

Future of spine surgery

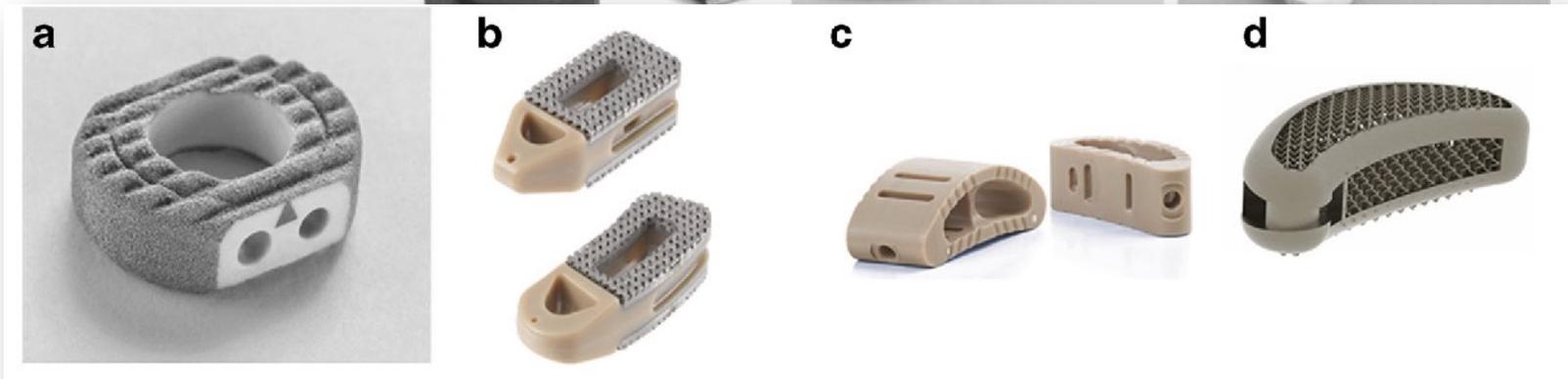
Aron Lazary



This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 766012

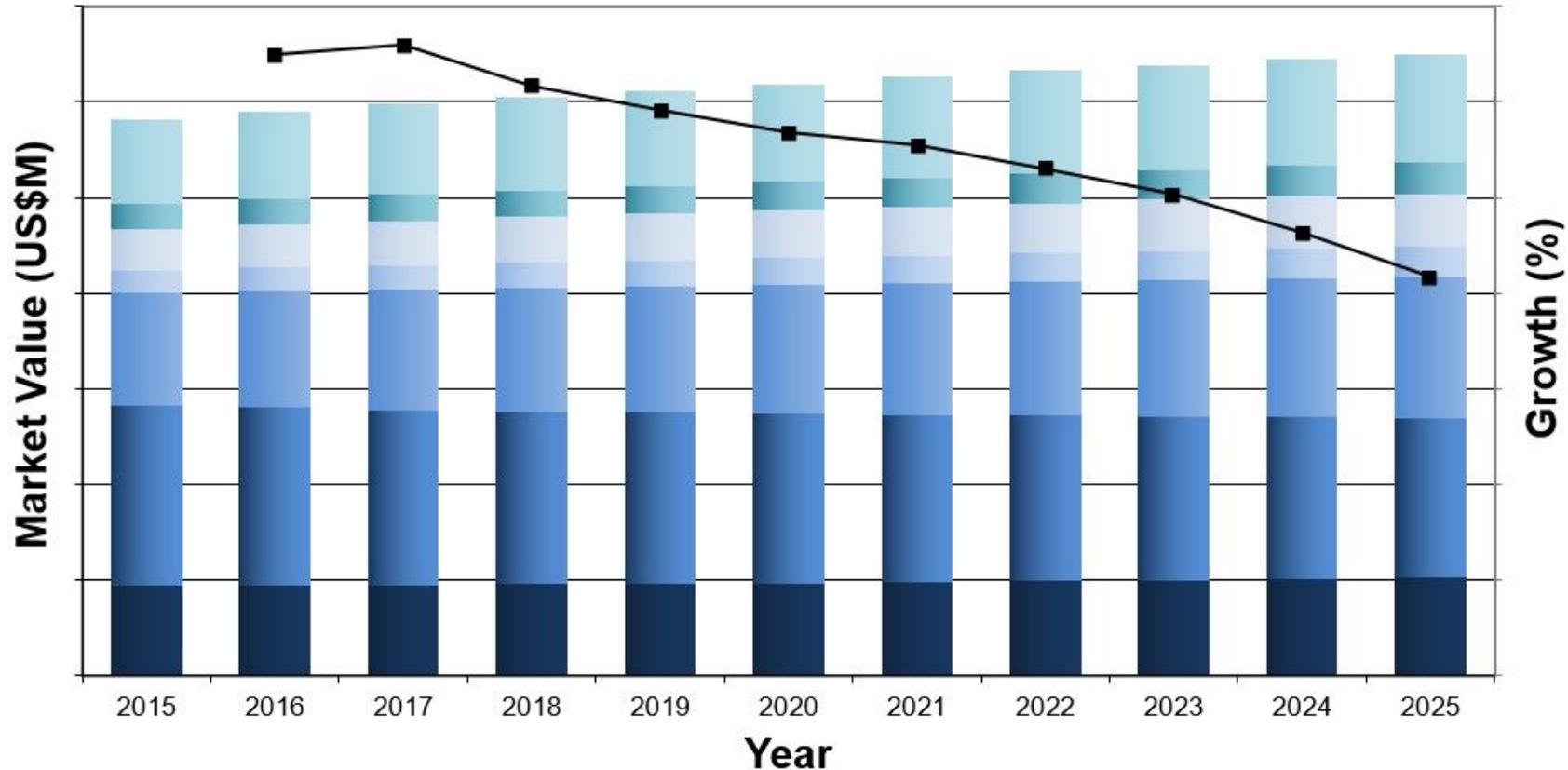
History of spine surgery

- Patients' need
- Population's need
- Technological development
 - Diagnostics
 - Surgical methods
 - Implants
 - Devices
- Business
- Fashion



Spinal Implants Market Value by Segment, U.S., 2015-2025

- Cervical Fixation Market
- Interbody Device Market
- Vertebral Compression Fracture Market
- Spinal Surgery Instrumentation Market
- Thoracolumbar Fixation Market
- Motion Preservation Device Market
- Spinal Electrical Stimulation Device Market
- Growth (%)

