University of Oslo
Faculty of Dentistry
March 9, 2022

Ensuring best patient care in oral prosthetics on the best evidence

Asbjørn Jokstad
Dr. odont., DDS
Specialist oral prosthetics

Given task: to present

1. A self-selected topic: **Ensuring best patient care in oral prosthetics on the best evidence**

2. A short overview of my research, with a focus on activities over the last years

3. A short overview of my future research plans

Good prosthodontists may be characterized by qualities and skills

Listen, empathize, examine, diagnose, communicate & execute therapy correctly

Best Clinical Practice*

Good prosthodontists may be characterized by qualities and skills

Listen, empathize, examine, diagnose, communicate & execute therapy correctly

Master all treatment methods and materials in prosthodontics

Type of knowledge: Ontology, *“Is aware of data / information”*

Prosthodontic methods and materials (the list is incomplete)

NEW PRODUCT LAUNCHES WILL ALWAYS REMAIN DYNAMIC!

Implants
Implant abutments
Prefabricated
Individualised (CAD-CAM)
Titanium – Zirconia - other

Computer-assisted planning
Implant placement
«Smile-design»
Virtual patient
Virtual articulator
Artificial Intelligence
Expert system
Occlusion design

Tissue regeneration.
Allografts, Alloplasts, Xenograft
Tissue engineering regenaration
stem cells, 3D printed, scaffolds, etc.

Recording devices
Intraoral scanner
Extraoral scanner
Tooth shade matching
Jaw kinematics tracker
Facial scanner
Tomography

Prosthesis design
Computer-assisted (CAD)

Prosthesis fabrication

Digitized	Manual
additive CAM chairside / centrally	sintered
subtractive CAM chairside / centrally	pressed

Layered ←→ «monolithic»

Surface treatments: Contact surface of tissues / biomaterials

Restorative materials

Implant-supported
Implant-abutment-fixed solution
Adhesive-to-abutment concept
Cement-to-abutment concept
Screw-retained abutment / implant

Tooth-supported
Adhesive prosthetics
Inlay, onlay, «endocrown», laminate/veneer
Etch-bridge
Conventional prosthetics
Crown & Bridge

Materials: alloys, hybrids, new compounds
esthetic / hard / monolithic ceramics
Retention:
Adhesive concepts / Cement products

Accessories: Impression, wax, gypsum, provisionals, articulators, grinders, etc.

Good prosthodontists may be characterized by qualities and skills

Listen, empathize, examine, diagnose, communicate & execute therapy correctly

Master all treatment methods and materials in prosthodontics

Type of knowledge: Ontology, *"Is aware of data / information"*

CHALLENGE: How to learn about new materials and methods?

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Tomography

Prosthesis design
Computer-assisted (CAD)

Prosthesis fabrication
Digitized: additive CAM (chairside / centrally); subtractive CAM (chairside / centrally)
Manual: sintered; pressed
Layered ←→ «monolithic»

Surface treatments: Contact surface of tissues / biomaterials

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Will attending large dental exhibitions keep you updated since this is where new products are usually introduced?

Product launches at IDS International Dental Show

Cologne, Germany

NEW PRODUCT LAUNCHES WILL ALWAYS REMAIN DYNAMIC!

INTERNATIONAL VISITORS

2019	
Total	160,095
Abroad	91,886
2017	
Total	155,132
Abroad	86,685

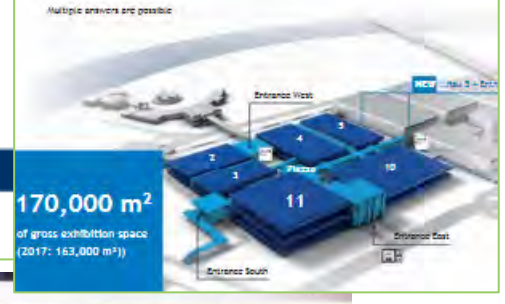
INTERNATIONAL EXHIBITORS

2019	
Total	2,328
Abroad	1,703
2017	
Total	2,305
Abroad	1,657

EXHIBITION FOCUSES

Number of exhibitors	Domestic	Abroad	Total
Dental section	507	1,369	1,876
Dental technology section	333	817	1,150
Infection protection and maintenance	122	330	452
Services, information, communication and organisation systems and means	161	329	490

Multiple answers are possible



170,000 m²
of gross exhibition space
(2017: 163,000 m²))

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Master all treatment methods and materials in prosthodontics

Type of knowledge: Ontology: *Is aware of data / information*

What will likely work best ← may work → will not work

How would one know?

Understand and interpret statistics ←→ lies ←→ damned lies

Type of knowledge: Epistemology, *Can distinguish between belief and knowledge*

NEW PRODUCT LAUNCHES WILL ALWAYS REMAIN DYNAMIC!

Prosthodontic methods and materials (the list is incomplete)

NEW PRODUCT LAUNCHES WILL ALWAYS REMAIN DYNAMIC!
BASED ON CLINICAL RESEARCH?
SUSTAINABLE MANUFACTURER?
SUSTAINED PRODUCT?

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Prosthodontic methods and materials

Sustained or disappeared in 2016

	Implant abutment blanks Zirconia	Implant planning software	Smile-design software	Intraoral scanner	Extraoral scanner	Shade matching	Face-scanner	CAD software	Hybrid ceramic	Zirconia for bridges
Sustained Products	**Ti-base** 	**Simplant (Materialise)**	**CEREC Smile Design (Sirona)**	**TRIOS (3Shape)**	**DWings (DentalWings)**	**Spectroshade (MHT)**	**X**	**DentalCAD (Exocad)**	**? Lava Ultimate (3MESPE)**	**Zenotec Zr (Wieland) (3Y-TZP)**
Not sustained products	Zr-base 	Expert Ease (Dentsply)	SmileMaker (DentalWings)	E4D (E4D)	(Several)	ShadePilot (Dentsply)	3dMDVultus (3DMD)	(Several)	Estenia (Kuraray)	Everest HPC (Kavo) ($ZrSiO_4$)

Nov 2016: ~225 commercial CA - products; ~350 clinical studies on ~80 CA-products

NEW PRODUCT LAUNCHES WILL ALWAYS REMAIN DYNAMIC!

Journal of Oral Rehabilitation

Journal of Oral Rehabilitation 2017 **44**; 261–290

Review

Computer-assisted technologies used in oral rehabilitation and the clinical documentation of alleged advantages – a systematic review

A. JOKSTAD Department of Clinical Dentistry, UiT The Arctic University of Norway, Tromsø, Norway

Prosthodontic methods and materials

Sustained or disappeared in 2016

Be aware that even large global manufacturers launch untested products!

Implant abutment blanks Zirconia	Implant planning software	Smile-design software	Intraoral scanner	Extraoral scanner	Shade matching	Face-scanner	CAD software	Hybrid ceramic	Zirconia for bridges
Ti-base	Simplant (Materialise)	CEREC Smile Design (Sirona)	TRIOS (3Shape)	DWings (DentalWings)	Spectroshade (MHT)	X	DentalCAD (Exocad)	? Lava Ultimate (3MESPE)	Zenotec Zr (Wieland) (3Y-TZP)
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3M Lava Ultimate Dental Crowns Settlement—Updated

Settlement Structure: Claims Made

Active: Closed

Closed Settlement Statement:

According to court documents, the claim submission deadline has passed. Please contact the claims administrator if you have any questions.

Case Summary:
Update: The court has decided to extended the Supplemental Claim Period to December 8, 2020. Claims may now be filed for debonds fixed between May 10, 2019 and September 7, 2020. A new Supplemental Notice and Supplemental Claim Form will be distributed between September 7 and September 22, 2020. Note that the deadline for debond repairs that occurred earlier than this period has now passed. For details, see the Supplemental Notice at the settlement website.

Original Settlement Summary: 3M is paying $32.5 million to settle a class action brought against it by a group of dentists and dental practices. The complaint alleged that 3M's ESPE Lava Ultimate CAD/CAM Restorative blocks, when made into dental crowns, had a much higher rate of debonding than other crowns, due to the materials of the Lava Ultimate crowns.

Docket Number:
0:16-cv-01304

Company: 3M

Filing Deadline: December 8, 2020

Class Period: June 15, 2020

$32.5 millions
(..to customers located in USA)

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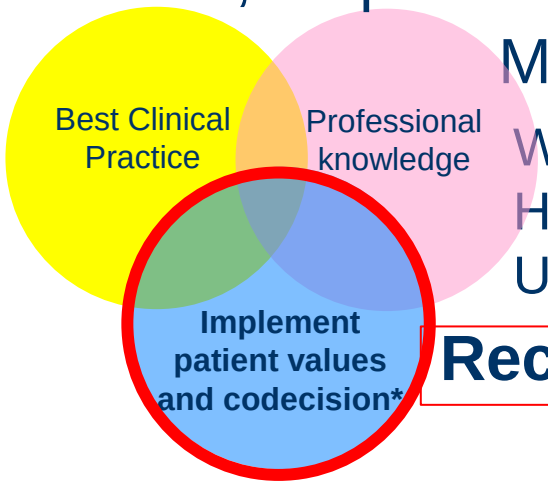

Master all treatment methods and materials in prosthodontics (Ontology)

What will likely work best← may work→ will not work

How would one know? (Epistemology)

Understand and interpret statistics ←→ lies ←→ damned lies

Recommend therapies that are ethical and professionally sound

(Professional ethics)

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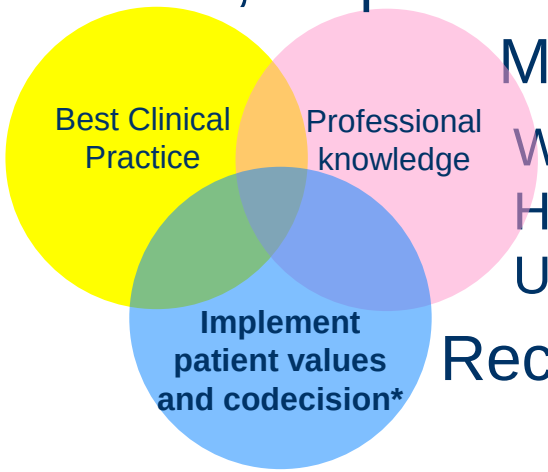

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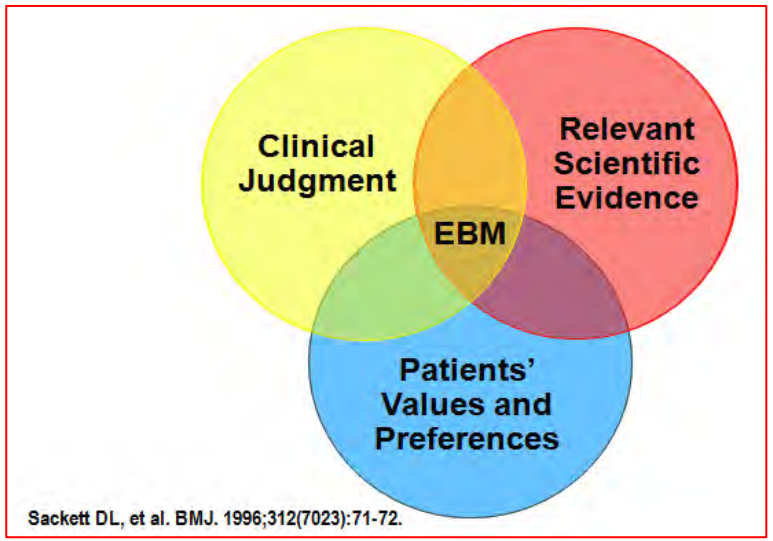
Is consonant with practicing:



Evidence-based medicine (1992, David Sackett, McMaster University, Canada)

(Original objective): Change the prevailing medical teaching culture **to prepare for life-long learning**

SCIENCE IS NOT STATIC!

UNENDING NEW SCIENCE MUST BE APPRAISED CRITICALLY

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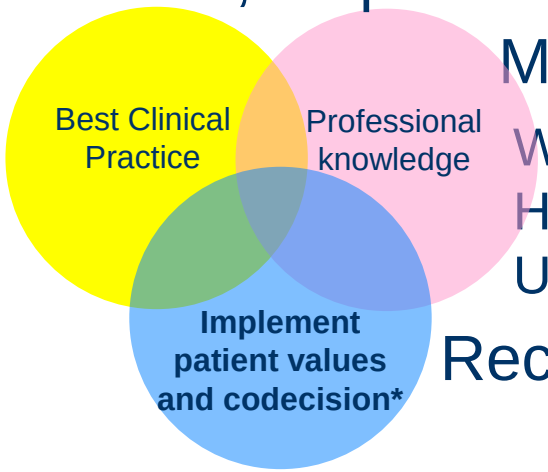

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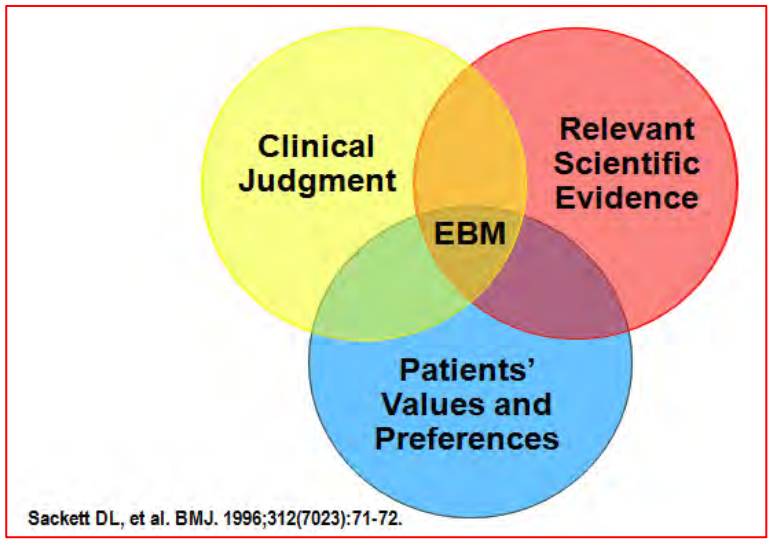


Evidence-based medicine (1992, David Sackett, McMaster University, Canada)

(Original aim): **Change the prevailing medical teaching culture**

EBM evolved, readapted and was renamed

SCIENCE WILL ALWAYS REMAIN DYNAMIC!

(Consensus): **Respect patient autonomy**

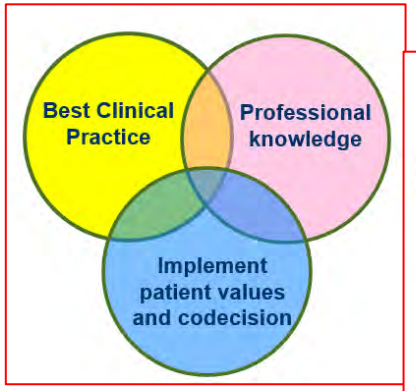
(Confusion): **How to a) find and b) identify the best scientific evidence?**

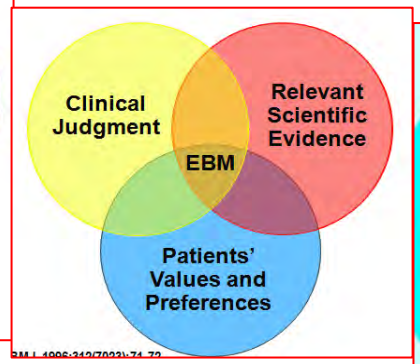
(Contentious from day 1): **What should count as "scientific"?**

(Contentious later): **Is the unequal access to best scientific evidence fair?**

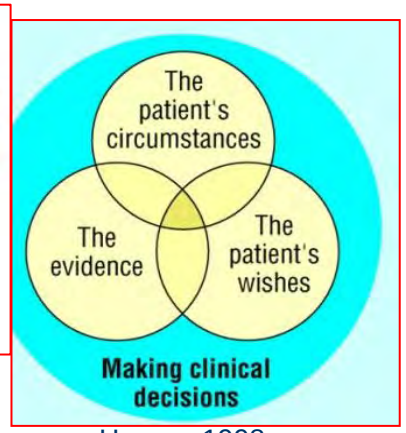
Good prosthodontists may be characterized by qualities and skills

Consonant with practicing EBD & for some, a commitment to professional ethics



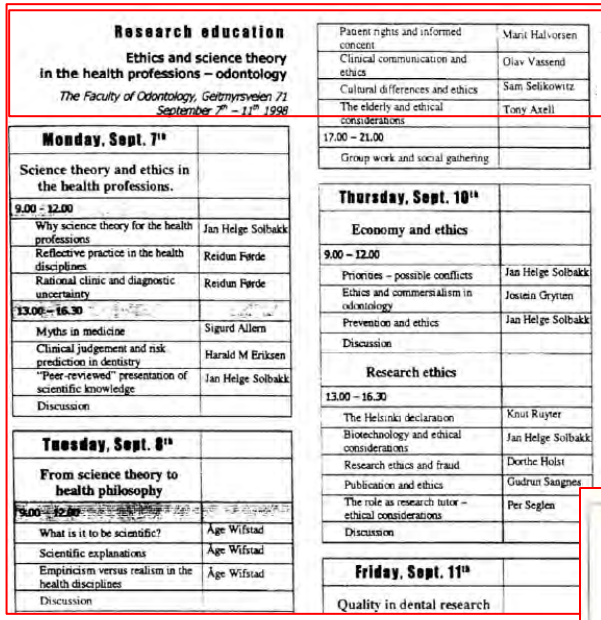


Sackett 1996



Haynes 1998

SCIENCE WILL ALWAYS REMAIN DYNAMIC!

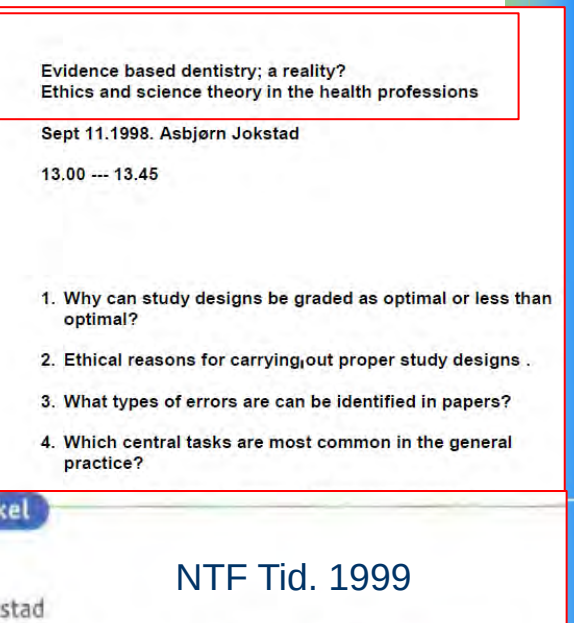


Research education

Ethics and science theory in the health professions – odontology

The Faculty of Odontology, Geitmyrsveien 71 September 7th – 11th 1998

Monday, Sept. 7th	
Science theory and ethics in the health professions.	
9.00 - 12.00	
Why science theory for the health professions	Jan Helge Solbakk
Reflective practice in the health disciplines	Reidun Førde
Rational clinic and diagnostic uncertainty	Reidun Førde
13.00 – 16.30	
Myths in medicine	Sigurd Allern
Clinical judgement and risk prediction in dentistry	Harald M Eriksen
"Peer-reviewed" presentation of scientific knowledge	Jan Helge Solbakk
Discussion	
Tuesday, Sept. 8th	
From science theory to health philosophy	
9.00 - 12.00	
What is it to be scientific?	Åge Wifstad
Scientific explanations	Åge Wifstad
Empiricism versus realism in the health disciplines	Åge Wifstad
Discussion	
Patient rights and informed concent	Marit Halvorsen
Clinical communication and ethics	Olav Vassend
Cultural differences and ethics	Sam Selikowitz
The elderly and ethical considerations	Tony Axell
17.00 – 21.00	
Group work and social gathering	
Thursday, Sept. 10th	
Economy and ethics	
9.00 – 12.00	
Priorities – possible conflicts	Jan Helge Solbakk
Ethics and commersialism in odontology	Jostein Grytten
Prevention and ethics	Jan Helge Solbakk
Discussion	
Research ethics	
13.00 – 16.30	
The Helsinki declaration	Knut Ruyter
Biotechnology and ethical considerations	Jan Helge Solbakk
Research ethics and fraud	Dorthe Holst
Publication and ethics	Gudrun Sangnes
The role as research tutor – ethical considerations	Per Seglen
Discussion	
Friday, Sept. 11th	
Quality in dental research	



Evidence based dentistry; a reality?
Ethics and science theory in the health professions

Sept 11.1998. Asbjørn Jokstad

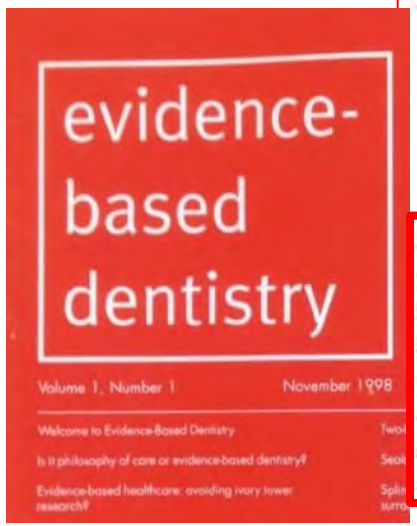
13.00 --- 13.45

1. Why can study designs be graded as optimal or less than optimal?
2. Ethical reasons for carrying out proper study designs .
3. What types of errors are can be identified in papers?
4. Which central tasks are most common in the general practice?

Nov 1998
Nature Publishing

Alan Lawrence
Derek Richards
Rick Niederman
Asbjørn Jokstad

I.d. excellent science
+
Synopsis of study
+
Content expert commentary



editorial

Asbjorn Jokstad
Associate Editor

Evidence- based healthcare: avoiding ivory tower research?

Several individuals and organisations have gradually recognised the value of applying evidence-based health care in dentistry (EBD). The two centres focussing on EBD, The Center for Evidence Based Dentistry[1] and The Cochrane Collaboration Oral Health Group[2] are both located in UK. Thus far, much of the activity within EBD is centered in UK.[3] A survey was therefore initiated to appraise possible EBD activities in main-Europe.

European Cochrane Centres were con-

profession, clinicians as well as scientists so far hesitate to start to practice EBD. There may be several explanations for this. The most obvious explanation is the lack of information about EBD. Although there have been editorials and subsequent letters on the subject in some major journals, the topic has not been followed by more in-depth papers.

