "Criteria & Guidance", "ODEP Process", "News & Articles", "Submit a Product", and "Feedback". A large banner image shows various orthopedic implants. On the left, a "Find a product" sidebar includes search filters for "Product Type" (Knees), "Manufacturer" (All), "Product Name" (All), and "ODEP Rating" (All), along with a "Search" button and a "Clear Search" button at the bottom. The main content area shows a list of products. The first product is "Physica ZUK, metal back tibial baseplate" by LimaCorporate. It includes a small image of the implant, a description: "Physica ZUK, cemented, metal backed tibial component, fixed bearing, CoCr, standard poly >>", and a table of specifications: Manufacturer: LimaCorporate, Product Type: Knees, Fixation: Cemented, Modularity: Modular, Date of first use: 2005. A red box highlights this product entry. In the bottom right corner of the product entry, there is a red badge with the text "ODEP 10A".

ODEP
Orthopaedic Data Evaluation Panel

0845 345 9991 enquiries@odep.org.uk

Products | ODEP Explained | Criteria & Guidance | ODEP Process | News & Articles | Submit a Product | Feedback

Find a product

Search by Product Type
Knees

Search by Manufacturer
All

Search by Product Name
All

Search by ODEP Rating
All

Search

Clear Search

Home | Products

Sort by: Default Show: 5 Per Page Page 1 of 67 1 2 3 4 ... Show all

Physica ZUK, metal back tibial baseplate
Physica ZUK, cemented, metal backed tibial component, fixed bearing, CoCr, standard poly >>

Manufacturer: LimaCorporate
Product Type: Knees
Fixation: Cemented
Modularity: Modular
Date of first use: 2005

ODEP 10A

What is Missing Today?

Definition of Quality Criteria

What you measure, you can improve ...

Frequency of Surgical Site Infections (SSI)

Frequency of Blood Transfusion

Co-morbidity & mortality

Hospital Stay

Readmission

Early revision surgery within 2 years

What is Missing Today?

Availability of Information for Patients



What is Missing Today?

What are our options?

We want Safe Implants

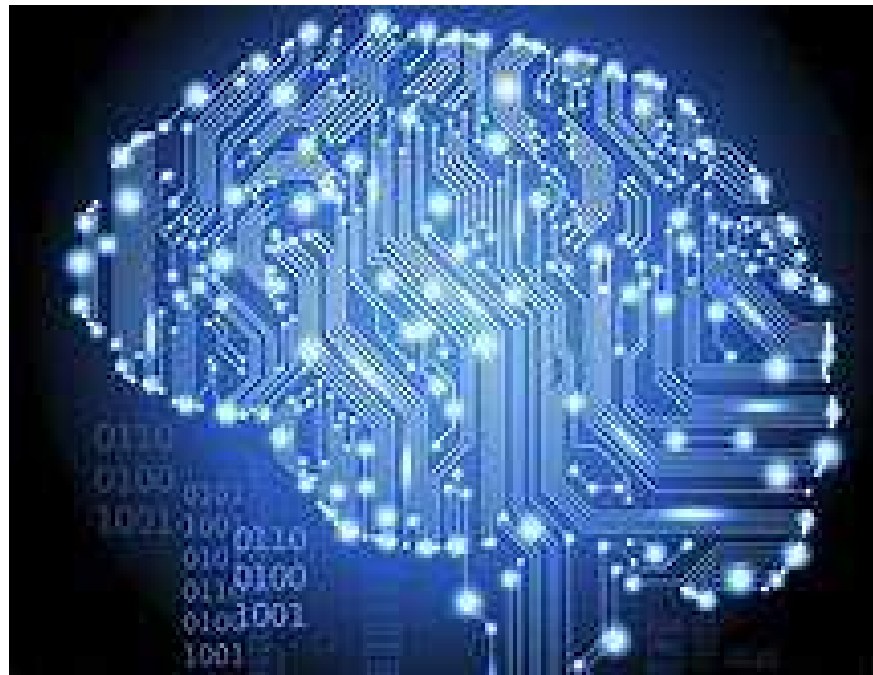
Proposed only to patients who really need them

Implanted by surgeons who know how to do this in their best possible way

With a quality follow-up on how they are doing for longevity / outcome

Technology & Innovation

Artificial Intelligence & Deep Learning to determine patient's risk
Indication & Potential Outcome



Technology & Innovation

Robotic-assisted Surgery to improve surgical accuracy & reproducibility



Get it right first ...

Technology & Innovation

Next Generation of Implants

Patient-specific implants

Onsite 3D-printed implants

New materials (fixation / infection reduction)

Biological matrices

Technology & Innovation

Regulation should allow research and innovation in Europe

Under well controlled conditions

In the hands of experts

Acknowledgments

MEP Paul Rubig

Prof. Marcel Vandevoorde

Dr. Gianluca Quaglio

Dr. Theodoros Karapiperis

The Future is Our Ambition

THANK YOU