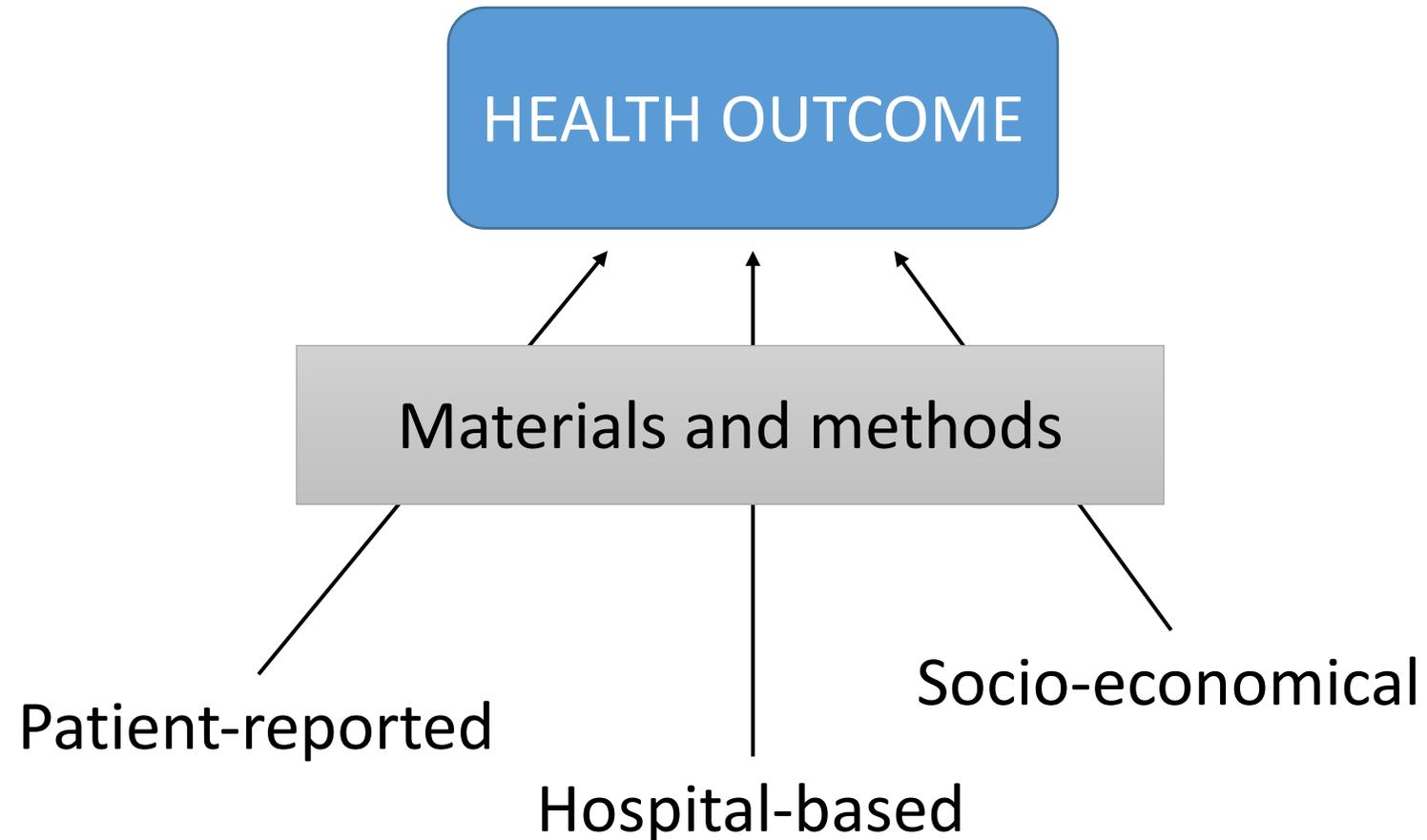


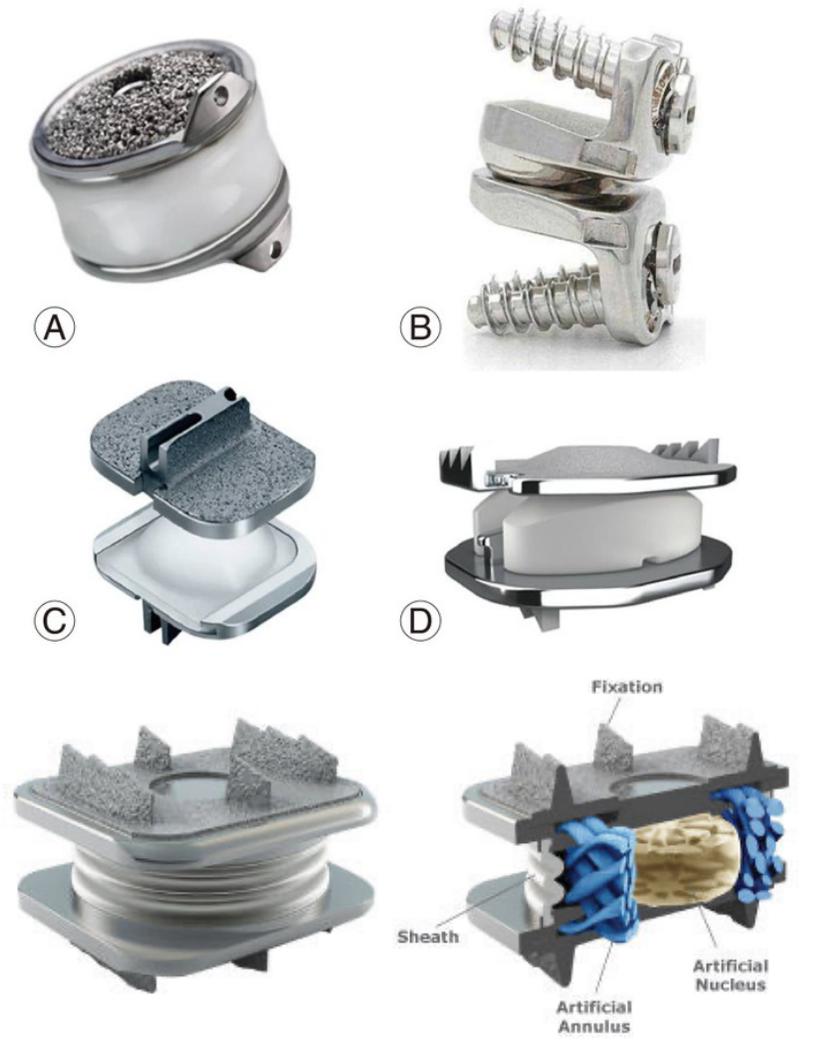