It is also possible that many still consider that the quality of research presented in dental journals is secured through existing systems for granting. Unfortu-

Evidence-based dentistry is much more than randomised controlled trials and must always be regarded as an adjunct to, and not as substitute for, sound clinical judgement and patient preferences.

Fagartikkel

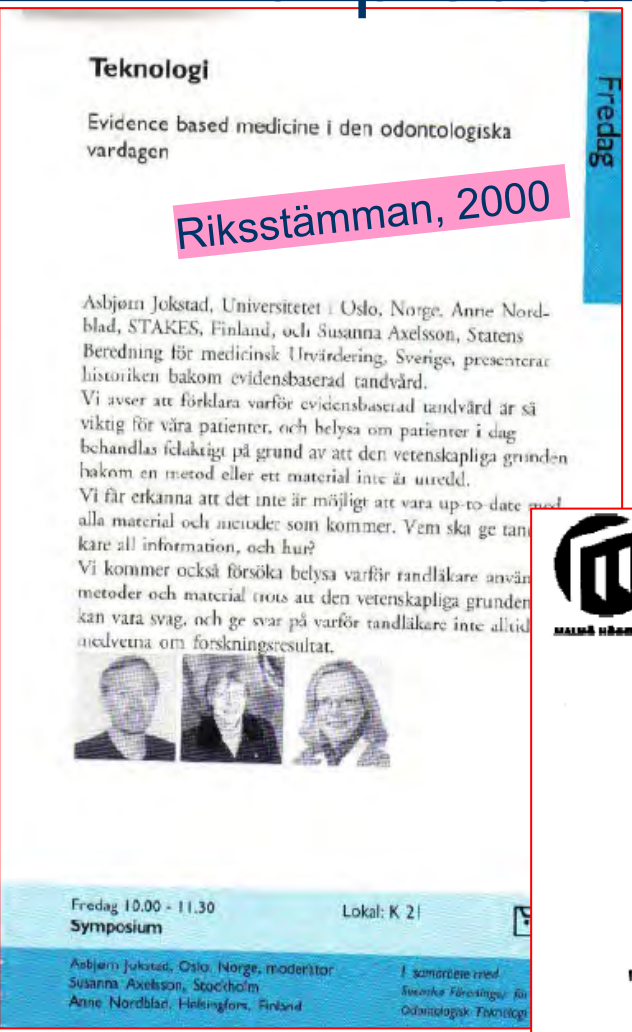
NTF Tid. 1999

Asbjørn Jokstad

EBM, evidensbasert medisin – relevant for tannleger?

Evidensbasert medisin (EBM) er en ny strategi for å knytte sammen gruppebaserte forskningsdata og epidemiologisk statistikk med individrettet pasientbehandling. EBM praktiseres ved å a) omforme kliniske informasjonsbehov til konkrete spørsmål som kan besvares, b) finne relevant dokumentasjon for å besvare slike spørsmål, c) vurdere kritisk denne dokumentasjonen etter ulike kriterier for å anslå hvor sannsynlig det er at funnene er riktige og d) yte behandling i henhold til dokumentasjonen dersom denne er klinisk signifikant og relevant for ens egen praksis. Innen flere helsefag blir EBM stadig mer tatt i bruk for å evaluere effekten av sykdomsforebygging og terapi, for å klarlegge etiologiske faktorer og for å vurdere effektiviteten av diagnostiske tester.

An unprecedented number of publications in dental research



Teknologi

Evidence based medicine i den odontologiska vardagen

Fredag

Riksstämman, 2000

Asbjørn Jokstad, Universitetet i Oslo, Norge, Anne Nordblad, STAKES, Finland, och Susanna Axelsson, Statens Beredning för medicinsk Utvärdering, Sverige, presenterar historiken bakom evidensbaserad tandvård.
Vi avser att förklara varför evidensbaserad tandvård är så viktig för våra patienter, och belysa om patienter i dag behandlas fel/riktigt på grund av att den vetenskapliga grunden bakom en metod eller ett material inte är utredd.
Vi får erkänna att det inte är möjligt att vara up-to-date med alla material och metoder som kommer. Vem ska ge tandkare all information, och hur?
Vi kommer också försöka belysa varför tandläkare använder metoder och material trots att den vetenskapliga grunden kan vara svag, och ge svar på varför tandläkare inte alltid medvetna om forskningsresultat.

Fredag 10.00 - 11.30 Lokal: K 21
Symposium
Asbjørn Jokstad, Oslo, Norge, moderator
Susanna Axelsson, Stockholm
Anne Nordblad, Helsingfors, Finland

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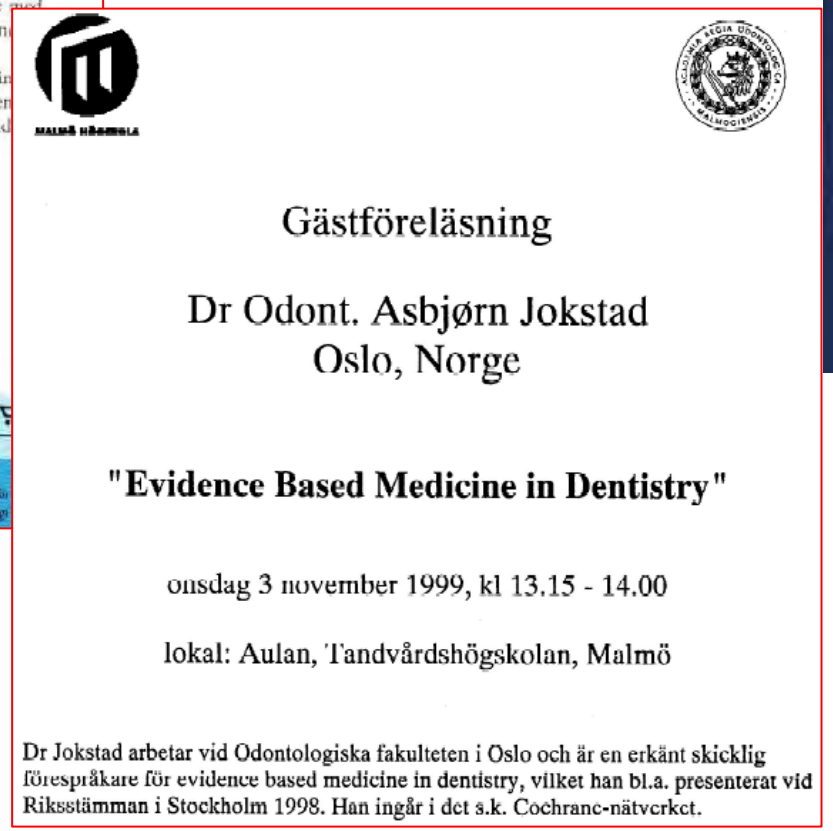


Gästföreläsning

Dr Odont. Asbjørn Jokstad
Oslo, Norge

"Evidence Based Medicine in Dentistry"

onsdag 3 november 1999, kl 13.15 - 14.00

lokal: Aulan, Tandvårdshögskolan, Malmö

Dr Jokstad arbetar vid Odontologiska fakulteten i Oslo och är en erkänt skicklig föreläsare för evidence based medicine in dentistry, vilket han bl.a. presenterat vid Riksstämman i Stockholm 1998. Han ingår i det s.k. Cochrane-nätverket.

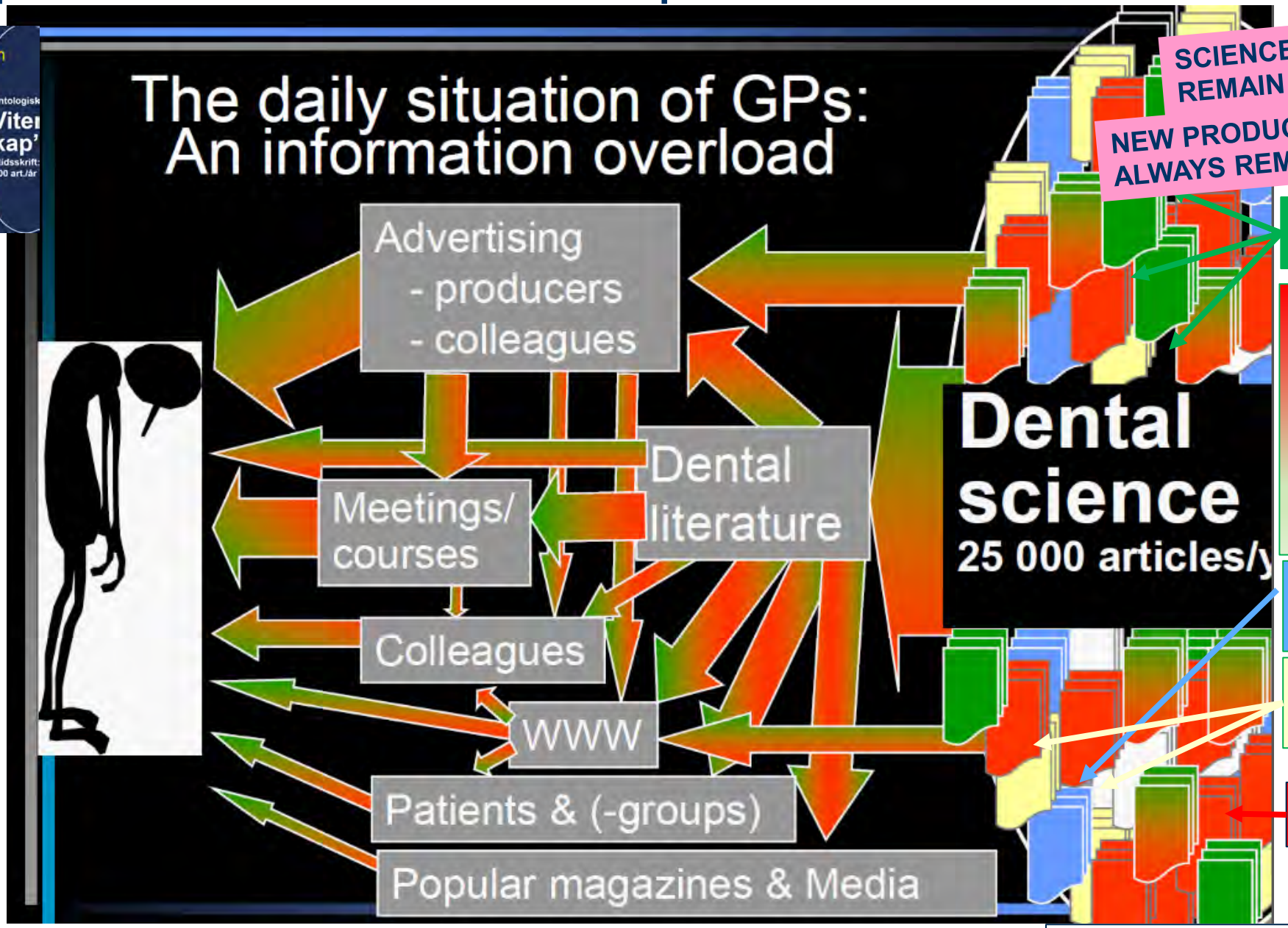
Referat fra BTFs medlemsmøte
fredag 3. mars 2000
i Grand selskapslokaler

Formann Erik G. Lien ønsket velkommen til ca. 45 medlemmer, til kveldens foredragsholder - førsteamanuensis Asbjørn Jokstad fra UIO og til formannen i Husstyret Ronald Johnsen.

Sak 1a: Referat fra forrige møte 4. februar. Godkjent uten merknader. (Sak 1a var falt ut i møteinnkallingen)

Sak 1b: Asbjørn Jokstad: Evidence based dentistry, EBD - verdifullt for allmenntannlegen.

An unprecedented number of publications in dental research



SCIENCE WILL ALWAYS REMAIN DYNAMIC!

NEW PRODUCT LAUNCHES WILL ALWAYS REMAIN DYNAMIC!

GOLD NUGGETS

ALL scientific papers contain more or less USEFUL DATA

In vitro studies

Reviews & Guidelines

FAKE RESEARCH! (www.retractionwatch.com

From: https://jokstad.net

An unprecedented number of publications in dental research

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An unprecedented growth of RCTs and SRs, e.g., dental implants

Quality Assessment of Randomized Controlled Trials of Oral Implants

Marco Esposito, DDS, PhD[1]/Paul Coulthard, BDS, MFGDP, MDS, FDSRCS, PhD[2]/
Helen V. Worthington, BSc, MSc, PhD, FIS[3]/Asbjørn Jokstad, DDS, PhD[4]

The aim of this study was to assess the quality of randomized controlled trials (RCTs) concerned with the effectiveness of oral implants and to create a trial register. A multilayered search strategy was used to identify all RCTs published by the end of 1999 in any language. The Cochrane Oral Health Group specialist register, PubMed, and personal libraries were searched. Seventy-four RCTs were identified. Forty-three articles, not presenting the same patient material, were independently assessed by 3 researchers using a specially designed form. A statistician assessed all trials for the appropriate use of statistics. The quality of each study was assessed on 7 items, including 3 key domains. Randomization and concealment allocation procedures were not described in 30 articles (70%). Reasons for withdrawals were not given in 10 reports (23%). No attempt at blinding was reported in 31 studies (42%). The quality of RCTs of oral implants is generally poor and needs to be improved. (Int J Oral Maxillofac Implants 2001;16:783–792)

Interventions for replacing missing teeth: surgical techniques for placing dental implants (Review)

Coulthard P, Esposito M, Jokstad A, Worthington HV

Interventions for replacing missing teeth: bone augmentation techniques for dental implant treatment (Review)

Coulthard P, Esposito M, Jokstad A, Worthington HV

Interventions for replacing missing teeth: hyperbaric oxygen therapy for irradiated patients who require dental implants (Review)

Coulthard P, Esposito M, Worthington HV, Jokstad A

Interventions for replacing missing teeth: maintaining and re-establishing healthy tissues around dental implants

Esposito M, Worthington HV, Coulthard P, Jokstad A

Interventions for replacing missing teeth: preprosthetic surgery versus dental implants (Review)

Coulthard P, Esposito M, Worthington HV, Jokstad A

THE COCHRANE COLLABORATION®

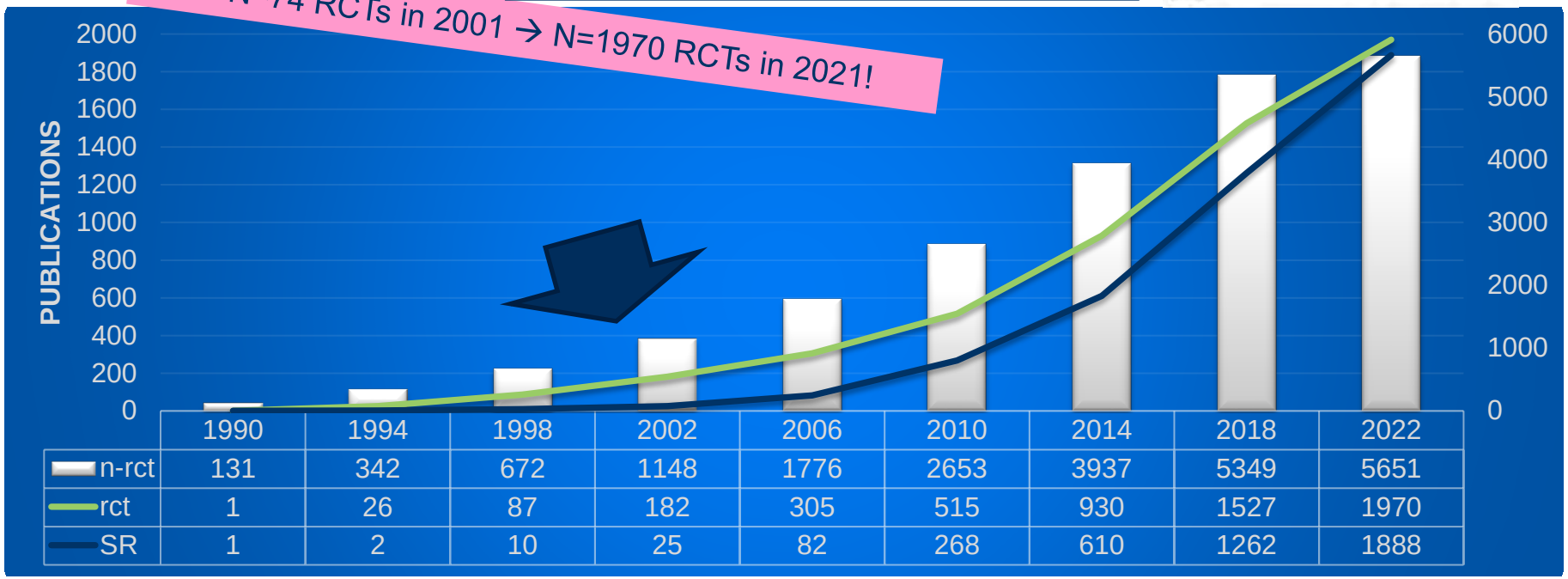
Interventions for replacing missing teeth: different types of dental implants

Esposito M, Coulthard P, Worthington HV, Jokstad A, Wennerberg A

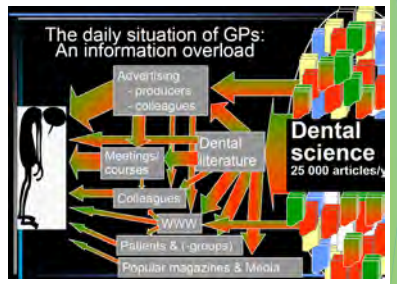
Cover sheet - Background - Methods - Results - Discussion - References - Tables & Graphs

This review should be cited as: Esposito M, Coulthard P, Worthington HV, Jokstad A, Wennerberg A. Interventions for replacing missing teeth: different types of dental implants (Cochrane Review). In: *The Cochrane Library*, Issue 4, 2002. Oxford: Update Software.

From N=74 RCTs in 2001 → N=1970 RCTs in 2021!



	1990	1994	1998	2002	2006	2010	2014	2018	2022
n-rct	131	342	672	1148	1776	2653	3937	5349	5651
rct	1	26	87	182	305	515	930	1527	1970
SR	1	2	10	25	82	268	610	1262	1888



SCIENCE WILL ALWAYS REMAIN DYNAMIC!

An unprecedented number of oral prosthetic products

e.g.,
3961 implant designs
238 dental ceramic
197 CAD-CAM devices

FD.	Period	Producer	Implant	material
	2009-	Metoxit dental	TZP-A Bio-HIP	Zirconia (Ziraldent HI
		Metoxit dental	ATZ Bio-HIP	Zirconia (Ziraldent HI
	2017	CAMLOG Biotechnologies	CERALOG Hexalobe	Zirconia (Y-TZP)+PEEK
	2006-	Bredent Medical GmbH &	WhiteSKY	Zirconia (Y-TZP)
	2017	CAMLOG Biotechnologies	CERALOG Monobloc	Zirconia (Y-TZP)
	2014?	Z-Systems, GmbH	Zirkolith Z5 mlb / mlc	Zirconia (TZP-A Bio-H
	2014?	Z-Systems, GmbH	Zirkolith Z5c	Zirconia (TZP-A Bio-H
	2014?	Z-Systems, GmbH	Zirkolith Z5m	Zirconia (TZP-A Bio-H
	2014?	Z-Systems, GmbH	Zirkolith Z5m(t)	Zirconia
	2016?	Z-Systems, GmbH	Zirkolith Z5s	Zirconia
	2014?	Z-Systems, GmbH	Zirkolith Z5-TL	Zirconia
	2014?	Z-Systems, GmbH	Zirkolith Z5BL	Zirconia
K163(	2016	dentalpoint AG ZERAMEX	Zeramex® P6	Zirconia
	2016	dentalpoint AG ZERAMEX	Zeramex® T	Zirconia
		Incermed	Sigma	Zirconia
	2016	Institut Straumann, AG	Straumann® PURE Cerami	Zirconia
	2018	Institut Straumann, AG	Straumann® PURE Cerami	Zirconia
	2019	Institut Straumann, AG (Z	Straumann® SNOW Ceran	Zirconia
	2016-2019	dentalpoint AG ZERAMEX	Zeramex® (P)lus	Zirconia
	2016	dentalpoint AG ZERAMEX	Zeramex® XT	Zirconia
K1801		Nobel Biocare (Dentalpoi	NobelPearl Tapered (AKA	Zirconia
	2004-	CeraRoot S.L. <- Oral Iceb	CeraRoot™ 11	Zirconia
	2004-	CeraRoot S.L. <- Oral Iceb	CeraRoot™ 12	Zirconia
	2004-	CeraRoot S.L. <- Oral Iceb	CeraRoot™ 14	Zirconia
	2004-	CeraRoot S.L. <- Oral Iceb	CeraRoot™ 16	Zirconia
	2004-	CeraRoot S.L. <- Oral Iceb	CeraRoot™ 21	Zirconia
		FairImplant GmbH	FairWhite	Zirconia
	2014?	creamed GmbH / Maxon c	OMNIS	Zirconia
	2015-	creamed GmbH / Maxon c	OMNIS two-piece implan	Zirconia
K1325	2013	COHO Biomedical Techno	ZiBone Zirconia Implant s	Zirconia
K0619	2007	NOBEL BIOCARE AB	ZIRCONIA IMPLANT	Zirconia
	2017-	Argon Dental GmbH & Co	K3Pro Zirkon	Zirconia
	2016?	BPI Biologisch Physikalisc	bpisys ceramic	Zirconia
	2004??2007	Bredent Medical GmbH &	Circon-bite	Zirconia
	2004??2007	Bredent Medical GmbH &	Sky-Circon	Zirconia
	2017-	Caridant AG	Hybrid Implant	Zirconia
	2018	Champions-Implants Gmb	BioWin!	Zirconia
	2017-2018	Champions-Implants Gmb	Champions®(R)Evolution	Zirconia
	2017-2019	Champions-Implants Gmb	Champions®New Art Whi	Zirconia
	2014-2019	dentalpoint AG ZERAMEX	T Zeralock™	Zirconia
	2009	Denti System, Ltd	Denti Circonium	Zirconia
	2009	Denti System, Ltd	Denti Circonium	Zirconia
	2009	Denti System, Ltd	Denti Circonium	Zirconia
	2009	Denti System, Ltd	Denti Circonium	Zirconia