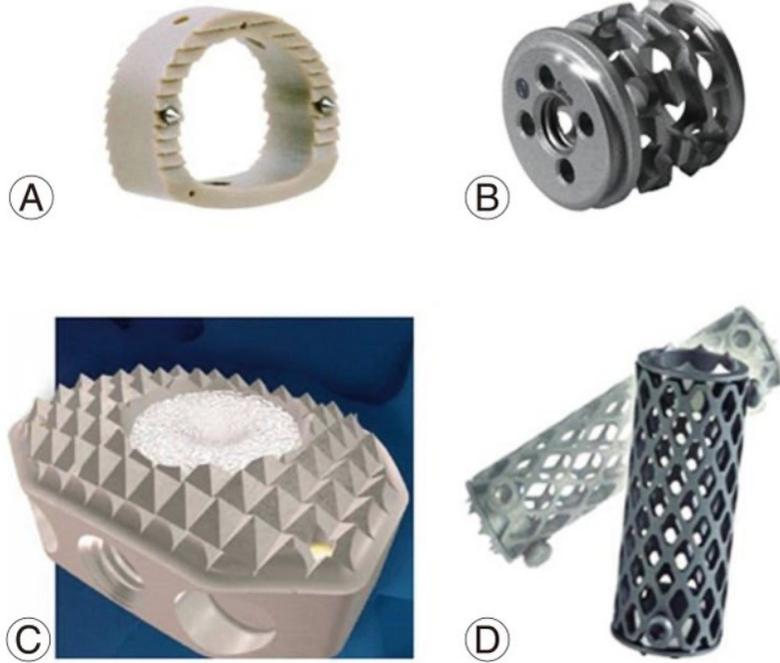
Source: iData Research Inc.