Record: 37 of 3961 | Unfiltered | Search

Producer	Brand name	Mater	category	
Ivoclar Vivadent	IPS e.Max ZirPress	Glass-ceramic fluorapatit	Veneering porcelain	Heat-Pres
Ivoclar Vivadent	IPS e.Max Ceram	glass-ceramic nano-fluora	Veneering porcelain	Veneering
Ivoclar Vivadent AG (Li	IPS e.max ZirCAD®MO/LT	Zirconia-3Y-TZP	Veneered: IPSe.maxCera	(Partial si
Wieland dental, Germa	ZENO Zr	Zirconia-3Y-TZP	Veneered: (Wieland)Zirc	(Partial si
Creation Willy Geller Ir	YTZP	Zirconia-	Veneered: (WG)Creation	
Vita Zahnfabrik H. Rau	VITA In-Ceram YZ cube	Zirconia-3Y-TZP	Veneered: (VITA)VM9 9(	(Partial si
VITA, Germany	Vitablocks Mark II /TriLuxe /	Feldspatic -Extrusion mou	Veneered: (VITA)VM9	Mill -> °C
VITA, Germany	VITA Inceram AL cube	Alumina-Aluminium Trioxi	Veneered: (VITA)VM7	
VITA, Germany	VITA In-ceram Alumina	AluminiumOksid slip-infilt	Veneered: (VITA)VM7	
VITA, Germany	VITA In-ceram Spinell	AluminiumOksid slip-infilt	Veneered: (VITA)VM7	
VITA, Germany	VITA In-ceram Zirconia	Ceramic -Slip cast glass-i	Veneered: (VITA)VM7	
Panasonic, Japan	NanoZR	Zirconia-Ce-TZP-Al2O3	Veneered: (Shofu)Vintag	
Kuraray Noritake Denta	Katana® Zirconia HT	Zirconia-4Y-PZP	Veneered: (Noritake)Cer	
Kuraray Noritake Denta	Katana® Zirconia ML	Zirconia-M4Y-PZP	Veneered: (Noritake)Cer	
Nobel Biocare	Procera Zirconia	Zirconia-3Y-TZP (Pre-sinte	Veneered: (Nobel)Nobel	
Dentsply Sirona (USA)	Cercon base	Zirconia-3Y-TZP	Veneered: (Cercon)Cera	(Green) M
Dentsply Sirona (USA)	Cercon smart ceramics	Zirconia-3Y-TZP	Veneered: (Cercon)Cera	(Partial si
3M ESPE, Seefeld, Gerr	Lava™ Frame	Zirconia-3Y-TZP	Veneered: (3M)Lava Cer	(Partial si
Amann Girrbach AG (Au	Ceramill ZI	Zirconia-3Y-TZP	Veneered	(Partial si
Wieland dental, Germa	Zenotec Zr	Zirconia-3Y-TZP	Veneered	
Dental Direkt, Spenge,	DD Bio Z W /S /A /K	Zirconia-3Y-TZP (HIP)	Veneered	(HIP) Mill
Etkon, Grafelringen, Ge	zerion	Zirconia-3Y-TZP (HIP)	Veneered	(HIP) Mill
CeramTec, Plochingen,	Zirconia disk	Zirconia-3Y-TZP (99wt% Z	Monolithich/Veneer	
Ivoclar Vivadent	IPS e.max CAD	Glass-ceramic-Lithium dis	Monolithic	(Partial si
Dentsply De Trey	Celtra Press	Lithium disilicate glass ce	monolithic	
Ivoclar Vivadent	IPS e.max CAD	Lithium disilicate glass ce	monolithic	CAD/CAM
Ivoclar Vivadent	IPS e.max Press	Lithium disilicate glass ce	monolithic	Heat-Pres
Dentsply De Trey	Celtra CAD	Lithium metasilicate+disil	monolithic	
Dentsply De Trey	Celtra Duo	Lithium metasilicate+disil	monolithic	
Vita Zahnfabrik	Suprinity	Lithium metasilicate+disil	monolithic	
Glidewell	Obsedian	Lithium silicate glass cera	monolithic	
H Schein, USA	Zirlux FC2	Zirconia-	Monolithic	
Ivoclar Vivadent	IPS e.max ZirCAD MT	Zirconia 4Y-TZP	monolithic	
Kuraray Noritake	Katana ST/STML	Zirconia 4Y-TZP	monolithic	
Wieland Dental	Zenostar MT	Zirconia 4Y-TZP	monolithic	
Tosoh	Zpex 4	Zirconia 4Y-TZP	monolithic	
Ivoclar Vivadent AG (Li	Diazir	Zirconia-3Y-TZP	Monolithic	(Partial si

Record: 23 of 238 | Unfiltered | Search

Introdu	www	Company	Brand name	Component(s)	C
	gctech.eu	GC Corporation	Aadva	Scanner(Aadva)	Jap
	www.zfx-dental.com	zfx gmbH	Zfx-Scan II /III /Zfx™ Inhou	Scanner(Zfx-Scan II	Ge
2005	wieland-dental.de	Wieland Dental (Ivoclar Viva	Zenotec zeno4820	3/4-axis-milling uni	Ge
2005	wieland-dental.de	Wieland Dental (Ivoclar Viva	Zenotec zeno4030	3/4-axis-milling uni	Ge
2005	wieland-dental.de	Wieland Dental (Ivoclar Viva	Zenotec zeno3020	3/4-axis-milling uni	Ge
2005	wieland-dental.de	Wieland Dental (Ivoclar Viva	Zenotec Select ion	3/4-axis-milling uni	Ge
2005	wieland-dental.de	Wieland Dental (Ivoclar Viva	Zenotec Select hybrid	3/4-axis-milling uni	Ge
2005	wieland-dental.de	Wieland Dental (Ivoclar Viva	Zenotec select /mini / CA	3/4-axis-milling uni	Ge
2005	wieland-dental.de	Wieland Dental (Ivoclar Viva	Zenotec pro	3/4-axis-milling uni	Ge
2005	wieland-dental.de	Wieland Dental (Ivoclar Viva	Zenotec mini	3/4-axis-milling uni	Ge
2005	wieland-dental.de	Wieland Dental (Ivoclar Viva	Zenotec CAM	3/4-axis-milling uni	Ge
-2006	http://www.schick-de	Schick dental	Z1 Milling Unit	Copy-milling unit	Ge
	yenadent.com	Yena Dent	Yenascan / CAM 5.1 / D14-		Tur
		Shenzhen XTcera Medical Te	X-Mill 220 / 300 / 400 / 500		Chi
2003	www.xawex.ch	Xavex AG, Switzerland <- ZFI	Xawex Dentalsystems		Sw
	http://vericoresystem	Whip Mix Corp	Vericore System	---	US
2005	www.3shape.com	3Shape A/S	TRIOS digital intraoral imp	Design-Software	De
	schuetz-dental.com	Schütz Dental gmbH	Tizian Smart-scan / Tizian		Ge
	schuetz-dental.com	Schütz Dental gmbH	Tizian Cut eco plus		Ge
	schuetz-dental.com	Schütz Dental gmbH	Tizian cut 5.2Plus		Ge
	schuetz-dental.com	Schütz Dental gmbH	Tizian Cut 5 smart		Ge
	http://www.strauman	Straumann Cares Digital solu	Straumann CADCAM	---	Sw
		Degos	Starline 355NS		
1991-1999	----------	Sopha Bioconcept	Sopha-CAD/CAM	Scanner(Opticast) -	Fra
	mc-dental.de /cad-can	MC-dental GmbH	Smart Mill start / plus / ur		Ge
	nobilmetal.it	Nobil-Metal S.p.A	Sinergia		Ital
	anthogyr.com	simeda medical	Simeda SCAN-CAD(Exoca		
		Shera Werkstoff-Tech	Sheraeco mill wet		
		Shera Werkstoff-Tech	Sheraeco mill dry		
		Shera Werkstoff-Tech	Sheraeco 5xchange		
2001	http://www.strauman	Straumann <- etkon AG, Swit	Scanner es	Scanner(Scanner es	Sw
1987-2007	www.bienair.com	Bien Air,	Scan200/Mill200	Scanner -> Design-S	Sw
	http://www.zirkonzah	Zirkonzahn s.r.l.	S600 Arti(scan / Modelier	Scanner() -> Design	Ital
	http://www.zirkonzah	Zirkonzahn s.r.l.	S600 Arti(scan / Modelier	Scanner() -> Design	Ital

Record: 6 of 197 | Unfiltered | Search

An unprecedented number of oral prosthetic studies

e.g.

928 Fixed dental prosthesis
197 SRs on fixed dental prosthesis
255 removable partial prosthesis
146 removable full prosthesis

firstauth	Title	Source	studyobj
Bacher et al. (2021)	10-Year Clinical Cor	Eur J Prosthodont Restor Dent	To investigate the development of ir
Schwendicke et al. (20	Long-term costs of p	Clin Oral Investig. 2021; 25(4):	To evaluate the initial and follow-up
Cheng et al. (2021)	Randomized clinical	J Prosthet Dent 2021; 125: 73-8	to compare the time efficiency and
Linnemann et al. (2021	Longevity and Risk I	J Endod. 2021; 47(4): 577-584	to evaluate the success and surviva
Raedel et al. (2021)	Performance of fixec	J Prosthet Dent. 2021; Feb 20;	to evaluate the longevity of FDPs u
Wierichs et al. (2021)	A prospective, multi	Dent Mater. 2021; 37(8):1273-1	to analyze factors associated with
Hedberg et al. (2021)	Cognitive changes a	BMC Oral Health 2021; 21: 297	to investigate the effect of rehabilita
Gardell et al. (2021)	Translucent Zirconiu	Int J Prosthodont. 2021; 34: 16	To evaluate and compare the clinic
Fiore et al. (2021)	Automatic Digital De	J Prosthodont 2021; 30: 104-11	to compare the static and
Miura et al. (2021)	Clinical evaluation o	J Prosthodont Res. 2021; 65: 1	to examine the clinical per
Mikeli et al. (2021)	Three-year clinical p	J Prosthet Dent. 2021; S0022-3	to evaluate the clinical perf
Rauch et al. (2021)	Do monolithic zircor	Int J Prosthodont. 2021; 34(4):	To investigate the effect of
Pontevedra et al. (2021	Prospective Clinical	J Prosthodont. 2021; 30: 298-3	To evaluate the clinical per
Selvaraj et al. (2021)	Evaluation of the we	J Prosthet Dent 2021; 126: 52-5	To evaluate and compare t
Bömicke et al. (2021)	Clinical Performance	J Prosthodont 2021; 30: 384-39	To compare the clinical pe
Pahncke et al. (2021)	Two-Year Longevity	Applied Sciences, 2021; 11(10)	To observe the 2-year clini
El Halawani et al. (202	Evaluating the marg	Int J Prosthodont 2021; 34: 324	To assess the short-term c
Degidi et al. (2021)	Fixed Partial Restor	Int J Prosthodont. 2021; 34: 3	To evaluate the 2-year perf
Agustín-Panadero et al	Clinical behavior of p	J Prosthet Dent. 2021; 125(6):	to evaluate the clinical, me
Caray et al. (2020)	Survival of Single-Ur	Dent J (Basel). 2021; 9(6):60.	To determine the survival ra
Walter et al. (2021)	Rehabilitation of sho	J Oral Rehabil 2021; 48: 738-74	to analyse the long-term s
Raedel et al. (2020)	Six-year survival of s	J Dent. 2020; 101: 103459.	To evaluate the longevity o
Revilla-León et al. (202	Esthetic dental perc	J Prosthet Dent 2020; 124: 763	to analyze the perceptions
González-Martín et al.	One- versus two-sta	J Clin Periodontol 2020; 47: 15	to assess the efficacy of a
Ferrari Cagidiaco et al.	A randomized contr	Am J Dent 2020; 33: 291-295	To evaluated the behavior c
Schubertet al. (2020)	Influence of intraoral	Clin Oral Investig. 2020;	To evaluate the influence o
Saker et al. (2020)	Ten-Year Clinical Su	Int J Prosthodont 2020; 33: 292	To assess the 10-year clin
Rauch et al (2020)	Material selection fo	Clin Oral Investig. 2021; 25: 28	to survey dentists in Germ
Malament et al. (2020)	10.9-year survival of	J Prosthet Dent. 2020 Oct 1: S	to determine the 10.9-year
van den Breemer et al (	Prospective clinical	Clin Oral Investig. 2020 Aug 12	To evaluate the clinical per
Souza et al. (2020)	One-year clinical pe	Odontology. 2020 doi: 10.1007/	To compare the 1-year clin
Forrer et al (2020)	Clinical performance	J Prosthet Dent. 2020; [Epub. 2	To assess the failure and c
Habibi et al. (2020)	Three-year clinical p	J Esthet Restor Dent. 2020; 32	To compare the 3-year sur
Scutella et al. (2020)	Reliability of Chair-s	Eur J Prosthodont Restor Dent.	to evaluate the survival of r
Naenni et al (2020)	Resin-Bonded Fixec	Int J Prosthodont 2020; 33: 503	To assess the clinical outc
Seidel et al. (2020)	The occlusal wear o	J Dent 2020; 103: 103500	to evaluate differences of th
Rinke et al (2020)	Clinical Evaluation o	Eur J Prosthodont Restor Dent.	to evaluate the clinical perf

26 of 928 | Unfiltered | Search

Firstauthor	Title	Source	Aim	Topics	
Banh et al. (2021)	Longevity of	Materials (B	To systematically review the	Material-AC	ZirLi
Carvalho et al. (2021	Predictors o	J Clin Period	To evaluate the risk factors	Perio	Perio
Fan et al. (2021)	Long-term C	Oper Dent 2	To evaluate the long-term c	Onlay-Mate	Onla
Gao et al. (2021)	Antagonist V	Int J Prosthc	To evaluate the wear of zirc	Material-AC	ip
Leitao et al. (2021)	Clinical perfc	J Prosthodor	to evaluate the survival rate	Material-AC	mon
Mazza et al. (2021)	Survival and	J Prosthet D	to evaluate the survival and	Material-AC	mon
Mine et al. (2021)	Critical revie	Jpn Dent Sc	to assess the literature rega	RBFDP-Ge	RBF
Saravi et al. (2021)	Clinical Perfc	Materials (B	to estimate the survival and	Fabrication-	CAD
Tanoue et al. (2021)	Longevity of	J Prosthodor	To evaluate the survival rate	RBFDP-Mat	journ
Ahmed et al. (2020)	Fit of tooth-s	Clin Exp Der	to systematically map all the	Material-AC	Pass
Al-Dabbagh (2020)	Survival and	J Prosthet D	to collate published work or	Geometry-e	endo
Al-Haj Husain et al (2	Clinical Perfc	J Clin Med 2	To evaluate the clinical perf	Fabrication-	CAD
Aziz et al. (2020)	Clinical outc	Dent Med Pr	to evaluate the survival rate	Material-AC	
Bae et al. (2020)	Reliability of	Materials (B	to assess the reliability of th	Fabrication-	
Bandiaky et al. (2020	Comparative	J Prosthet D	to determine the impact of i	Procedure-I	Pass
Borse& Chaware (20	Tooth shade	J Indian Pros	To evaluate the methods of	Procedure-S	
Bousnaki et al. (2020	Variables aff	J Prosthet D	to determine the variables a	Material-AC	Pass
Bustamante-Hernánd	Clinical Beha	Int J Environ	to analyze the survival of on	Onlay-Mate	
Giachetti et al (2020)	Accuracy of	Int J Prosthc	To determine the accuracy	Procedure-I	Pass
Govare & Contrepois	Endocrowns	J Prosthet D	to determine whether endoc	Geometry-e	endo
Hasanzade et al. (20	Marginal anc	J Prosthet D	to compare the marginal an	Procedure-I	Pass
Leon-Martínez et al 8	Periodontal I	J Clin Med. 2	to analyze the periodontal b	Procedure-F	Perio
Limones et al. (2020)	Zirconia-cera	J Am Dent A	to compare the survival and	Material-AC	ZrOx
Lin et al. (2020)	The significa	J Periodonto	to investigate the effect of s	Outcome-Sc	
Mai et al. (2020)	Reliability of	J Prosthet D	to assess the reliability of d	Outcome-M	Pass

1 of 197 | Unfiltered | Search

firstauth	Title	Source	studyobj
Fueki et al. (2021)	Cost-effective	J Prosthodont R	to compare the cost-effe
Ali et al. (2020)	A Pilot Randor	Int J Prosthodor	To investigate differences
Hinz et al. (2020)	Clinical perfor	Clin Oral Investi	to evaluate the 5-year su
Kraljevic et al. (2020)	Long-Term Ob	Int J Prosthodor	To investigate the long-te
Mai et al. (2020)	Accuracy of P	Int J Environ Re	To considering the accura
Yoshino et al. (2020)	Survival rate o	Clin Oral Investi	to clinically investigate do
Baig et al. (2019)	Assessment o	Int J Prosthodor	To prospectively evaluate
Ettinger & Qian (2019)	Longitudinal A	J Prosthodont. 2	To evaluate the longitudin
Hagiwara et al. (2019)	Ceria-Stabilize	Int J Prosthodor	To clinically evaluate the
Hinz et al. (2019)	Complications	Clin Oral Investi	to evaluate the effects of
Rauch et al. (2019)	Improving Ora	Int J Prosthodor	To investigate changes in
Reissmann et al. (2019	Impact of shor	J Dent 2019; 80	To compare oral health-re
Rinke et al. (2019)	Overdentures	Clin Oral Investi	Retrospective evaluation
Koyano & Fuji (2018)	Practice-Base	Int J Prosthodor	To examine factors affec
Walter et al. (2018)	The Randomiz	Int J Prosthodor	to compare the long-term
Zierden et al. (2018)	Nonprecious A	Int J Prosthodor	to evaluate the clinical ou
Al-Omiri (2017)	Muscle activity	J Prosthet Dent	to evaluate the influence
Ishida et al (2017)	Prognosis of c	J Prosthodont R	To compared the clinical
Khan et al. (2017)	Outcomes wit	J Oral Rehabil 2	To compare function, pat
Marcello-Machado et a	How does ma	J Oral Rehabil.	To investigated the differ
Ribeiro et al. (2017)	Influence of a	J Prosthet Dent	to evaluate the influence
Schwindling et al. (201	Electroplated	Clin Oral Investi	to investigate the clinical
Ye et al. (2017)	Preliminary Cl	Int J Prosthodor	to explore the application
Baig et al. (2016)	Effects of Imp	Int J Prosthodor	To evaluate the effects of
Bidra et al. (2016)	Prospective cr	J Prosthet Dent	to evaluate the clinical an
Cardoso et al. (2016)	Impact of mar	Braz Oral Res.	

16 of 255 | Unfiltered | Search

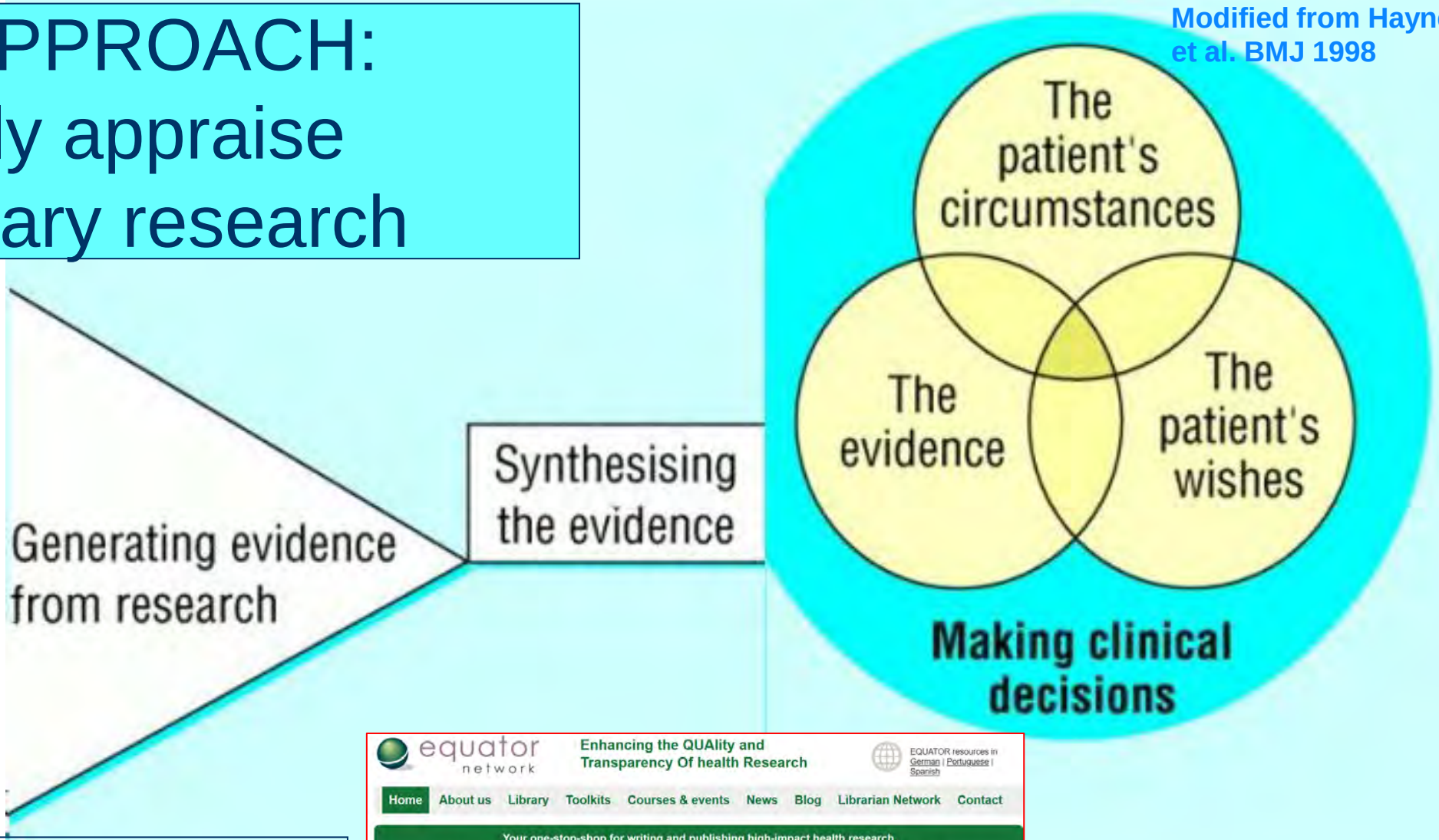
Srinivasan et al. (2019)	CAD/CAM	Fabrication-CADCAI	J Dent. 2019; 80: 75	
Drago & Borgert (2019)	Compariso	Fabrication-CADCAI	J Prosthet Dent. 201	
de Resende et al. (2019	Effectivene	Fabrication-Impressi	Gerodontology. 2019	
de Villa Camargos et al	Teaching C	Fabrication-Simplifie	J Dent Educ. 2019; 8	
Kanazawa et al. (2019)	Combined	Outcome-Diet	Clin Oral Investig. 20	
Suzuki et al. (2019)	Changes ir	PROM-Diet	J Prosthodont Res. 2	
von Stein-Lausnitz et al.	Does a fac	Fabrication-Facebov	Clin Oral Investig. 20	
von Stein-Lausnitz et al.	Influence o	Fabrication-Facebov	Clin Oral Investig. 20	
Miyayasu et al. (2018)	Cost-effec	Fabrication-Impressi	J Dent. 2018; 68: 98	
Kawai et al. (2018)	Do traditior	Fabrication-Simplifie	J Dent. 2018; 74: 30	
Lira-Oetiker et al. (2018	Randomise	Fabrication-Simplifie	J Oral Rehabil. 2018	
Nishiyama et al. (2018)	Zirconia-Re	Material	Int J Prosthodont. 20	
Suzuki et al. (2018)	The effect	Outcome-Diet	Clin Nutr. 2018; 37:	
Torres-Sánchez et al. (2	Compariso	Adhesive	J Prosthet Dent. 201	
Geerts (2017)	Neutral zor	Fabrication	J Oral Rehabil. 2017	
Kulkarni & Pawar (2017	Fabricatior	Fabrication-copytecl	Spec Care Dentist. 2	
Ceruti et al. (2017)	Simplified a	Fabrication-Simplied	J Prosthet Dent. 201	
Mengatto CM, Cameiro	A Randomi	Fabrication-simplifie	Int J Prosthodont. 20	
Sushma et al. (2017)	Nature cur	Hygiene	Ann Afr Med. 2017;	

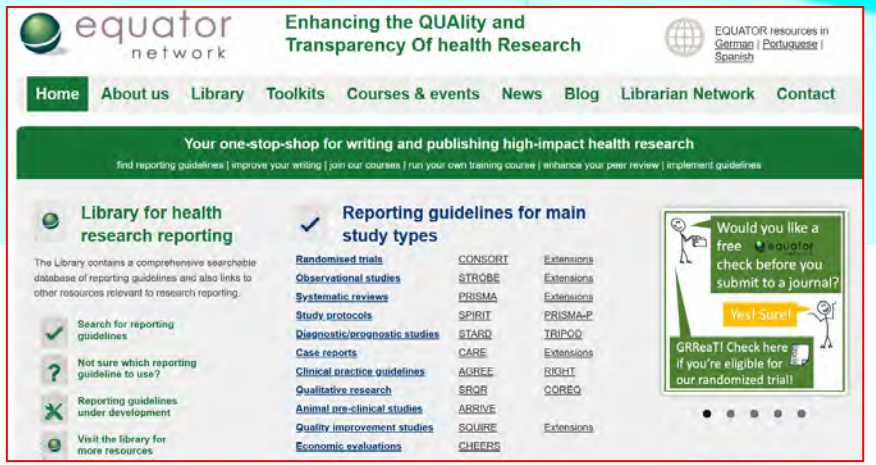
1 of 146 | Unfiltered | Search

Implementing an evidence-based practice in clinical oral prosthetic care can be achieved by three approaches

BEST APPROACH: Critically appraise new primary research

Modified from Haynes et al. BMJ 1998

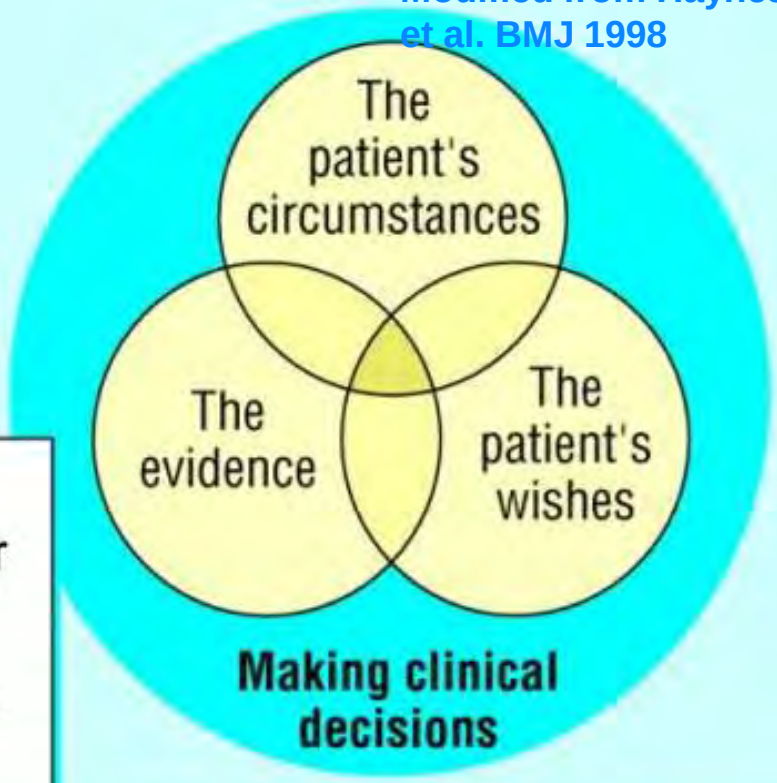


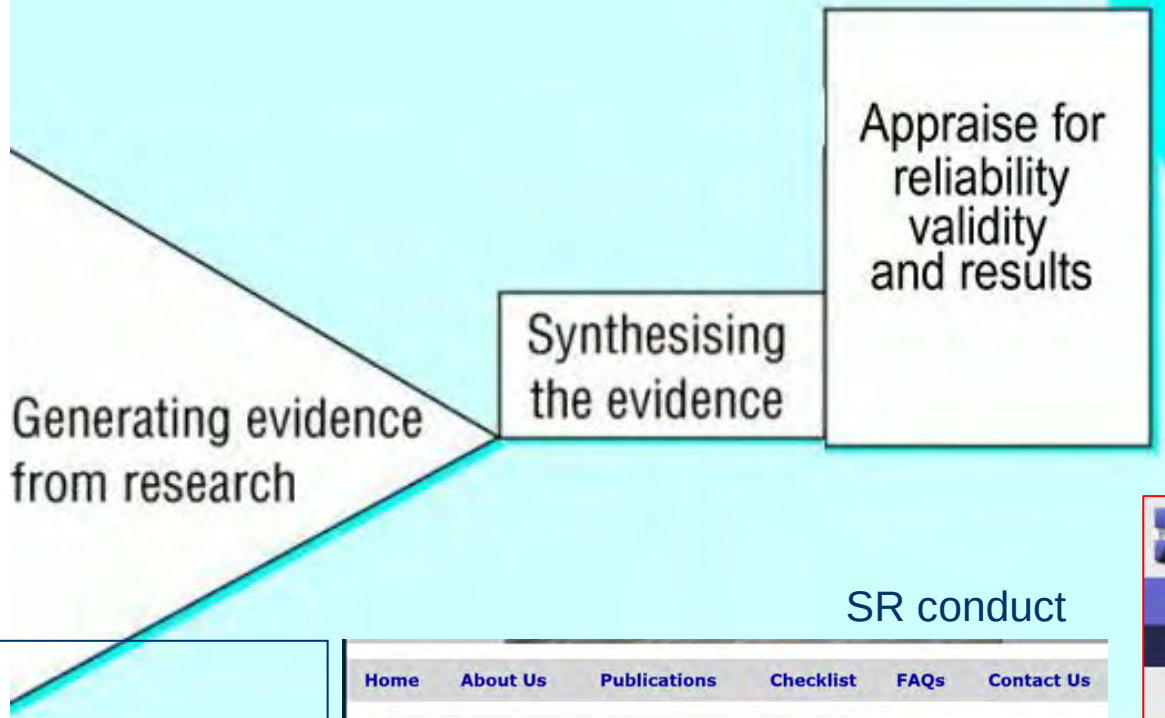


Drawbacks:
Publication volume
Study validity & representativity
Randomized trials: CONSORT
Other tools on the EQUATOR network

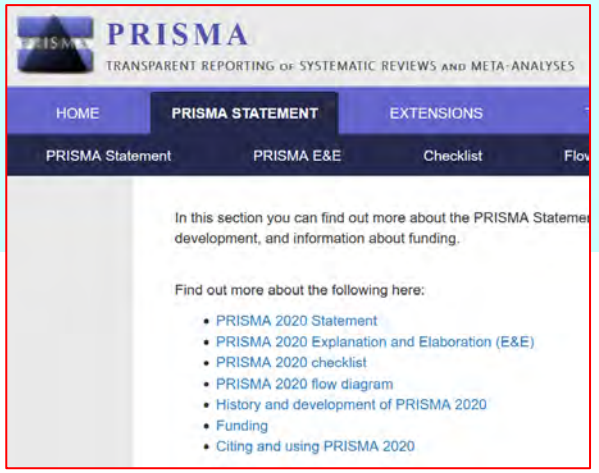
NEXT BEST APPROACH
Critically appraise new secondary research, i.e. Systematic Reviews

Modified from Haynes et al. BMJ 1998





SR reporting

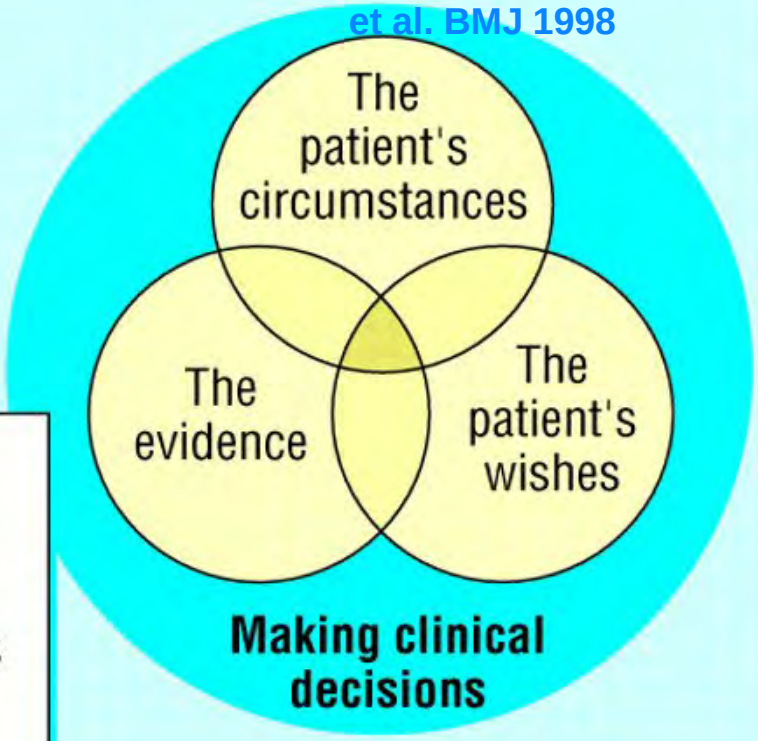


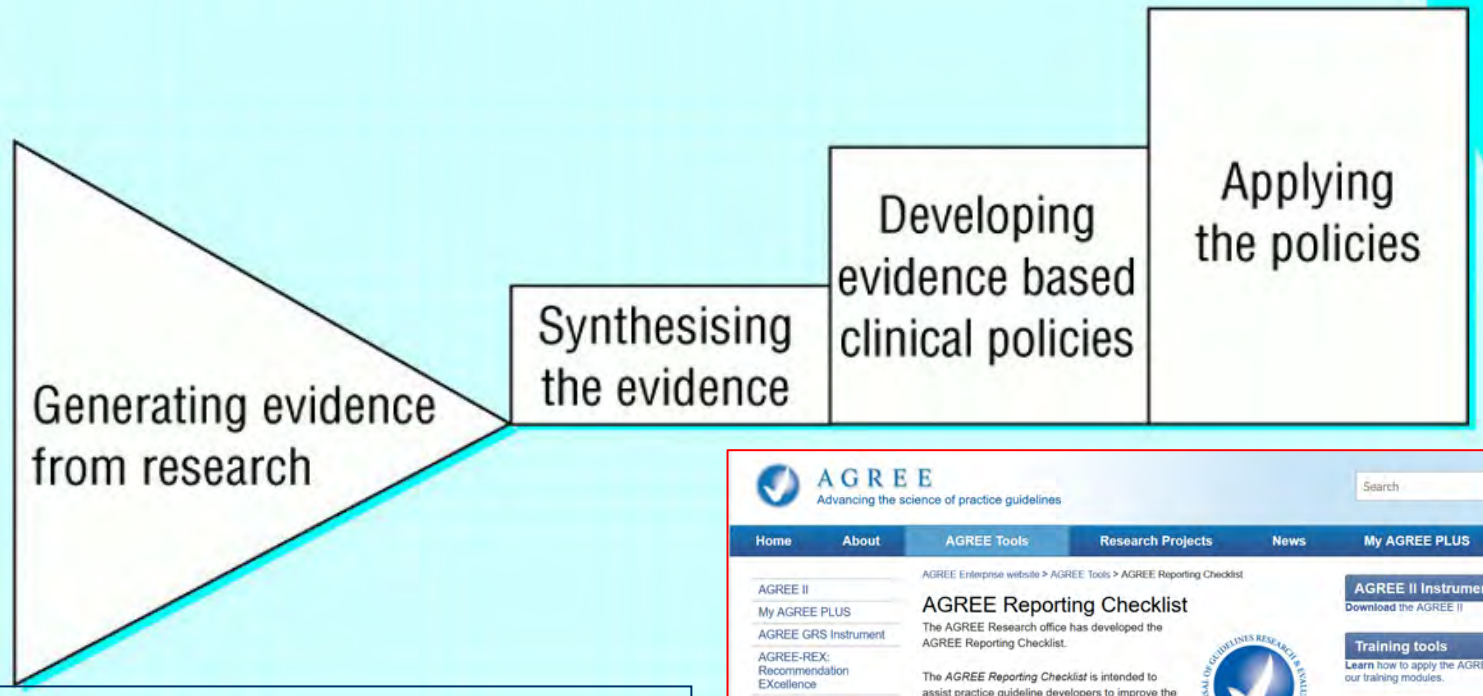
SR conduct

Drawbacks:
Publication volume
Study validity
Learn to use AMSTAR & PRISMA tools

A THIRD APPROACH
Critically appraise new clinical guidelines

Modified from Haynes et al. BMJ 1998





Drawbacks:
How to assess “validity”?
Learn to use the AGREE tool

The FDI guidelines database (2001-2009)

INTERNET ARCHIVE Wayback Machine http://www.fdiworldental.org/
645 captures
28 May 2002 - 22 Oct 2021

The FDI Organisation | FDI World Dental Press | Global Dental Aid & Aid Organization | The Dental Industry
FDI Members | FDI Congress, Education & Events Calendar | Global Dental Information | Professional Resources

FDI World Dental Federation

Site search, professional resources
Search

Professional Resources
Guidelines database
Dental journals on WWW
Continuing education courses
Inquiries - Dental Science
Emerging technologies

Professional Resources

One of the main aim of FDI is to disseminate policies, standards and information related to all aspects of oral health care. This webpage offers services for our individual members and member associations.

The guidelines database contain references and links to National and International Guidelines & Statements, Position papers, Proceedings, Systematic reviews and Meta-analyses.

All journals in dentistry that are available in full text electronically are hyperlinked.

Internet-based continuing education courses for dentists are listed, with special identification of recognised course providers who offer special rates for members of FDI

The FDI Science Manager associated with the Head Office can offer support to identify and appraise scientific evidence for use of materials, techniques and equipment. Any inquiries on science matters should be sent to the email address below. Please narrow the questions as much as possible.

The database of emerging technologies contain hyperlinks to new and exciting venues, biomaterials, techniques and procedures in dentistry.

All suggestions for improvement and changes are welcomed and should be sent to the email address below

FDI Science Manager

FDI World Dental Federation, 13 Chemin du Levant, l'Avant Centre, F-01210 Ferney-Voltaire, FRANCE
Tel: +33 4 50 40 50 50 Fax: +33 4 50 40 55 55
e mail science@fdiworldental.org

Drawbacks:
How to assess “validity”?
Learn to use the AGREE tool
Who should we trust?

National and International Guidelines, Statements, Position papers, Proceedings & Meta-analyses

The oral health topics component of the Resources section is composed of a database, which contains scientific papers, publications, including Cochrane reviews, meta-analyses and review papers. The list is not comprehensive and by no means exhaustive, but hopefully it will lead you in the right direction.

Patient issues
Public health issues
Precautions in the dental office
Materials, techniques & procedures
Dental disciplines
Education & Scientific issues
Dentists' world

Patient issues

Disabled and Special care patients	[World]	[FDI]		[META]
Dry Mouth, Saliva and oral health	[World]	[FDI]		[META]
Emergency treatment	[World]	[FDI]		[META]
Endocarditis and oral health	[World]	[FDI]		[META]
Odontophobia, psychology, fear	[World]	[FDI]		[META]
Oral mucosal problems	[World]	[FDI]		[META]
Pain	[World]	[FDI]		[META]
Quality of life and oral health	[World]	[FDI]		[META]
Sleeping disturbances (sleep apnea)	[World]	[FDI]		[META]
Sports	[World]	[FDI]		[META]
Wear of teeth	[World]	[FDI]	[FDI statement]	[META]

Public health issues

back to top

Abuse, child neglect and family violence	[World]			[META]
Access to oral health care	[World]	[FDI]	[FDI statement] [FDI statement] [FDI statement]	[META]
Cancer, Oral and Oropharyngeal	[World]	[FDI]	[FDI statement] [FDI statement]	[META]
Caries, public measures	[World]	[FDI]		[META]
Diet and oral health	[World]	[FDI]		[META]
Fluorides - topical and general use	[World]	[FDI]	[FDI statement]	[META]
Fluorides - waterfluoridation	[World]	[FDI]		[META]
General health and oral health relationship	[World]	[FDI]	[FDI statement]	[META]
HIV and AIDS	[World]	[FDI]	[FDI statement]	[META]
Periodontal diseases, public measures	[World]	[FDI]		[META]
Prevention of oral ill-health	[World]	[FDI]		[META]
Tobacco and oral health	[World]	[FDI]	[FDI statement]	[META]

Precautions in the dental office

back to top

Cross-infection control	[World]	[FDI]	[FDI statement]	[META]
Dermatitis, allergies & latex use	[World]	[FDI]		[META]
Environmental issues	[World]	[FDI]		[META]
Nitrous oxide	[World]	[FDI]		[META]
Safety of employees, precautions	[World]	[FDI]		[META]

The FDI guidelines database (2001-2009)

INTERNET ARCHIVE WayBackMachine http://www.fdiworldental.org/ 645 captures 28 May 2002 - 22 Oct 2021

The FDI Organisation | FDI World Dental Press | Global Dental Aid & Aid Organization | The Dental Industry
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FDI World Dental Federation

Site search, professional resources

Search

Professional Resources

Guidelines database
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Professional Resources

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e mail science@fdiworldental.org

Drawbacks - often:
Overarching political policies
Hidden marketing agendas

Public health issues back

8th Annual Conference of the European Association of Dental Public Health

APPRAISAL OF GUIDELINES IN DENTISTRY USING THE AGREE INSTRUMENT.

Asbjørn Jokstad. FDI World Dental Federation, Ferney-Voltaire, France & Institute of Clinical Dentistry, University of Oslo, Norway.

Introduction

The number of practice guidelines in Medicine and Dentistry has increased dramatically during the last two decades (Fig 1). The FDI World Dental Federation maintains on their website a database of guidelines in Dentistry[1]. The database contains currently about 450 guidelines. Concern has been raised that some of these are not evidence-based or reflect best practice. Different systems for appraisal of clinical guidelines have emerged, to facilitate the identification of the differences between evidence based guidelines, good practice guidelines by consensus, guidelines produced by individual experts, and standards. The aim of this study was to critically appraise the quality of clinical guidelines in dentistry

Fig 1. Practice guidelines in dentistry identified in Medline

Materials & Methods

20 clinical guidelines were randomly selected from the FDI World Dental Federation database of guidelines [1]. The guidelines were appraised according to the AGREE Appraisal Instrument [2] by a single appraiser.

AGREE APPRAISAL INSTRUMENT

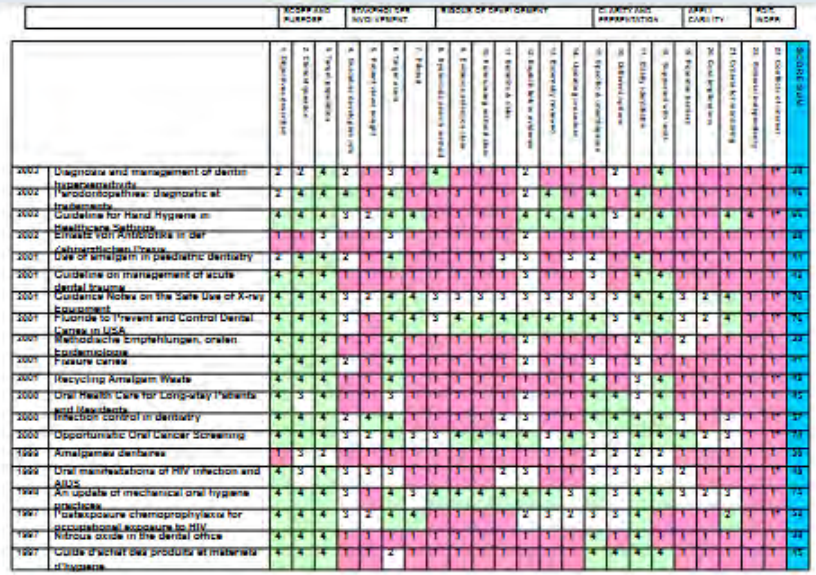
SCOPE AND PURPOSE
1. The overall objective(s) of the guideline is (are) specifically described.
2. The clinical question(s) covered by the guideline is (are) specifically described.
3. The patients to whom the guideline is meant to apply are specifically described.

STAKEHOLDER INVOLVEMENT
4. The guideline development group includes individuals from all the relevant professional groups.
5. The patients' views and preferences have been sought.
6. The target users of the guideline are clearly defined.
7. The guideline has been piloted among target users.