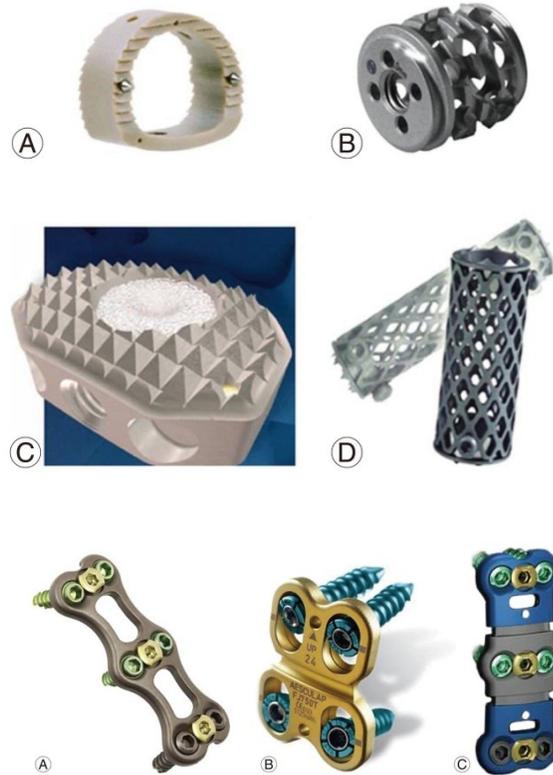
Global health care vision

- Evidence-based spine care
- General approaches
- Individual solutions
- Bio-psycho-social model
- Value-based health care

„providers, including hospitals and physicians, are paid based on patient health outcomes“



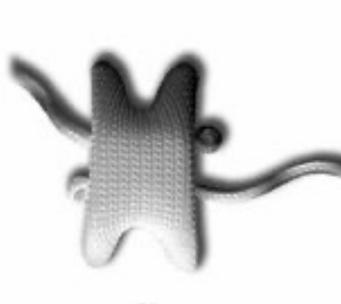




OR time	90'	75'	60-120'
Patient satisfaction	90%	91% (??)	92% (???)
„Cool” factor	1	10	100
Price	1000 EUR	2000 EUR	10000 EUR



(a)



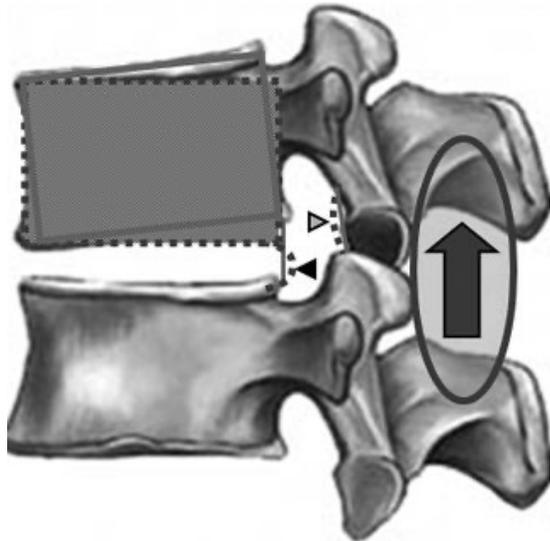
(b)



(c)



(d)



Search results for "posterior interspinous implant".