RIGOUR OF DEVELOPMENT
8. Systematic methods were used to search for evidence.
9. The criteria for selecting the evidence are clearly described.
10. The methods used for formulating the recommendations are clearly described.
11. The health benefits, side effects and risks have been considered in formulating the recommendations.
12. There is an explicit link between the recommendations and the supporting evidence.
13. The guideline has been externally reviewed by experts prior to its publication.
14. A procedure for updating the guideline is provided.

CLARITY AND PRESENTATION

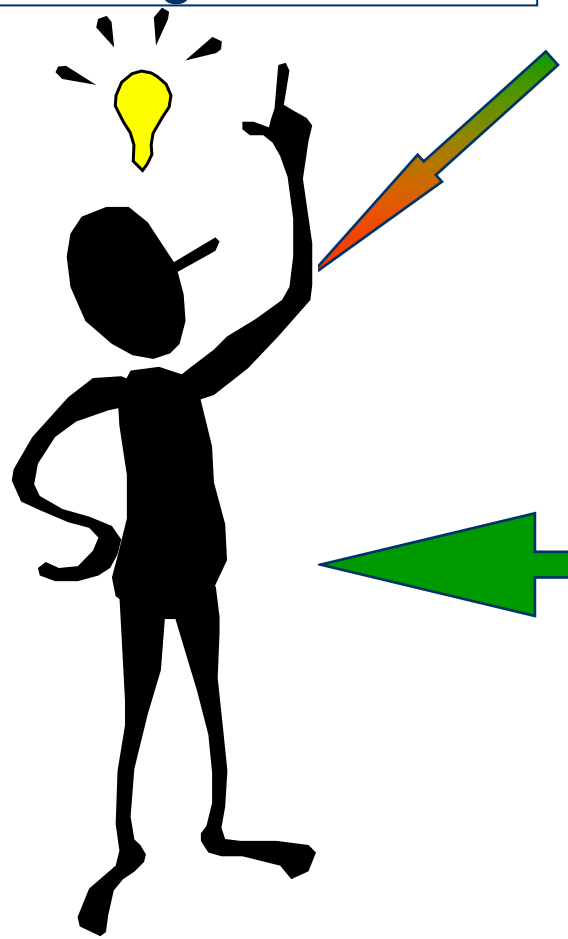
Results



- High scores were obtained for the domains: Scope and purpose & Clarity and presentation
- Mediocre scores were obtained for the domains: Stakeholder involvement & Rigour of development
-Low scores were obtained for: Applicability and Editorial independence
- Four of the evaluated guidelines could be strongly recommended for use, three could be recommended a nd as many as 13 should not be recommended.
- Particularly the criteria lack of independence from sponsoring body and conflict of interest scored low.
- Very few of the guidelines contained explicit links to the scientific evidence.
- The strength of recommendations were seldom presented

A CONTENTIOUS APPROACH: To mandate that students read selected texts (for memorizing) rather than **preparing for life-long learning** by teaching how to critically appraise new science

The new graduate

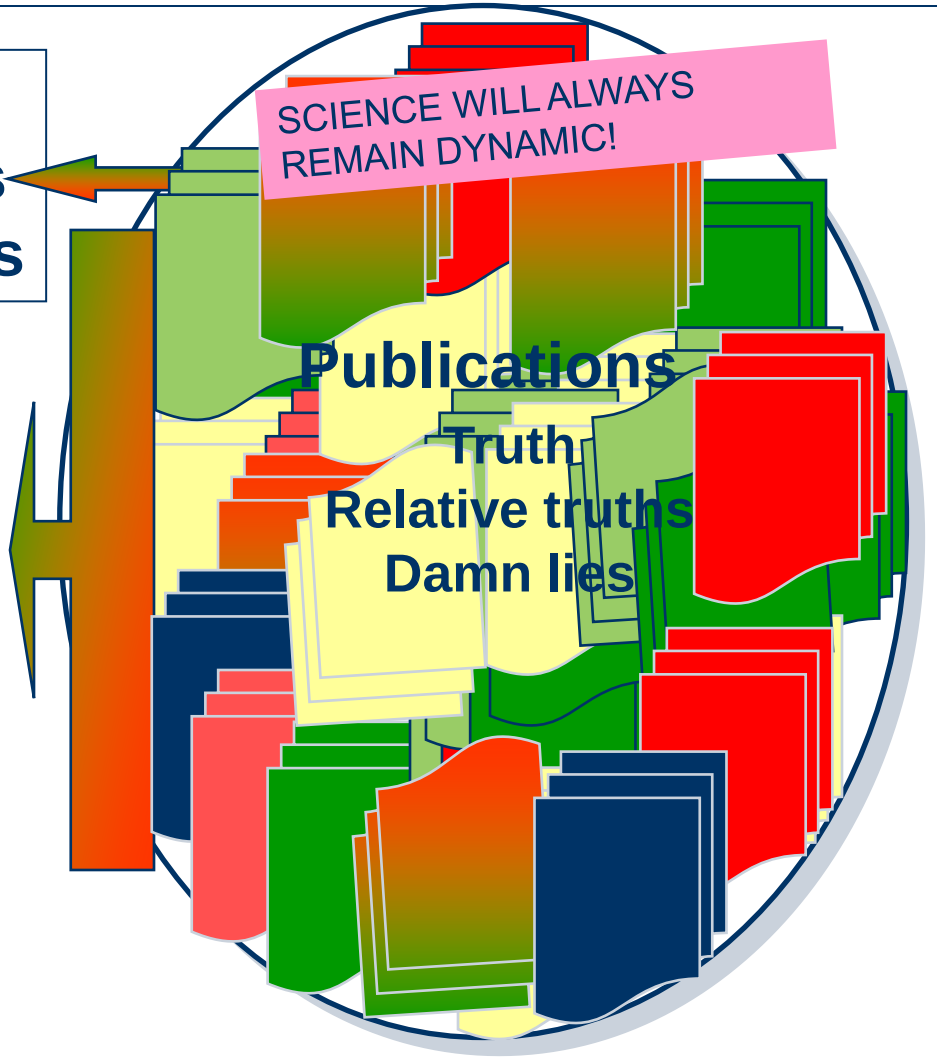


Advertising
- producers
- colleagues

Filtered by the Head / Staff / Demonstrator:

“Curriculum”

”The Classic literature”



SCIENCE WILL ALWAYS BE DYNAMIC AND REQUIRES CONTINUOUS CRITICAL APPRAISAL
COMMIT ALSO TO MEMORY:

Guerir quelquefois,
soulager souvent,
consoler toujours

(Cure occasionally, relieve often, console always)

Ambroise Paré (1510-1590)

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Le doute n'est pas une état bien agréable, mais l'assurance est un état ridicule

(Doubt is not a condition that is pleasant, but certainty is an absurd condition)

Voltaire (1694-1778)

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Voltaire (1694-1778)

Medicine is a science of uncertainty and an art of probability

(Medisin er en usikkerhetens vitenskap og det sannsynliges kunst)

William Osler (1849-1919)

Given task: to present

1. A self-selected topic: Ensuring best patient care in oral prosthetics on the best evidence

2. **A short overview of my research, with a focus on activities over the last years**

A short overview – 1984-2022

https://www.jokstad.net – since 1994

Asbjørn Jokstad, DDS, Dr. Odont.

- **Professor, Institute of Clinical Dentistry, Faculty of Health Sciences, UiT The Arctic University of Norway, Tromsø** - Website
- **Professor emeritus, Prosthodontics, Faculty of Dentistry, University of Toronto, Ontario, Canada** - Website
- **Professor emeritus, Prosthodontics, Dental Faculty, Universitetet i Oslo, Oslo, Norway** - Website

One page CV - Current Research Information SysTem In Norway (CRISTIN)

GoogleScholar -- ORCID: 0000-0002-5902-4520 -- Publons:1183985 --Pubmed -- Research Gate -- Scopus: 7003486298

Themes
Anatomy & Colour of teeth
Cariology & Operative/Restorative Dentistry
Covid-19 & SARS-2
Digital technologies & Computer Assistance
Education
Evidence Based Practice
Health & Safety in the Work Environment
Implant prosthodontics
Occlusion & Temporomandibular Disorders (TMD)
Oral Cancer
Prosthodontics, Conventional
Quality, Standards, Guidelines and patient safety
Research Ethics, -Organization and -Validity
Other themes
Clinical and Experimental Dental Research - editorials, 2015-2019
Student lectures - Oslo, Norway (2000-2005), Toronto, Canada (2005-2012), Tromsoe (2012-
Popular Science & Interviews
WWW website management

← Research
Multi/Trans-disciplinary

Lectures

	1 & 2 semester	3& 4 semester	5 & 6 semester	7 & 8 semester	9 & 10 semester
University of Tromso 2013H- Kliniske Arbeidsrutiner, Versjon 2019			Biostatistikk 1 Biostatistikk 2 God klinisk praksis i protetikk Best undersøkelse og behandlingsplan Tannpreparering til krone 1 Tannpreparering til krone 2 Bittfunksjon. Basalt Bittfunksjon. Interferens Bittfunksjon. TMD Avtakbar partiell protese Førstehjelp, helprotese Propedeutisk kurs - hefte	Planlegging av protetikkbehandling Preparering til fast broprotese Rotstifter i fast protetikk Midlertidig bro Retraksjon av gingiva før avtrykk Propedeutikk-kurs, manual Avtrykk til fast protetikk Arbeidsmodeller & utforming av bro Passform, understøttelse og kontroller Sementering av fast protetikk Implantatretinert singelkrone Implantatretinert singelkrone estetikk Kvalitet og pasientsikkerhet Avtakbar partialprotetikk. Generelt Avtakbar partialprotetikk. Konstruksjon Avtakbar partialprotetikk. Utforming Patentfester i oral protetikk Propedeutisk kurs Propedeutisk kurs - hefte	Protetikk for TMD pasienten Farge -teori og praksis Protetikk for slitt bitt kasus Protetikk for slitt bitt teori Valg av bromateriale Digitalteknologi i protetikk Periodontal sykdom og protetikk Protetikk for eldre individer Implantatprotetikk 1 Implantatprotetikk 2 Hel kjeve metode & material1 Hel kjeve metode & material2 Tannløs kjeve - alternativer Problem etter utlevering Evidensbasert protetikk
University of Tromso 2012H-2013V	Oral helse som del av generell helse		Klinisk epidemiologi Bittfunksjon.		

Tromsø 2012→

University of Toronto 2011H-2012V	Why prosthodontics	IDAPP -course	Gerodontology Treatment planning 1 Treatment planning 2 Patient management for best care	Costs and benefits prostho
University of Toronto 2010H-2011V	Why prosthodontics	IDAPP -course	Gerodontology Treatment planning Patient management for best care	Prosthodontics curriculum changes Costs and benefits prostho
University of Toronto 2006H-2011V			Gerodontology Treatment planning Patient management for best care	Costs and befits of prosthodontics_07 Teaching needs Costs and benefits of prosthodontics.08
University of Toronto 2005H-2006V			Use of an auditory response system	Teaching needs Costs and benefits of prosthodontics

Toronto 2005-2012

University of Oslo 2004H-2005V			Hvordan holde seg ajour faglig? Dental faginformasjon og bruk av digital medier	Brannslukking i protetikk	Bittfysiologi 1– TMD Bittfysiologi 2 TMD Finne og analysere evidens Grunnlag for klinsk avgjørelse Kostnadsaspekter Protetikk- basert på empiri? Hvor finne protetikk-literatur? Skille, seriøs og useriøs info
University of Oslo 1999H-2004V	Hva er kariologi?	Kaviteter i fissurer for adhesive materialer	Journalføring 1/2 Journalføring 2/2 Klasse II amalgam Gullinnlegg Caries-etiologi Caries-epidemiologi-1 Caries-diagnostikk PBL 6 sem	Sekundærkaries-seminar Caries-diagnostikk validitet Caries-symptomatologi Lokale tannskader Årsaker til fyllingsfeil PRT. 8 sem	Kariesepidemiologi-2 Traumatologi - voksne Valg av fyllingsmaterialer
University of Oslo 1998H-1999V		Kaviteter i fissurer for adhesive materialer	Journalføring 1/2 Journalføring 2/2 Klasse II amalgam Gullinnlegg Caries-etiologi Caries-epidemiologi-1 Caries-diagnostikk	Sekundærkaries-seminar Caries-diagnostikk validitet Caries-symptomatologi Lokale tannskader Årsaker til fyllingsfeil Total tannløshet. Oversikt Introduksjon til forelesningsserien Tannløshet, et neglisjerbart problem Anatomiske hovedtrekk ved tannløshet Funksjonelle aspekter ved tannløshet Prosedyre for fremstilling av helprotese Protesemorfologi, kjeverelasjoneri Alternativ prosedyre, kopsprotese Målsetning for behandling Alternativer, behandlingsutfall Estetiske virkemidler Adaptasjonsfremmende tiltak Tilvenningsproblemer Problemer og problemløsning	Kariesepidemiologi 2 Traumatologi - voksne Valg av fyllingsmaterialer Nye fyllingsmaterialer Protetikk-seminar Ubesvarte spørsmål i protetikk
University of Oslo 1997H-1998V		Kaviteter i fissurer for adhesive materialer	Journalføring Klasse I amalgam Klasse II amalgam Gullinnlegg Caries-etiologi Caries-diagnostikk	Sekundærkaries-seminar Caries-diagnostikk validitet Caries-symptomatologi Lokale tannskader Årsaker til fyllingsfeil	Kariesepidemiologi Protetikk-seminar Ubesvarte spørsmål i protetikk
University of Oslo 1994H-1997V					Protetikk -seminar
University of Oslo 1985H-1991V	Tannmorfologi, hefte	Tannmorfologi, kompendium			

Oslo 1985 - 2005

Earliest academic career in a preclinical environment

U. of Oslo
Dentistry

1974-1979

→

Military dentist
North Norway

1979-1982

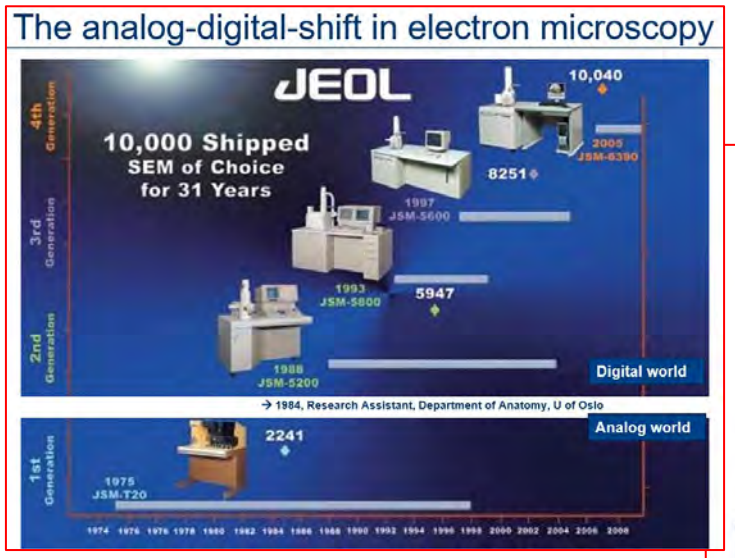
→

Computer Sciences, U. of Oslo
General biology graduate studies
Preclinic demonstrator, DOF, Oslo

1982-1984

↓

Faculty of Dentistry, Anatomy Dept.
SEM / TEM & Tooth morphology
Computer /Network infrastructure

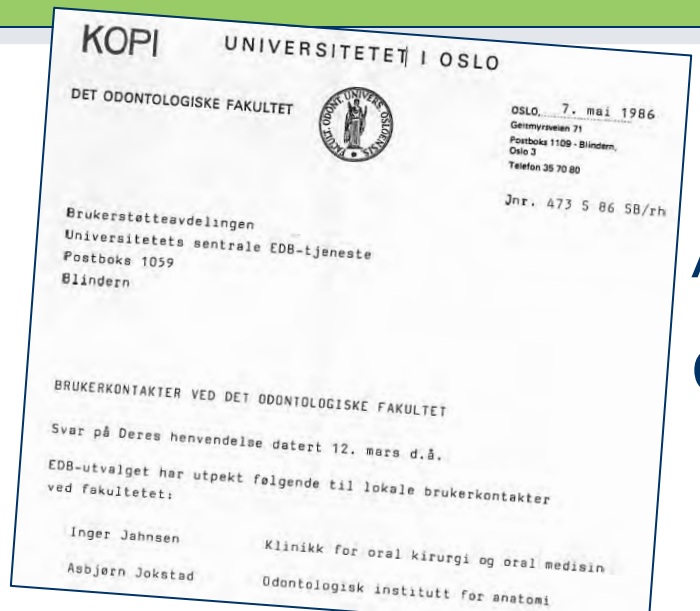


Jeol 1200 EXII

Transmission Electron Microscope (m/ Renate Hars)

Philips SEM 515

Scanning Electron Microscope (m/ Steinar Stølen)



KOPI

UNIVERSITETET I OSLO

DET ODONTOLOGISKE FAKULTET

OSLO, 7. mai 1986
Geitmyrsveien 71
Postboks 1109 - Blindern,
Oslo 3
Telefon 35 70 80

Jnr. 473 S 86 SB/rh

Brukerstøtteavdelingen
Universitetets sentrale EDB-tjeneste
Postboks 1059
Blindern

BRUKERKONTAKTER VED DET ODONTOLOGISKE FAKULTET

Svar på Deres henvendelse datert 12. mars d.å.

EDB-utvalget har utpekt følgende til lokale brukerkontakter ved fakultetet:

Inger Jahnsen — Klinikk for oral kirurgi og oral medisin

Asbjørn Jokstad — Odontologisk institutt for anatomi

Abrupt end

October 1985

Digital innovations affect everyone – perhaps more for some than for all

Computer Sciences, U. of Oslo
General biology graduate studies
Preclinic demonstrator, DOF, Oslo

1982-1984

Professor Ivar A Mjör
NIOM director
Head of Department of Anatomy (on leave)

1985 October

Faculty of Dentistry, Anatomy Dept.
SEM / TEM & Tooth morphology
Computer /Network infrastructure
&
Nordic Institute of Dental Materials
Clinical studies program

1.The mainframe computer rented at SINTEF (Gaustadbekken) had broken down!

2. All clinical data accumulated over 10 years in the NIOM clinical studies program were in disarray!

3.All data files were corrupted and required to be reconstructed!

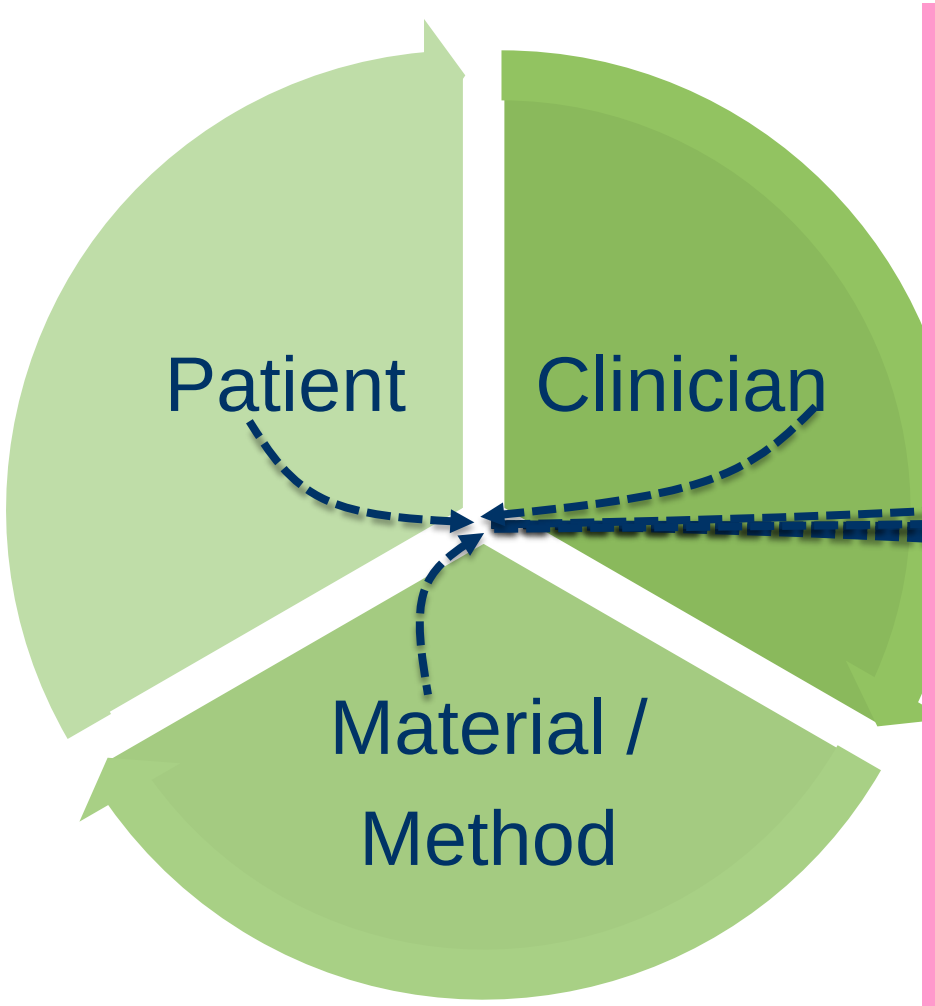
A computer geek with a dentistry background was desperately needed!!!

NIOM
Nordic Institute of Dental Materials

Clinical studies program

Objective: To appraise the clinical performance of materials in Nordic clinics under everyday conditions*

Variables



*The term **PBRN research** was “not invented yet”

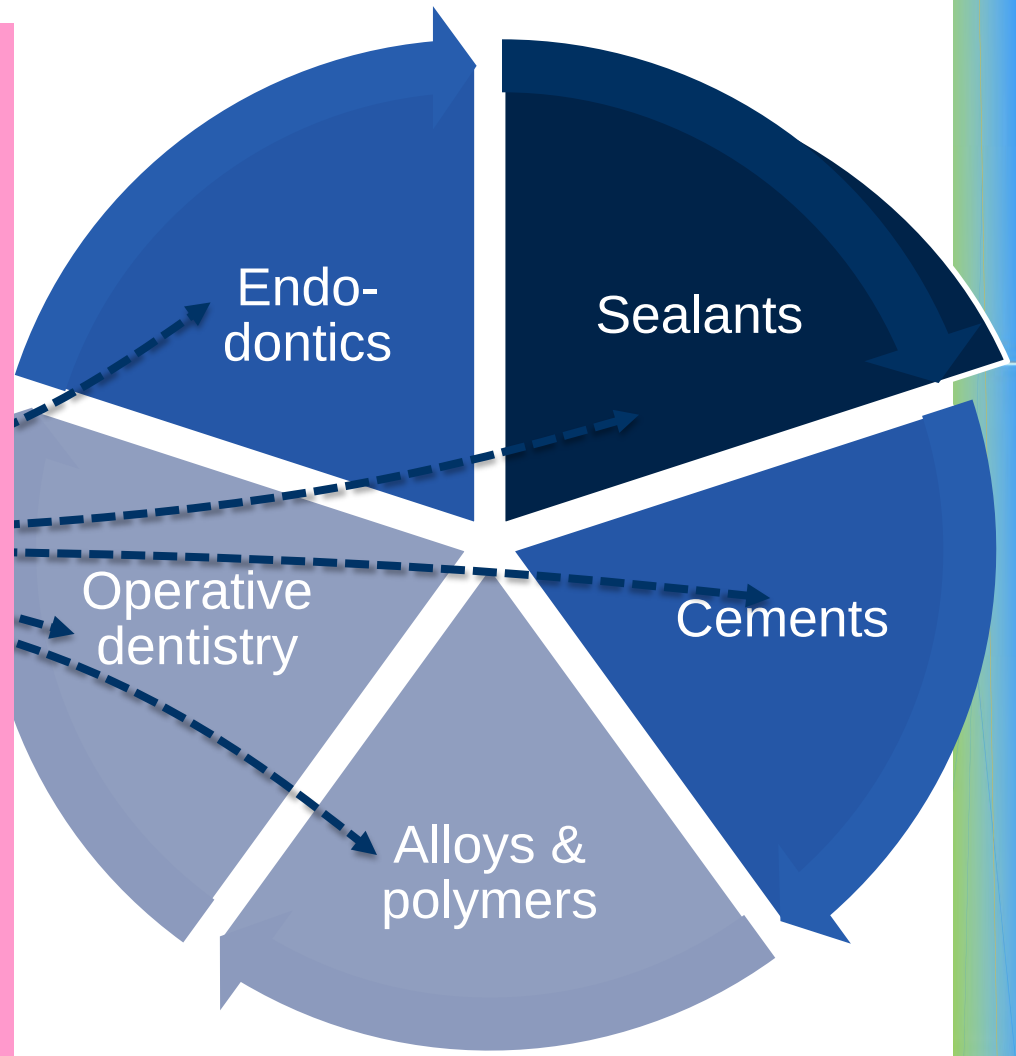
Herø, Holland, Mejare, Øilo, Ørstavik +guest researchers

Reconstructing the corrupted datafiles was complex and tedious

<u>Challenges:</u> Choices of independent & dependent variables (dichotomous / nominal / continuous)

Planned statistical analyses were largely exploratory (and often erroneously parametric)

Outcomes



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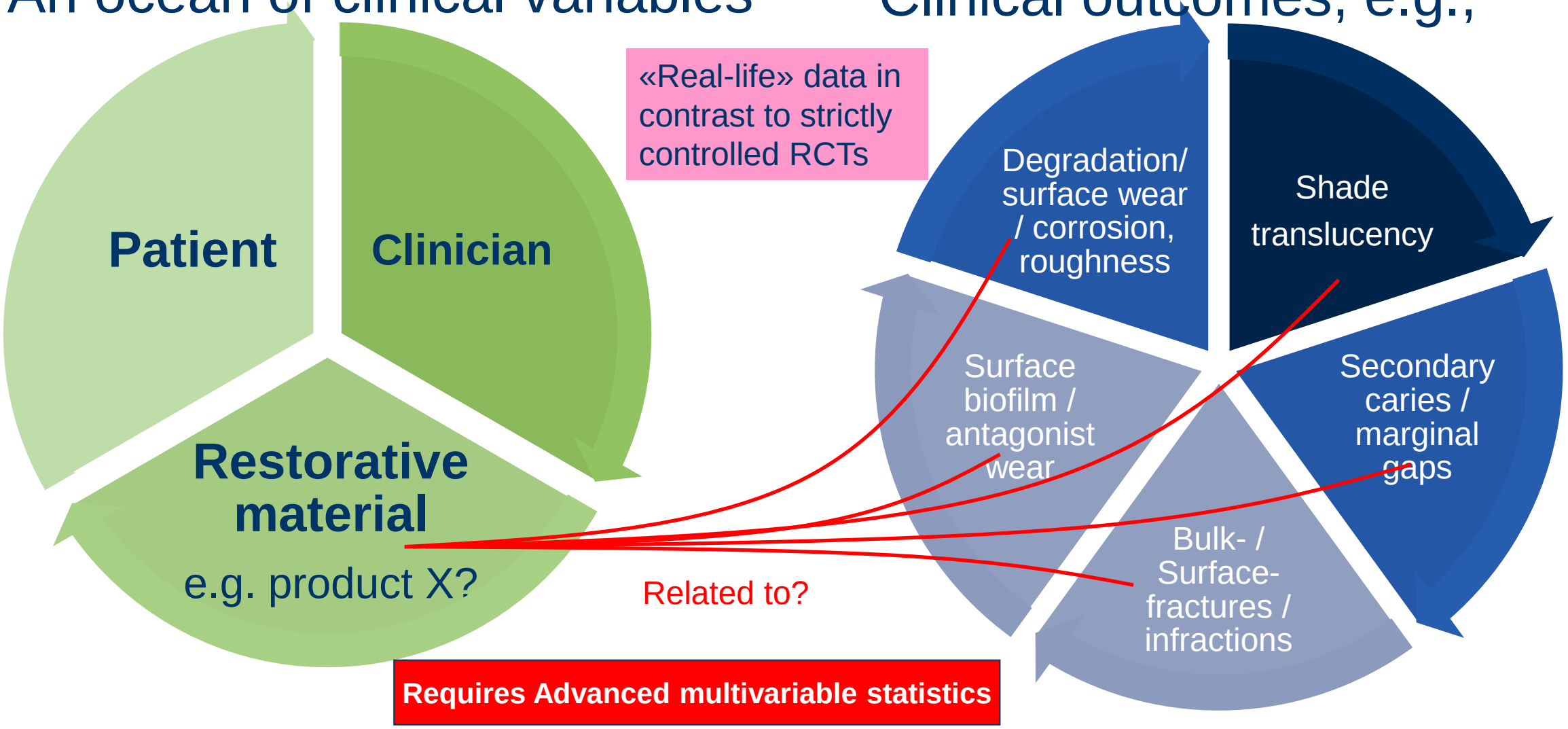
Clinical studies program

Objective: To appraise the clinical performance of materials in Nordic clinics under everyday conditions

An ocean of clinical variables

Clinical outcomes, e.g.,



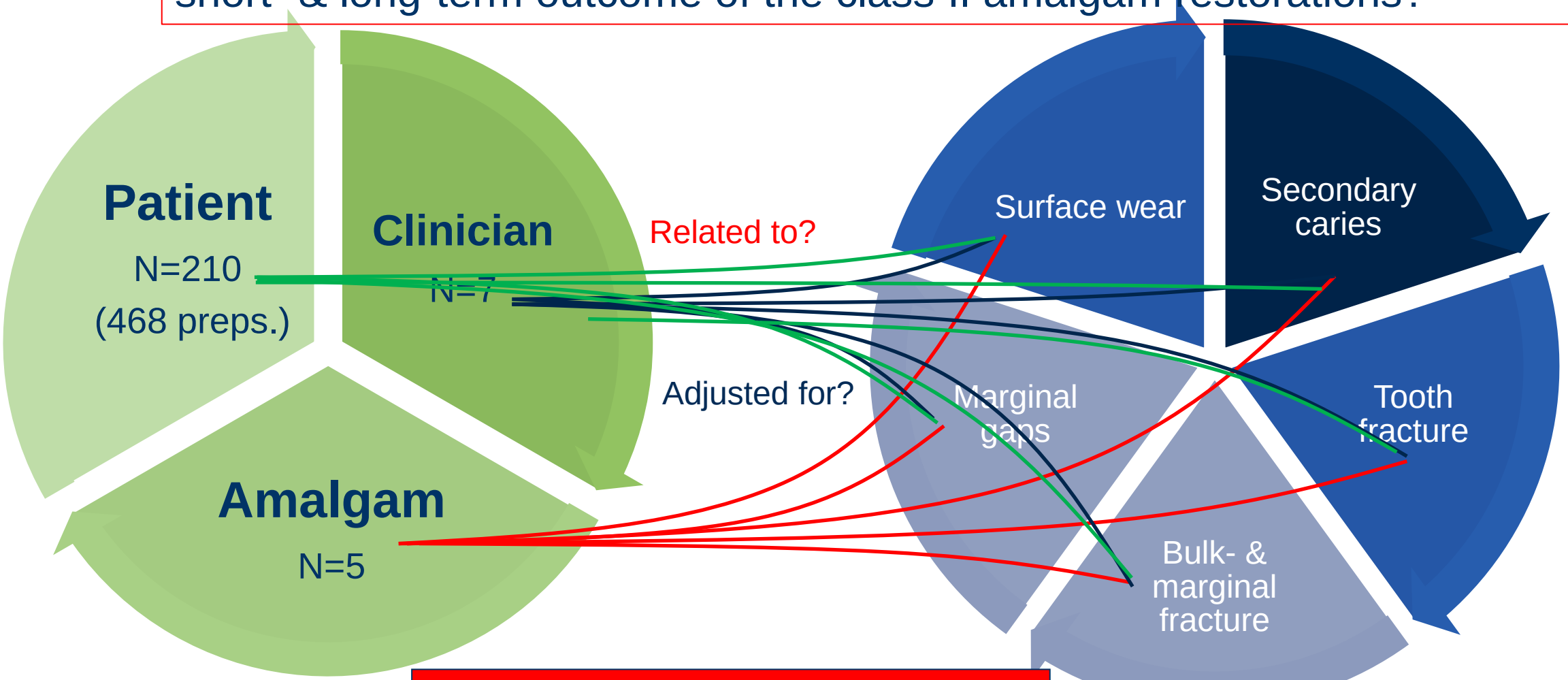
Requires Advanced multivariable statistics

NIOM
Nordic Institute of Dental Materials

Clinical studies program

Objective: To appraise the clinical performance of materials in Nordic clinics under everyday conditions

How will the qualities of the cavity prepared by general dentists affect the short- & long-term outcome of the class II amalgam restorations?



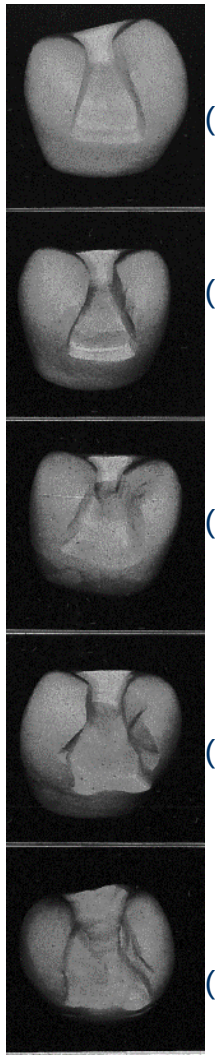
Complex advanced multivariable statistics

PhD start 1986

NIOM
Nordic Institute of Dental Materials

Clinical studies program

Research question: How will the qualities of the cavity prepared by general dentists affect the short- & long-term outcome of the restorations?



(A)lfa

(B)ravo

(C)harly

(D)elta

(V)ictor

Categorical scale

Cavity designs for class II amalgam restorations

A literature review and a suggested system for evaluation

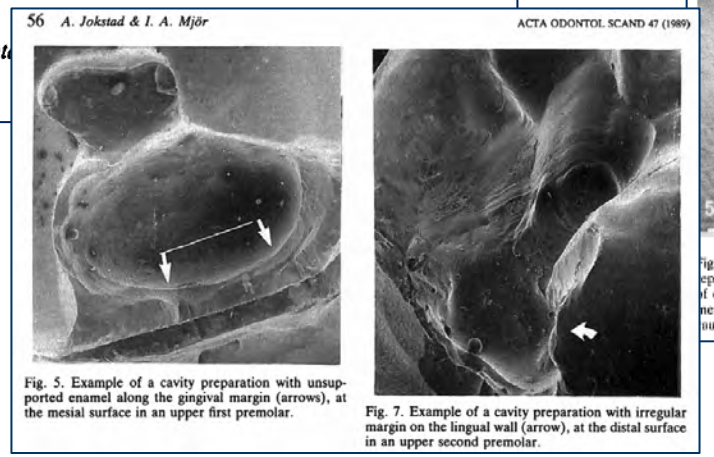
Asbjörn Jokstad and Ivar A. Mjör
Department of Anatomy, School of Dentistry, University of Oslo, and
NIOM, Scandinavian Institute of Dental Materials, Oslo, Norway

Jokstad A, Mjör IA. Cavity designs for class II amalgam restorations. A literature review and a suggested system for evaluation. Acta Odontol Scand 1987;45:257–273. Oslo. ISSN 0001–6357.

A classification system for variations in cavity design and finish has been developed for application on models of teeth with class II cavities for amalgam restorations. The system was based on a review of the literature, on principles for clinical studies, and on examination of models of 623 teeth in which routine class II cavity preparations had been made. Preliminary data on the agreement of rating of evaluators indicated that the classification system can be used with good consistency for assessment of variations in cavity preparations. Longitudinal clinical studies on the performance of restorations will be decisive for the validity of the selected criteria and for a relevant differentiation between acceptable and unacceptable preparation features. □ *Conservative dentistry; failure of restorations; longevity of restorations; operative dentistry*

Asbjörn Jokstad, Department of Anatomy, Dent
of Oslo, N-0316 Oslo 3, Norway

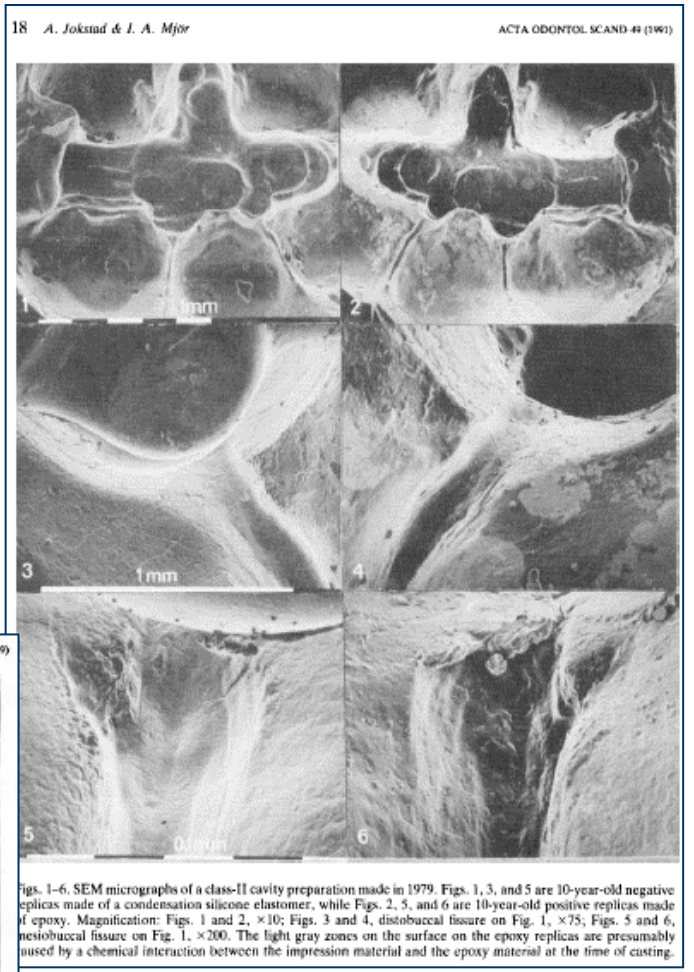
COST-PROHIBITIVE IN 1987:
Stereo-photogrammetry
Computer stereo vision



56 A. Jokstad & I. A. Mjör ACTA ODONTOL SCAND 47 (1989)

Fig. 5. Example of a cavity preparation with unsupported enamel along the gingival margin (arrows), at the mesial surface in an upper first premolar.

Fig. 7. Example of a cavity preparation with irregular margin on the lingual wall (arrow), at the distal surface in an upper second premolar.



18 A. Jokstad & I. A. Mjör ACTA ODONTOL SCAND 49 (1991)

Figs. 1–6. SEM micrographs of a class-II cavity preparation made in 1979. Figs. 1, 3, and 5 are 10-year-old negative replicas made of a condensation silicone elastomer, while Figs. 2, 5, and 6 are 10-year-old positive replicas made of epoxy. Magnification: Figs. 1 and 2, ×10; Figs. 3 and 4, distobuccal fissure on Fig. 1, ×75; Figs. 5 and 6, mesiobuccal fissure on Fig. 1, ×200. The light gray zones on the surface on the epoxy replicas are presumably caused by a chemical interaction between the impression material and the epoxy material at the time of casting.

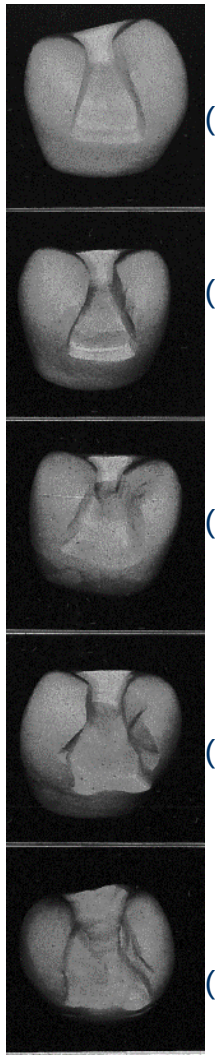
Philips SEM pictures

PhD start 1986

NIOM
Nordic Institute of Dental Materials

Clinical studies program

Research question: How will the qualities of the cavity prepared by genera dentists affect the short- & **long-term outcome** of the restorations?



(A)lfa

(B)ravo

(C)harly

(D)elta

(V)ictor

Categorical scale

Cavity designs for class II amalgam restorations

A literature review and a suggested system for evaluation

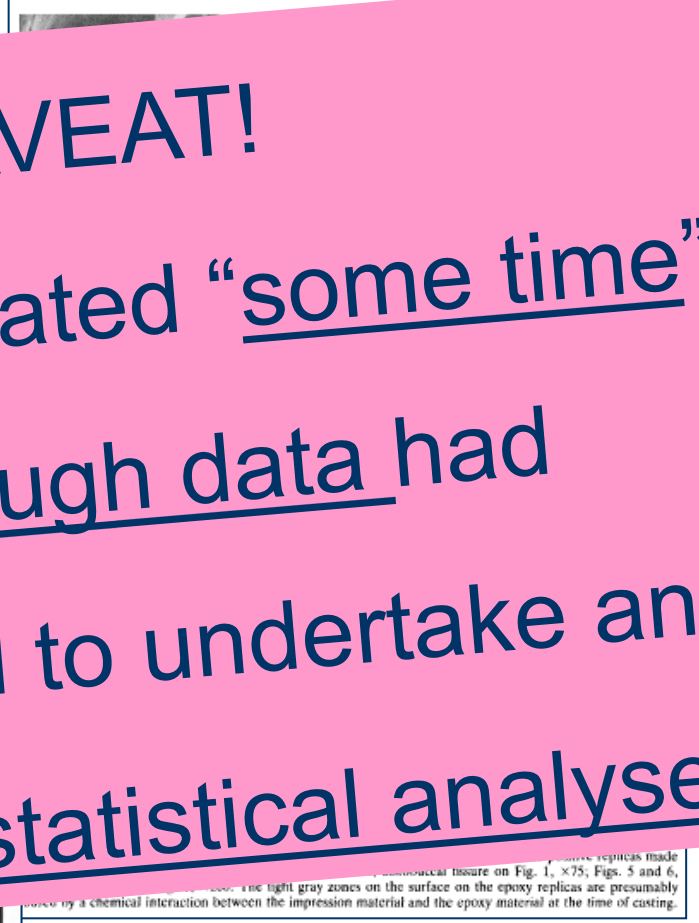
Asbjörn Jokstad and Ivar A. Mjör
Department of Anatomy, School of Dentistry, University of Oslo, a
NIOM, Scandinavian Institute of Dental Materials, Oslo, Norway

Jokstad A, Mjör IA. Cavity designs for class II
and a suggested system for evaluation. Acta Od
0001–6357.

A classification system for variations in cavity d
application on models of teeth with class II cavities
based on a review of the literature, on principles f
models of 623 teeth in which routine class II cavity
data on the agreement of rating of evaluators indic
used with good consistency for assessment of variat
clinical studies on the performance of restorations
selected criteria and for a relevant differentiation
preparation features. □ *Conservative dentistry; fai
rations; operative dentistry*

*Asbjörn Jokstad, Department of Anatomy, Dent
of Oslo, N-0316 Oslo 3, Norway*

18 *A. Jokstad & I. A. Mjör* ACTA ODONTOL SCAND



...tight gray zones on the surface on the epoxy replicas are presumably ...by a chemical interaction between the impression material and the epoxy material at the time of casting.

56 *A*

Fig. 5. Example of a cavity preparation with unsupported enamel along the gingival margin (arrows), at the mesial surface in an upper first premolar.

Fig. 7. Example of a cavity preparation with irregular margin on the lingual wall (arrow), at the distal surface in an upper second premolar.

COST-PROHIBITIVE IN 1987:
Stereo-photogrammetry
Computer stereo vision

CAVEAT!

It was anticipated “some time” until enough data had accumulated to undertake any meaningful statistical analyses

Philips SEM pictures

While waiting for the amalgam restorations to fail ....

Asbjørn Jokstad[1], Jan Aaseth[2] og Per Løkken[3]:

Kvikksølv fra amalgam og anvendelse av kelatorer

Til nytte eller skade?

Pharmacology & Toxicology 1992, **70**, 308–313.

Dental Amalgam and Mercury

Asbjørn Jokstad[1], Yngvar Thomassen[2], Erik Bye[2], Jocelyne Clench-Aas[3] and Jan Aaseth[4]

[1]Department of Anatomy, Dental Faculty, University of Oslo, P.O Box 1052 Blindern, N-0316 Oslo, [2]National Institute of Occupational Health, Oslo, [3]Norwegian Institute for Air Research, Lillestrøm, [4]Central Hospital, Elverum, Norway

(Received October 21, 1991; Accepted December 18, 1991)

Kvikksølvopptak på tannklinikker

En oversikt og en rapport fra forholdene i Hordaland

Asbjørn Jokstad
Nils Wandel

Tannhelsepersonell utsettes for kvikksolv av ulike former i sitt daglige arbeid. Kvikksolv har en viss flyktighet allerede ved rom-

Jorunn Bjørnsen
Marit Hansen
Liv Mette Harboe
Asbjørn Jokstad
Svein Roseth

Biologisk institutt.
Universitetet i Oslo.