Search bar: posterior interspinous implant

Buttons: Advanced, Create alert, Create RSS, Save, Email, Send to, Sorted by: Most recent, Display options

99 results

Page 1 of 10

Year	Number of Publications
2000	0
2001	0
2002	0
2003	0
2004	0
2005	0
2006	0
2007	0
2008	0
2009	0
2010	0
2011	0
2012	0
2013	0
2014	0
2015	0
2016	0
2017	8
2018	0
2019	0
2020	0
2021	0



(k)

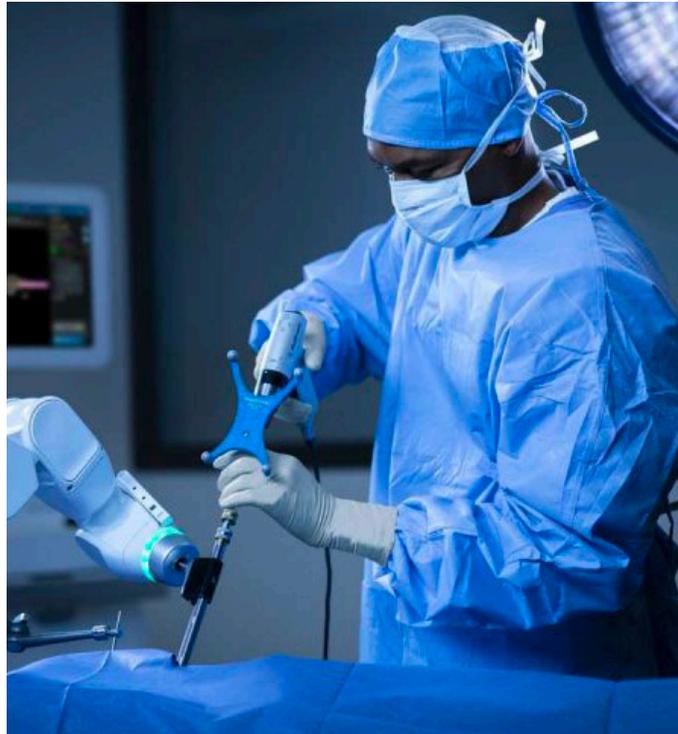
(l)

(m)

(n)

Future developments in spine surgery

ROBOTICS, NAVIGATION



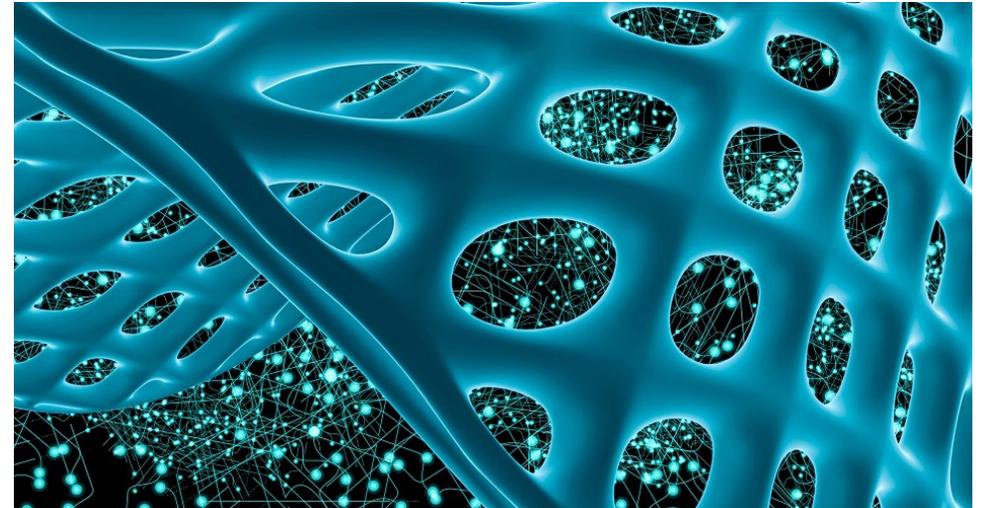
VIRTUAL REALITY, SIMULATORS



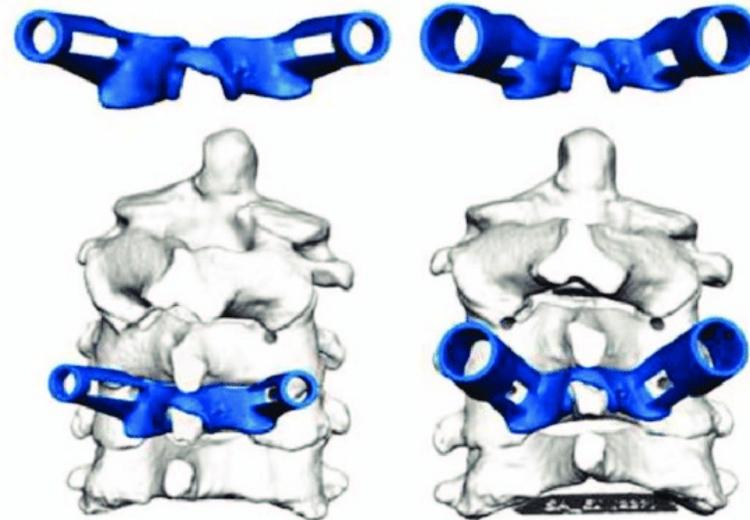
LESS INVASIVE SURGERY



BIOMATERIALS



3D PRINTING



Drill Guide
Template

Screw Guide
Template



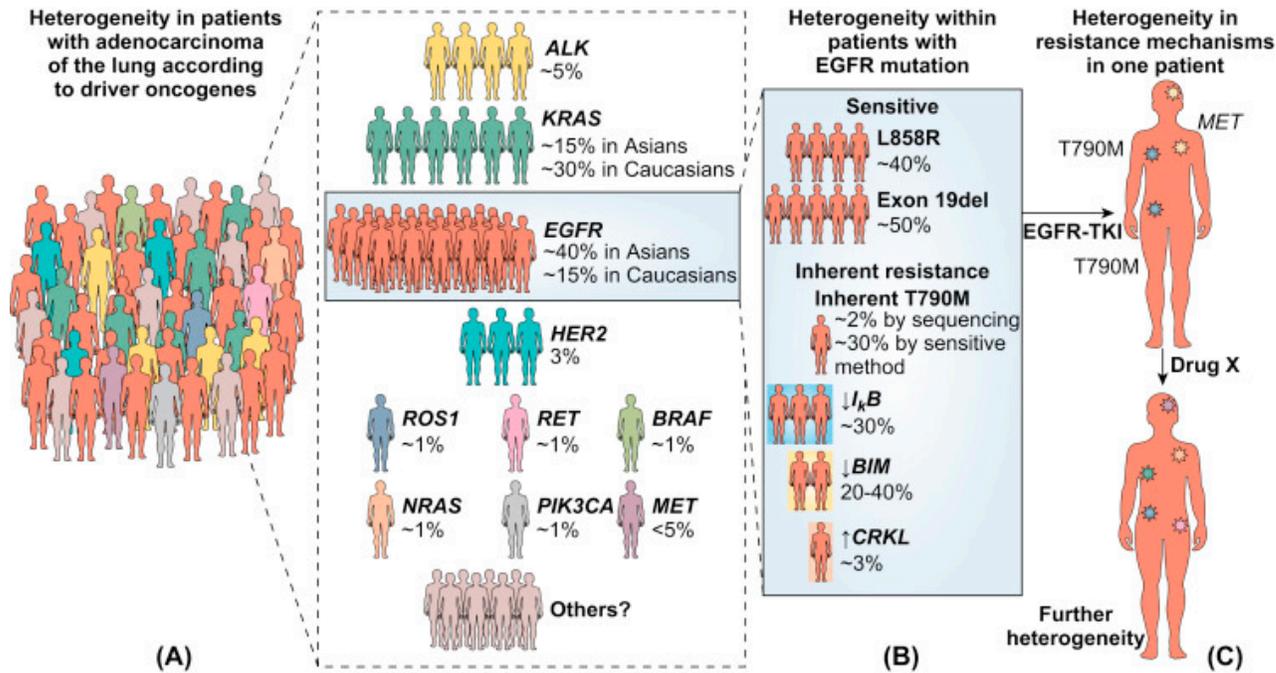


Robot: 1M
Navigation: 1M
Microscope: 0,5M
Endoscope: 0,5M

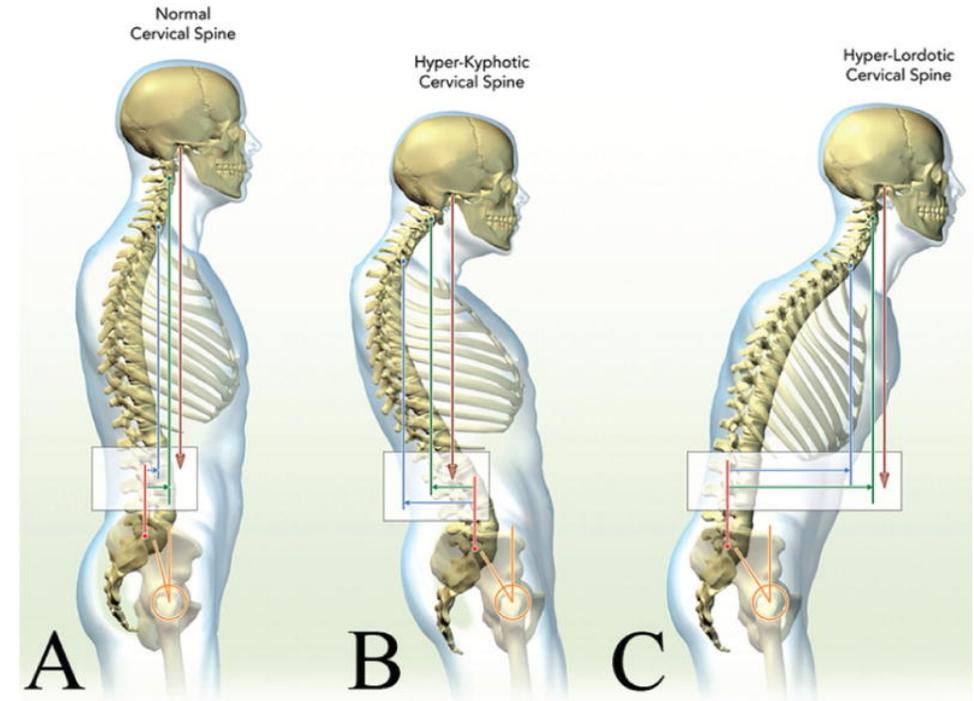
} **3M EUR**

One—level fusion:
4000 EUR (HUN) – 750 pts