Cytotoksisitet av glassionomersementer anvendt som tannfyllingsmateriale.

Prosjektoppgave 6.2, BIO 241.

Vår 1989

Mercury excretion and occupational exposure of dental personnel

Jokstad A: Mercury excretion and occupational exposure of dental personnel. Community Dent Oral Epidemiol 1990; 18: 143–8.

Computer Sciences, U. of Oslo
General biology graduate studies
Preclinic demonstrator, DOF, Oslo

1982-1984

Faculty of Dentistry, Anatomy Dept.
SEM / TEM & Tooth morphology
Computer /Network infrastructure
&
Nordic Institute of Dental Materials
Clinical studies program
Toxicology

Asbjørn Jokstad:

Yrkesrelatert kontaktdermatitt og tannhelsepersonell

Et spørreskjema om erhvervsrelaterte helseplager ble sendt til 800 NTF-landsmøtedeltagere i 1987. Tohundreogfemtini ansatte i

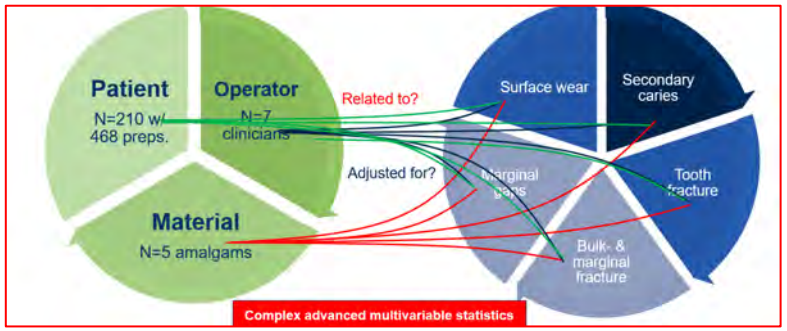
kjemiske forbindelser i løpet av et år. En rekke av disse er primærtoksiske stoffer som kan fremkalle irritativ kontaktder-

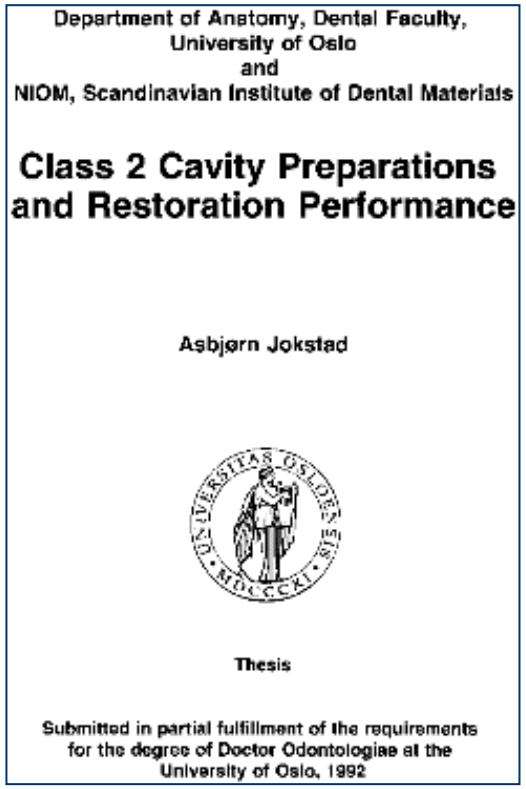
tenke seg at aller tener, dvs lavm stanser, lettere k nom en hudba

Clinical studies program

Research question: How will the qualities of the cavity prepared by general dentists affect the short- & **long-term outcome** of the restorations?

"*Some time*" ended up being 10 years (!)




Department of Anatomy, Dental Faculty, University of Oslo
and
NIOM, Scandinavian Institute of Dental Materials

Class 2 Cavity Preparations and Restoration Performance

Asbjørn Jokstad

Thesis

Submitted in partial fulfillment of the requirements for the degree of Doctor Odontologiae at the University of Oslo, 1992

Computer Sciences, U. of Oslo
General biology graduate studies
Preclinic demonstrator, DOF, Oslo

1982-1984

Faculty of Dentistry, Anatomy Dept.
SEM / TEM & Tooth morphology
Computer /Network infrastructure
&
Nordic Institute of Dental Materials
Clinical studies program
Toxicology

1984-1992

Then: ANOVA & MCA (Multiple classification analyses), Wilcoxon tests, Survival analyses: logrank , Lee-Desu, Cox regression models

Today: Multilevel multivariable logistic / linear regression

Clinical studies program

and

Dr J Valderhaug (†1999)

Fixed prostheses → periodontitis?

Periodontal conditions in patients 5 years following insertion of fixed prostheses

Pocket depth and loss of attachment

J. VALDERHAUG and J.M. BIRKELAND

Oral Hygiene in a Group of Supervised Patients with Fixed Prostheses

by JAKOB VALDERHAUG* LEIF ARNE HELØE†

Oral hygiene, periodontal conditions and carious lesions in patients treated with dental bridges

A 15-year clinical and radiographic follow-up study

J. Valderhaug, J. E. Ellingsen and A. Jokstad

Assessment of the periapical and clinical status of crowned teeth over 25 years

J. Valderhaug, A. Jokstad, E. Ambjørnsen and P. W. Norheim

Computer Sciences, U. of Oslo
General biology graduate studies
Preclinic demonstrator, DOF, Oslo

1982-1984

Faculty of Dentistry, Anatomy Dept.
SEM / TEM & Tooth morphology
Computer /Network infrastructure
&
Nordic Institute of Dental Materials
Clinical studies program
Toxicology

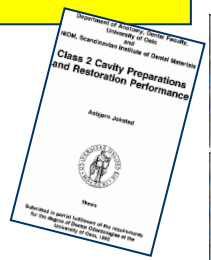
1984-1992

Private Practice
&
Graduate
Prosthodontics
Program

1992 -

Applied statistics

Core Curriculum
Biostatistics /
Research methodology



Class 2 Cavity Preparations and Restoration Performance

Jokstad A, Mjör IA. Ten years' clinical evaluation of three luting cements. Journal of Dentistry, 1996; 24: 309 - 315. [Online] --[Medline]

Jokstad A, Mjör IA, Nilner K, Kaping S. Clinical performance of three anterior restorative materials over 10 years. Quintessence International, 1994; 25: 101 - 108. [Online] [Medline]

Mjör IA, **Jokstad A**. Five - year study of Class II restorations in permanent teeth using amalgam, glass polyalkenoate (ionomer) cermet and resin - based composite materials. Journal of Dentistry, 1993; 21: 338 - 343. [Online] [Medline]

Digital innovations affect everyone – perhaps more for some than for all

Computer Sciences, U. of Oslo
General biology graduate studies
Preclinic demonstrator, DOF, Oslo

1982-1984

A computer geek with a prosthodontic background was desperately needed!!! → postdoc position

Faculty of Dentistry, Anatomy Dept.
SEM / TEM & Tooth morphology
Computer /Network infrastructure
&
Nordic Institute of Dental Materials
Clinical studies programs
Toxicology

1984-1992

Digital Motion Capture System
+ Electromyography (EMG)

QUALISYS
BIOPAC Systems, Inc.

2xIR cameras - 40Hz
Graphic controller EMG
Analogue x-y & y-z video screens

Calibration frame for 3D recording

Fiducial markers (IR reflectors)

MacReflex software: Triangulation of centre points (40 Hz)
MacIntosh computer

Jon Ørstavik

Private Practice
&
Graduate Prosthodontics Program

1992 - 1994

EUROPEAN PROSTHODONTIC ASSOCIATION FOUNDED IN 1977

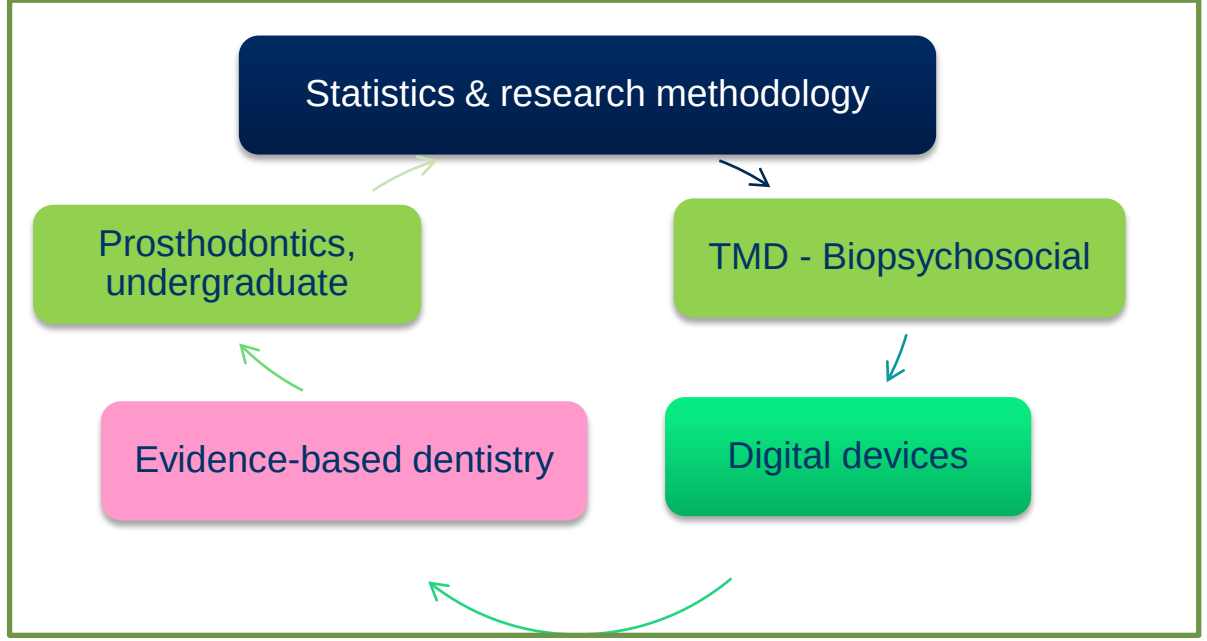
EPA meeting Oslo, 1988 → $$$

Core Curriculum
Biostatistics /
Research methodology

Applied statistics

JEOL
Arpanet
NIOM Nordic Institute of Dental Materials

From 1994 -



Computer Sciences, U. of Oslo
General biology graduate studies
Preclinic demonstrator, DOF, Oslo

1982-1984

Faculty of Dentistry, Anatomy Dept.
SEM / TEM & Tooth morphology
Computer /Network infrastructure
&
Nordic Institute of Dental Materials
Clinical studies programs
Toxicology

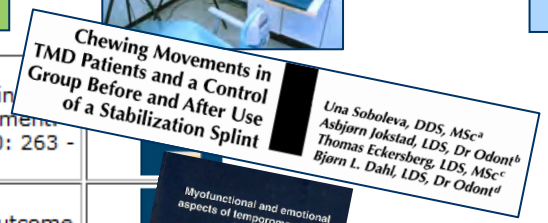
1984-1992

Private Practice
&
Graduate
Prosthodontics
Program

1992 - 1994

Prosthetic dentistry and Stomatognathic function (1994-)

TMD (Berit Krogstad)
Psychomotoric physiotherapy



Krogstad BS, **Jokstad A**, Dahl BL, Vassend O. The reporting of pain, somatic complaints, and anxiety in group of TMD - patients before and two years treatment. Sex differences. Journal of Orofacial Pain, 1996; 10: 263 - 269 [Online] -- [Medline]

Krogstad BS, **Jokstad A**, Dahl BL, Vassend O. Relationships between risk factors and treatment outcome in a group of patients with Temporomandibular disorders. Journal of Orofacial Pain, 1996; 10: 48 - 53. [Online]--- [Medline]

Krogstad BS, **Jokstad A**, Dahl BL, Soboleva, U. Somatic complaints, psychological distress and treatment outcome in two groups of TMD - patients, one previously subjected to whiplash injury. Journal of Orofacial Pain, 1998; 12: 136 - 144. [Online] -- [Medline]

THE COCHRANE COLLABORATION

Evidence- Based Dentistry

Core Curriculum
Biostatistics /
Research methodology

Applied statistics

From 1998 -

Statistics & research methodology

Fluorides

Tooth wear

Global outreach EBD

Evidence-based dentistry

Digital devices

Prosthodontics specialist program - theses

Computer Sciences, U. of Oslo
General biology graduate studies
Preclinic demonstrator, DOF, Oslo

1982-1984

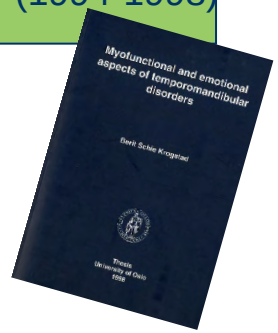
Faculty of Dentistry, Anatomy Dept.
SEM / TEM & Tooth morphology
Computer /Network infrastructure
&
Nordic Institute of Dental Materials
Clinical studies programs
Toxicology

1984-1992

Private Practice
&
Graduate
Prosthodontics
Program

1992 - 1994

Prosthetic dentistry and Stomatognathic function (1994-1998)



Cariology (1998-)

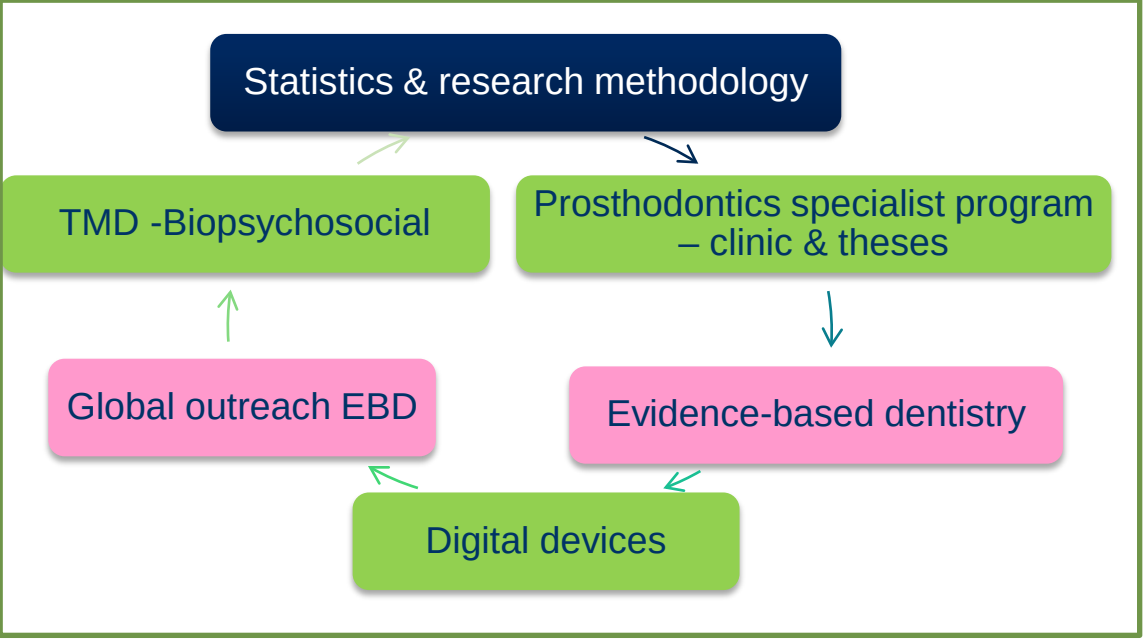
1.9.1999 Assoc professor
1.5.2000 Professor
1.3.2002 Tenure

Evidence- Based Dentistry

Core Curriculum
Biostatistics /
Research methodology

Applied statistics

From 2004 -



Computer Sciences, U. of Oslo
General biology graduate studies
Preclinic demonstrator, DOF, Oslo

1982-1984

Faculty of Dentistry, Anatomy Dept.
SEM / TEM & Tooth morphology
Computer /Network infrastructure
&
Nordic Institute of Dental Materials
Clinical studies programs
Toxicology

1984-1992

Private Practice
&
Graduate
Prosthodontics
Program

1992 - 1994

Prosthetic dentistry and Stomatognathic function (1994-1998)

Cariology (1998-2004)

Oral prosthetics & function (2004-2005)

2005

Applied statistics

Core Curriculum
Biostatistics /
Research methodology

Evidence- Based Dentistry

Sep 2005→ Toronto, Canada, to conduct clinical trials

World-Renowned Scholar Joins U of T's Faculty of Dentistry

The long-standing relationship between the University of Toronto and Nobel Biocare has brought Professor Asbjørn Jokstad from the University of Oslo, Norway, to join U of T's Faculty of Dentistry as the Nobel Biocare Chair in Prosthodontics. The Chair, created in 2004 through a $2-million gift from the Swedish-based company, promotes significant contributions to prosthodontics scholarship.

Left to right: David Naylor (President, University of Toronto), Asbjørn Jokstad, David Mock. Seated: Heliane Canepa

President's Prize 2005

Jokstad replaces the Chair's inaugural holder, retiring Professor George Zarb,

Objective: to create a transdisciplinary Research Institute Clinic

Toronto Faculty of Dentistry - Research Institute

Table of Contents (hyperlinked text – click on line to repos

Dr. Jokstad was assigned in December 2005, by Dr. Santerre (Director of the DIR) and the Interim Director of the RIC, Dr. Tenenbaum to chair a committee to review the current RIC operations. The mandate of the committee was to:

- Review current operation of the RIC with respect to
  - use of faculty resources
  - ability to service the clinical research faculty
  - assessment of Faculty resources not currently in use
  - general operation procedures.
- Provide a review of academic strengths within the faculty that could complement the RIC in terms of making it an attractive site for companies and investigators to carry out clinical research within the faculty premises
- Provide a clear plan with respect to future operations, including administration, service support, cost recovery, promotion, effective use of resources and future building planning.
- Ensure a comprehensive review in its assessment of the whole faculty and clinical investigators affiliated with the faculty.
- Generate a final report with a plan for operations of the RIC and recommendations for implementation of the plan along with a time frame for its implementation.

Contingent of a new faculty building

Sep 2005→ Toronto, Canada, to conduct clinical trials

World-Renowned Scholar Joins U of T's Faculty of Dentistry

Left to right: David Naylor (President, University of Toronto), Asbjørn Jokstad, David Mock. Seated: Heliane Canepa

The long-standing relationship between the University of Toronto and Nobel Biocare has brought Professor Asbjørn Jokstad from the University of Oslo, Norway, to join U of T's Faculty of Dentistry as the Nobel Biocare Chair in Prosthodontics. The Chair, created in 2004 through a $2-million gift from the Swedish-based company, promotes significant contributions to prosthodontics scholarship.

Jokstad replaces the Chair's holder, retiring Professor Ge North America's foremost e implant dentistry. Zarb's re innovative teaching progra Canadian dental faculty m initially brought Professor Brånemark, the founder of Biocare and inventor of m implants, to work with U early 1980s.

"We need to partner with universities because we need the dental profession to tell us what patients need," says Heliane Canepa, president and CEO of Nobel Biocare. "We provide and the dental profession, as the experts, decides. Together we are strong!"