20000 EUR (US) – 150 pts

PATIENT STARTIFICATION



RISK PREDICTION



Future developments in spine surgery

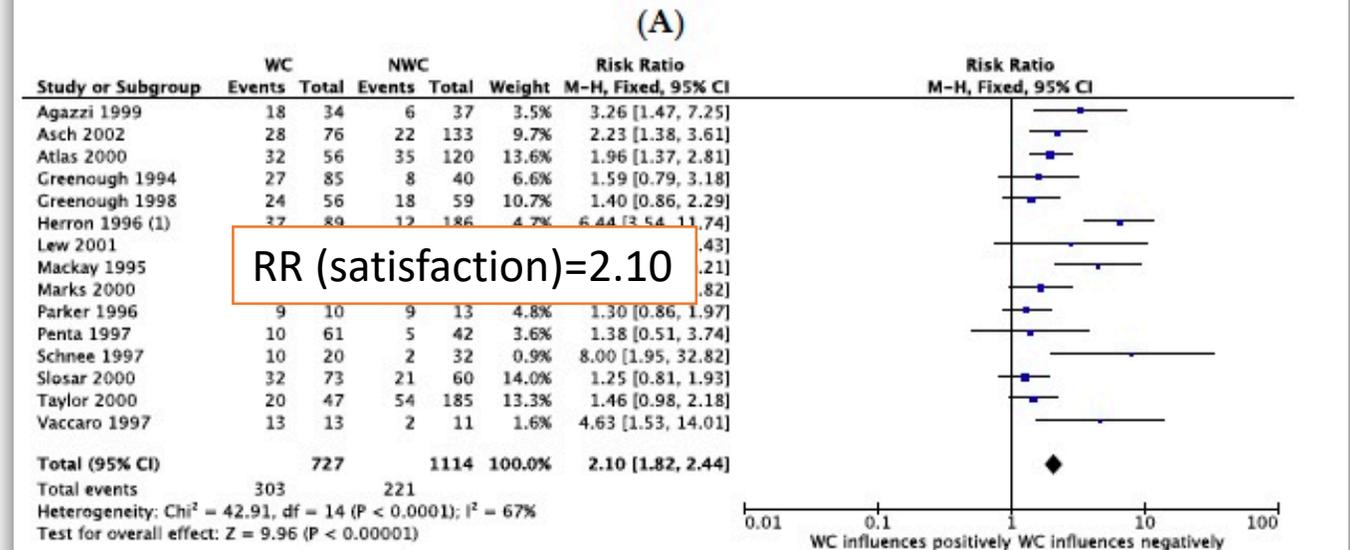
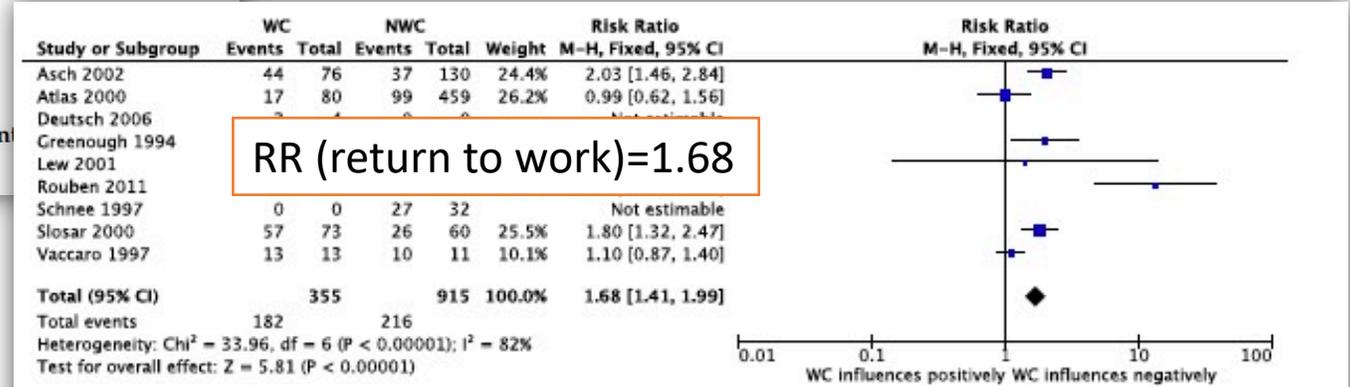
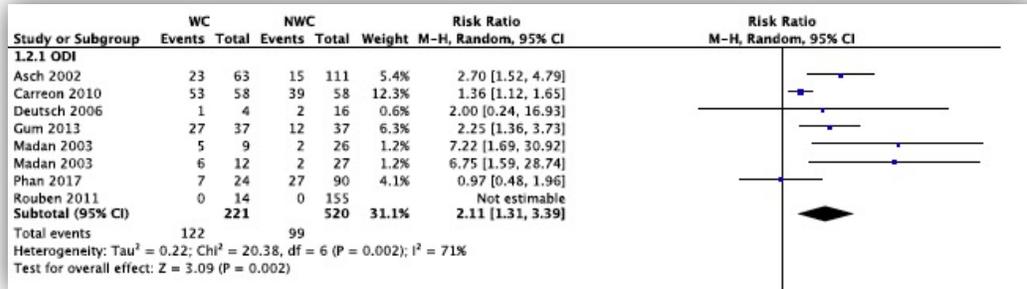
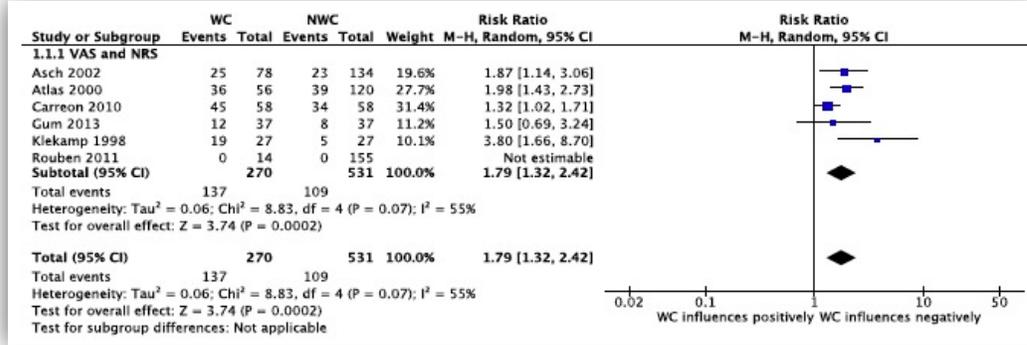
- Regulatory issues
- Socio-economy
- Psycho-social issues



Review

Does Workers' Compensation Status Affect Outcomes after Lumbar Spine Surgery? A Systematic Review and Meta-Analysis

Fabrizio Russo ^{1,*}, Sergio De Salvatore ¹, Luca Ambrosio ¹, Gianluca Vadalà ¹, Luca Fontana ¹, Rocco Papalia ¹, Jorma Rantanen ³, Sergio Iavicoli ² and Vincenzo Denaro ¹



(B)

Future developments in spine surgery

- Regulatory issues
- Socio-economy
- Psycho-social issues

SMART R & D

- *Reflects on real needs*
- *Focusing on multidimensional outcome*
- *Modern R & D technologies*
- *Collaboration between S & E*

bridging medicine and engineering
to enhance innovation