Objective: to create a transdisciplinary Research Institute Clinic

Recommendations:	Resource Allocation:
7.1.1: Staffing, clinical administration and management & public relations	
1. Establish a management structure	Faculty salaried positions assigned from current faculty and clinic teaching staff
2. Establish a Clinical Project Reviewer Committee	Faculty salaried positions assigned from current faculty
3. Assign current clinic staff allocation as detailed in section 7.1.1	Faculty salaried positions assigned from clinic teaching staff.
7.1.2: Infrastructure	
1. Review and Implement the RIC model	To be determined
7.1.3 Standard Operation Procedures and Space Requirements	
1. Director of RIC to assemble and adopt SOPs and plan space needs	To be determined
7.1.4 Consequences of changes	
To be determined	To be determined
7.1.5 Financial model	
To be determined	To be determined
7.2 New faculty building	
To be determined	To be determined

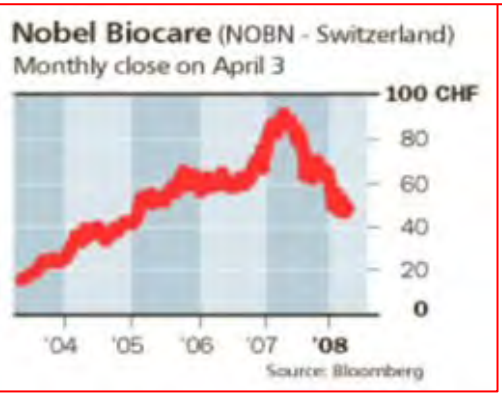
Table 7: Milestones

Recommendation	2006 Q3	2006 Q4	2007 Q1	2007 Q2	2007 Q3	2007 Q4	2008 Q1	2008 Q2	2008 Q3	2008 Q8
7.1.1	x	x								
7.1.2		x	x	x	x					
7.1.3			x	x	x	x				
7.1.4		x	x	x						
7.1.5	x	x	x	x	x	x				
7.2	x	x	x	x	x	x	x	x	x	x

Financial crisis of 2007–2008

From Wikipedia, the free encyclopedia

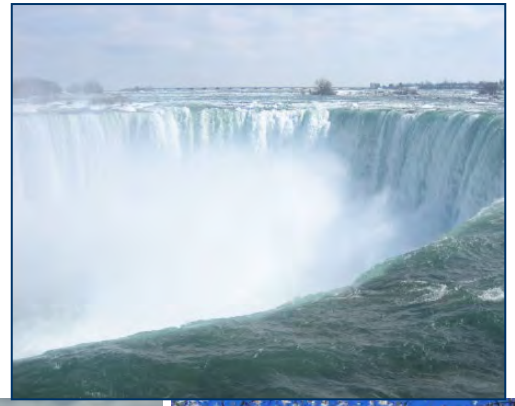
The **financial crisis of 2008**, or **Global Financial Crisis** (**GFC**), was a severe worldwide economic crisis that occurred in the late 2000s. It was the most serious financial crisis since the Great Depression (1929). Predatory lending targeting low-income homebuyers,[1] excessive risk-taking by global financial institutions,[2] and the bursting of the United States housing bubble culminated in a "perfect storm." Mortgage-backed securities (MBS) tied to American real estate, as well



Sponsor	Project title	Yrs	Award
Nobel Biocare AB. (Sweden) (→Nobel Biocare A.G. (Switzerland)	Clinical Trials of Edentulous Patients Treated with Immediately Loaded Implant-Supported Prostheses. (RCT)	2006-2012	$107k
International Team of Implantology (Switzerland)	Retrospective analyses of patients with implant-retained partial fixed dental prostheses.	2011-2013	$208k
Nobel Biocare A.G. (Switzerland)	Retrospective study of patients with full implant-retained FDPs.	2011-2013	$48k
Claron Technology (Canada)	NaviDent navigation surgery development. (Prospective cohort)	2011-2017	$126k
Astra Tech AB (Sweden)	Confidential – new implant brand (RCT)	2012-2017	TBD
Straumann A.G. (Switzerland)	Confidential – Roxolid in subpopulations (RCT)	2012-2017	TBD

2005 -

Toronto



2012→ Sabbatical

Publications 2016 - 2021

2012 -

Journal	n=20 (Category)	Topic
Clinical Oral Implants Research	5 (SRcon – SR+SRcon - RS - RS)	Prosthetics / Implants
The International Journal of Oral & Maxillofacial Implants	3 (SR - PS – RS)	Prosthetics / Implants
Clinical and Experimental Dental Research	3 (SR – Rev x2)	Research ethics - One health x2
Norsk Tannlegeforenings Tidende	3 (Rev x2 – Rev)	Aerosols x2 / Cements
International Journal of Oral Implantology	2 (SR+SRcon)	Piezo-implant surgery x2
Journal of Oral Rehabilitation	1 (SR)	Digital dentistry
Acta Odontologica Scandinavica	1 (X-Sect)	TMD: Youths, Bergen
Dental Materials	1 (SR)	Secondary caries
Biomaterial Investigations in Dentistry	1 (Laboratory)	Compule mat. porosities
International Network for Orofacial pain and related disorders methodology - INfORM	DC-TMD translation to Norwegian	Oral function - TMD
Clinical and Experimental Dental Research (2015 – 2019)	Editorials (n=23)	Several, e.g., science, ethics, digital dentistry

Last 5 Lectures	Last 5 publicationss
Summarizing findings from the EAO Consensus Conference. Group 4. Fabrication, workflow and delivery of reconstruction. Just Ask. . EAO Channel Youtube webinar; 6 Dec 2021	**Jokstad A**, Pjetursson BE, Mühlemann S, Wismeijer D, Wolfart S, Fehmer V, Frederik Güth J, Paterno Holtzman L, Hämmerle CHF, Makarov N, Meijer HJA, Milinkovic I, Sailer I, Spitznagel FA, Vandeweghe S, Van de Velde T, Zwahlen M, Giertmuehlen PC. Fabrication, workflow and delivery of reconstruction: Summary and consensus statements of group 4. The 6th EAO Consensus Conference 2021. *Clinical Oral Implants Research* 202; 32 Suppl 21: 336-341. https://doi.org/10.1111/clr.13797
Dentale keramer – hvilke produkter velger du og hvorfor?. Årsmøtet 2021. Norsk Forening for Oral Protetikk. Oslo. 18 Nov 2021.	**Jokstad A,** Pettersson M, Øilo M. Retensjon av sementerte protetiske erstatninger. *Den norske tannlegeforenings tidende* 2021; 131(6): 576-585 & *Tandlægebladet* 2021: 125: 546-554
Adopting wisely innovative computer-assisted technologies in prosthodontic care. Webinar. European Prosthodontic Association. Envisioning the Future of Prosthodontics; 8 May 2021	Gussgard AM, Valen H, Olsvik O, **Jokstad A**. Aerosol i tannhelseklinikken. Del 1: Risiko for smitte. *Den norske tannlegeforenings tidende* 2020; 130: 676-687 & Tandläkartidningen 2020; (12): 60-71. & *Tandlægebladet* 2020; 121(12): 1134-1145.
Klinisk odontologisk praksis og uønskede hendelser. Ansatte i Universitetstannklinikken og IKO. Institutt for Klinisk Odontologi. UiT Norges arktiske universitet. 11 Jan 2021.	Gussgard AM, Valen H, Olsvik O, **Jokstad A**. Aerosol i tannhelseklinikken. Del 2: Tiltak for å begrense smitte. *Den norske tannlegeforenings tidende* 2020; 130: 690-702 & *Tandlægebladet* 2020; 124(12): 1146-1156..
COVID-19-smitte, testing og statistikk for odontologer. Studenter og ansatte i Universitetstannklinikken og IKO.. Institutt for Klinisk Odontologi. UiT Norges arktiske universitet. 18 Mars 2020	Wold Nilsen, B, Mouhat M, **Jokstad A**. Quantification of porosity in composite resins delivered by injectable syringes using X-ray microtomography. *Biomaterials Investigations in Dentistry* 2020 Jan 1 ;7(1): 86-95. https://doi.org/10.1080/26415275.2020.1784013

CEDR 2015: 1st Wiley Open Access journal in dentistry

COPE: Committee on Publication Ethics

Home / About COPE

Members

Journal

Clinical and Experimental Dental Research

Editor-in-Chief: Prof Asbjørn Jokstad
Country: Norway
Publisher: Wiley
ISSN: 2057-4347

Clinical and Experimental Dental Research

Open Access

EDITORIAL

The wonderful aspects of Open Access publishing - and the unfortunate dark side

Asbjorn Jokstad, Editor-in-Chief

CEDR 10.03.2015

Correspondence
Institute of Clinical Dentistry, Faculty of Health of Health Sciences UiT The Arctic University of Norway Tromsø, Norway
E-mail: asbjorn.jokstad@uit.no

Innovative biomedical research must be ethical, methodologically sound, understandable, and easily accessible. The responsibility for assuring the fulfilment of these fundamentals must be anchored amongst the publisher, the editors and referees, and the authors and investigators. The ambition of *Clinical and Experimental Dental Research* is to provide publication that meets these fundamentals. The premises should be the best from the perspective of the reputation of the publisher, the exceptional quality of the associate editors, and the implementation of the open access (OA) concept.

6: 2017;3(1): Launching a new journal on the Internet in an era of fake science news and predatory publishing—doing the right thing and doing the thing right. https://doi.org/10.1002/cre2.62 [Wiley] [PMC]

5: 2016;2(3): Dentists and new digital appliances - to buy or delay until the next model?https://doi.org/10.1002/cre2.56 [Wiley] [PMC]

4: 2016;2(2): The young scientist's guide to win the award for best presentation. https://doi.org/10.1002/cre2.47 [Wiley] [PMC]

3: 2016;2(1): Has the pressure to publish or perish in academia been overtaken by a need to also generate a prominent h-index? https://doi.org/10.1002/cre2.31 [Wiley] [PMC]

2: 2015;1(2): Open Access publishing is a logical evolutionary extension of evidence-based medicine. https://doi.org/10.1002/cre2.19 [Wiley]

1: 2015;1(1): The wonderful aspects of Open Access publishing - and the unfortunate dark side. https://doi.org/10.1002/cre2.1 [Wiley]

Clin Exp Dent Res. 2019 Dec; 5(6): 585–587.
Published online 2019 Dec 27. doi: 10.1002/cre2.271
PMCID: PMC6
PMID: 3

Clinical and Experimental Dental Research celebrates 5 years an relay baton can be handed over

Asbjørn Jokstad, Edtior-in-chief✉

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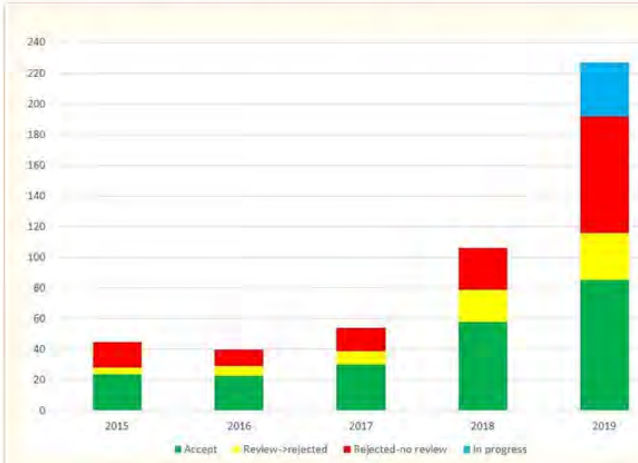
In the spring of 2015, the inaugural issue of *Clinical and Experimental Dental Research* included a somewhat optimistic vision that we hoped to count the journal as a prestigious scientific journal in dentistry and orofacial medicine within the next 5 years (Jokstad, 2015).

Although today I would have chosen "trustworthy" rather than "prestigious," subtle signs are sugges that we have reached this goal. The number of manuscript submissions that we received in 2018 dou from the approximately fifty submissions received annually in the three previous years. It doubled a 2019 (Figure 1). The journal is ranked as # 34 out of 167 dental journals in terms of verified peer-re over the last twelve months, according to Publons (https://publons.com/journal/?asjc=150). Finally, influential scientometric indices provide satisfactory marks for the journal, that is, SCImago (https://www.scimagojr.com/journalsearch.php?q=21100843003&tip=sid) and Elsevier/Scopus (Cit SNIP, and SJR) (https://www.scopus.com/sourceid/21100843003).



Clinical and Experimental Dental Research - editorials, 2015-2019

23: 2019:5(6): Clinical and Experimental Dental Research celebrates 5 years and the relay baton can be handed over. https://doi.org/10.1002/cre2.271 [Wiley] [PMC]

22: 2019:5(5): The 2018 AAP/EFP classification of periodontal diseases, a focus on "risks" as a *faux ami* and language gone on holiday. https://doi.org/10.1002/cre2.257 [Wiley] [PMC]

21: 2019:5(4): Oral health professional must use correct terminology when explaining risks for complications and undesirable health outcomes as a basis for informed consent for clinical treatment. https://doi.org/10.1002/cre2.237 [Wiley] [PMC]

20: 2019:5(3): Please do not feel bad, identifying the precise study design used in clinical research may be a challenge. https://doi.org/10.1002/cre2.211 [Wiley] [PMC]

19: 2019:5(2): Who can claim the ownership to the blueprints of my body parts? https://doi.org/10.1002/cre2.187 [Wiley] [PMC]

18: 2019:5(1): Quo Vadis Cochrane Collaboration? https://doi.org/10.1002/cre2.176 [Wiley] [PMC]

17: 2018;4(6): 20 years of Evidence-Based Dentistry — How have our patients benefited? https://doi.org/10.1002/cre2.155 [Wiley] [PMC]

16: 2018;4(5): Saving patients by pulling their teeth out-but killing them softly afterwards with dental implants? https://doi.org/10.1002/cre2.142 [Wiley] [PMC]

15: 2018;4(4): Quality dentistry and ethical dental practice. https://doi.org/10.1002/cre2.128 [Wiley] [PMC]

14: 2018;4(3): Patient-reported outcomes (PROs) versus patient-reported outcome measures (PROMs) – is there a difference? https://doi.org/10.1002/cre2.112 [Wiley] [PMC]

13: 2018;4(2): The art of amusing the public while conducting research may be fruitful. https://doi.org/10.1002/cre2.105 [Wiley] [PMC]

12: 2018;4(1): Medline indexing of the latest research findings in dental research has stopped. https://doi.org/10.1002/cre2.103 [Wiley] [PMC]

11: 2017;3(6): Register-based observational studies - who will endorse that maternal smoking lowers the odds for developing hay fever and eczema? https://doi.org/10.1002/cre2.99 [Wiley] [PMC]

10: 2017;3(5): The approval of clinical research by an independent ethics committee –a compulsory requirement and not a matter of the investigator's choosing. https://doi.org/10.1002/cre2.92 [Wiley] [PMC]

9: 2017;3(4): The disorder of disorders in current nosology. https://doi.org/10.1002/cre2.77 [Wiley] [PMC]

8: 2017;3(3): Why did Professor Per-Ingvar Brånemark never receive the Nobel Prize in medicine? https://doi.org/10.1002/cre2.72 [Wiley] [PMC]

7: 2017;3(2): Accuracy of digital appliances for use in dentistry for dummies. https://doi.org/10.1002/cre2.66 [Wiley] [PMC]

You don’t know what you don’t know – unless you peer review

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Asbjørn Jokstad

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Top peer reviewer

Professor - Faculty of Health Sciences, UiT - The Arctic University of Norway, University of Tromsø

Web of Science ResearcherID
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PUBLICATIONS	TOTAL TIMES CITED	H-INDEX	VERIFIED REVIEWS	VERIFIED EDITOR RECORDS
188	1 947	26	351	435

- Summary
- Metrics
- Publications
- Peer review

Asbjørn Jokstad's impact over time

Verified editor records

- (307) Clinical and Experimental Dental Research WOS
- (117) The International Journal of Oral & Maxillofaci... WOS
- (11) International Journal of Oral Implantology WOS

Plus 55 more editor records awaiting ver

WOS: Web of Science indexed

Verified reviews

- (62) Journal of Oral Rehabilitation WOS
- (53) The Journal of Prosthetic Dentistry WOS
- (37) Clinical Oral Implants Research WOS
- (27) The International Journal of Oral & ... WOS
- (19) The Journal of the American Denta... WOS
- (18) The International Journal of Prosth... WOS
- (17) Journal of Oral Implantology WOS
- (15) Journal of Prosthodontics WOS
- (13) Journal of Dentistry WOS
- (10) Quintessence International WOS
- (8) Clinical Implant Dentistry and Relate... WOS
- (7) Acta Odontologica Scandinavica WOS
- (6) Clinical and Experimental Dental Re... WOS
- (6) International Dental Journal WOS
- (6) Plos One WOS
- (5) British Dental Journal WOS
- (4) European Journal of Oral Sciences WOS
- (4) Journal of Prosthodontic Research WOS
- (3) BMC Oral Health WOS
- (3) International Journal of Oral Implant... WOS
- (3) Journal of Dental Research WOS
- (2) Acta Biomaterialia Odontologica Scandina...
- (2) BMJ Open WOS
- (2) Cochrane Database of Systematic R... WOS
- (2) Dental Materials WOS
- (2) Journal of the Canadian Dental Asso... WOS
- (1) BMC Musculoskeletal Disorders WOS
- (1) Caries Research WOS
- (1) Chiropractic & Manual Therapies WOS
- (1) Community Dental Health WOS
- (1) Computer Assisted Surgery WOS
- (1) European Journal of Prosthodontics... WOS
- (1) Head & Face Medicine WOS
- (1) ISRN Dentistry
- (1) Journal of Biomedical Materials Res... WOS
- (1) Journal of Oral Pathology and Medic... WOS
- (1) Medical Principles and Practice WOS
- (1) Odontology WOS
- (1) Science Progress WOS
- (1) Scientific Reports WOS
- (1) The Journal of Adhesive Dentistry WOS

Editorial board memberships

WOS: Web of Science indexed

CURRENT MEMBERSHIPS

- Clinical Oral Implants Research WOS
- International Dental Journal WOS
- International Journal of Oral Implantology WOS
- Journal of Oral Rehabilitation WOS
- Journal of Prosthodontic Research WOS
- Odontology WOS
- The International Journal of Oral & Maxillofacial Imp... WOS
- The International Journal of Prosthodontics WOS
- The Journal of Prosthetic Dentistry WOS

PAST MEMBERSHIPS

- Clinical and Experimental Dental Research WOS
- Deutsche Zahnärztliche Zeitschrift
- Evidence-Based Dentistry
- Journal of Dental Research WOS
- Journal of Investigative and Clinical Dentistry WOS
- Journal of the Canadian Dental Association WOS

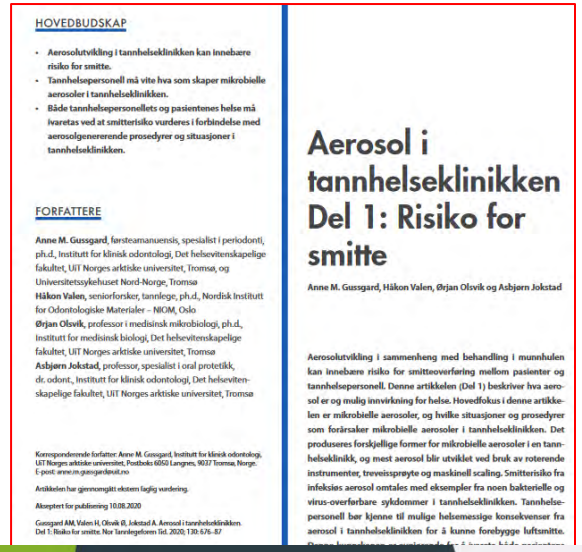
Given task: to present

1. A self-selected topic: Ensuring best patient care in oral prosthetics on the best evidence

2. A short overview of my research, with a focus on activities over the last years

3. A short overview of my future research plans

1.Sustainability in dentistry



HOVEDBUDSKAP

- Aerosolutvikling i tannhelseklinikken kan innebære risiko for smitte.
- Tannhelsepersonell må vite hva som skaper mikrobielle aerosoler i tannhelseklinikken.
- Både tannhelsepersonellets og pasientenes helse må ivaretas ved at smitterisiko vurderes i forbindelse med aerosolgenererende prosedyrer og situasjoner i tannhelseklinikken.

FORFATTERE

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Asbjørn Jokstad, professor, spesialist i oral protetikk, dr. odont., Institutt for klinisk odontologi, Det helsevitenskapelige fakultet, UiT Norges arktiske universitet, Tromsø

Korresponderende forfatter: Anne M. Gussgard, Institutt for klinisk odontologi, UiT Norges arktiske universitet, Postboks 6050 Langnes, 9037 Tromsø, Norge. E-post: anne.m.gussgard@uit.no

Artikkelen har gjennomgått ekstern faglig vurdering.

Akseptert for publisering 10.08.2020

Gussgard AM, Valen H, Olsvik Ø, Jokstad A. Aerosol i tannhelseklinikken. Del 1: Risiko for smitte. Nor Tannlegeforen Tid. 2020; 130: 676–87

Aerosol i tannhelseklinikken Del 1: Risiko for smitte

Anne M. Gussgard, Håkon Valen, Ørjan Olsvik og Asbjørn Jokstad

Aerosolutvikling i sammenheng med behandling i munnhulen kan innebære risiko for smitteoverføring mellom pasienter og tannhelsepersonell. Denne artikkelen (Del 1) beskriver hva aerosol er og mulig innvirkning for helse. Hovedfokus i denne artikkelen er mikrobielle aerosoler, og hvilke situasjoner og prosedyrer som forårsaker mikrobielle aerosoler i tannhelseklinikken. Det produseres forskjellige former for mikrobielle aerosoler i en tannhelseklinikk, og mest aerosol blir utviklet ved bruk av roterende instrumenter, treveissprøyte og maskinell scaling. Smitterisiko fra infeksiøs aerosol omtales med eksempler fra noen bakterielle og virus-overførbare sykdommer i tannhelseklinikken. Tannhelsepersonell bør kjenne til mulige helsemessige konsekvenser fra aerosol i tannhelseklinikken for å kunne forebygge luftsmitte.

Aerosol i tannhelseklinikken. Del 2: Tiltak for å begrense smitte

Anne M. Gussgard, Håkon Valen, Ørjan Olsvik og Asbjørn Jokstad

Aerosoler blir generert i sammenheng med flere behandlingsprosedyrer og situasjoner i tannhelseklinikken. Aerosoler i tannhelseklinikken kan være infeksiøse og føre til smitte mellom tannhelsepersonell og pasienter. Forskjellige tiltak for å begrense smitte fra infeksiøs aerosol, beskrives og diskuteres. Det er urealistisk å forvente at lokale aerosoler kan elimineres i sammenheng med behandling i munnhulen. Eksponering fra aerosol kan begrenses med tekniske tiltak. Aerosolgenerering og smitterisiko fra mikrobielle aerosoler, kan begrenses ved administrative og organisatoriske tiltak. Personlig verneutstyr som munnbind, øyebeskyttelse og hansker vil, forutsatt riktig bruk, også kunne bidra til å redusere faren for potensiell smitteoverføring. Spesielle tiltak under covid-19 pandemien i forhold til aerosoler samt risikovurdering og

Sustainability in dentistry

Ingeborg Knedahl, D.D.S.

PhD programme in Health Sciences,

Department of Clinical Dentistry

Supervisor: Associate Professor Anne Margrete Gussgard, The Arctic University of Norway

Co-supervisors:

Professor Asbjørn Jokstad, The Arctic University of Norway

Associate Professor Hans Jacob Rønold, The University of Oslo

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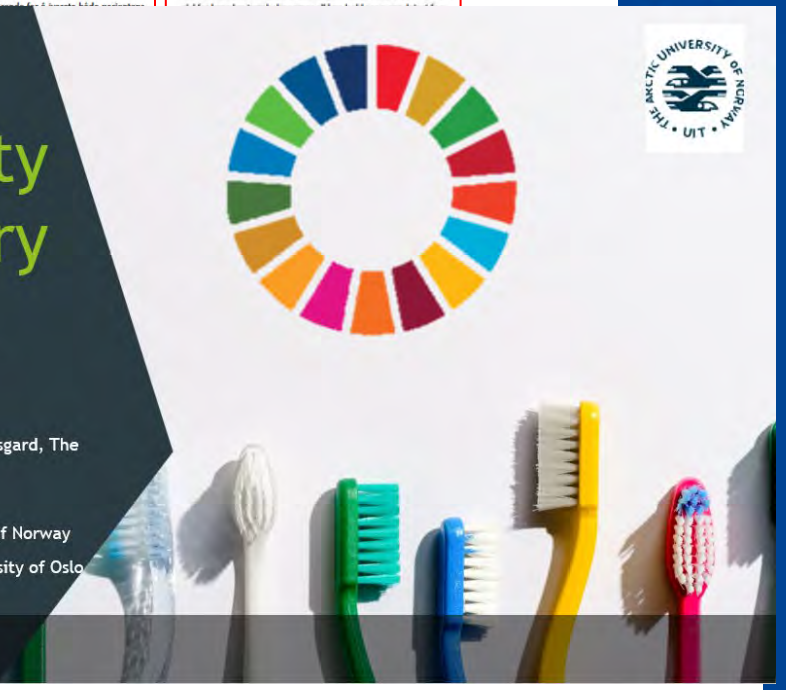
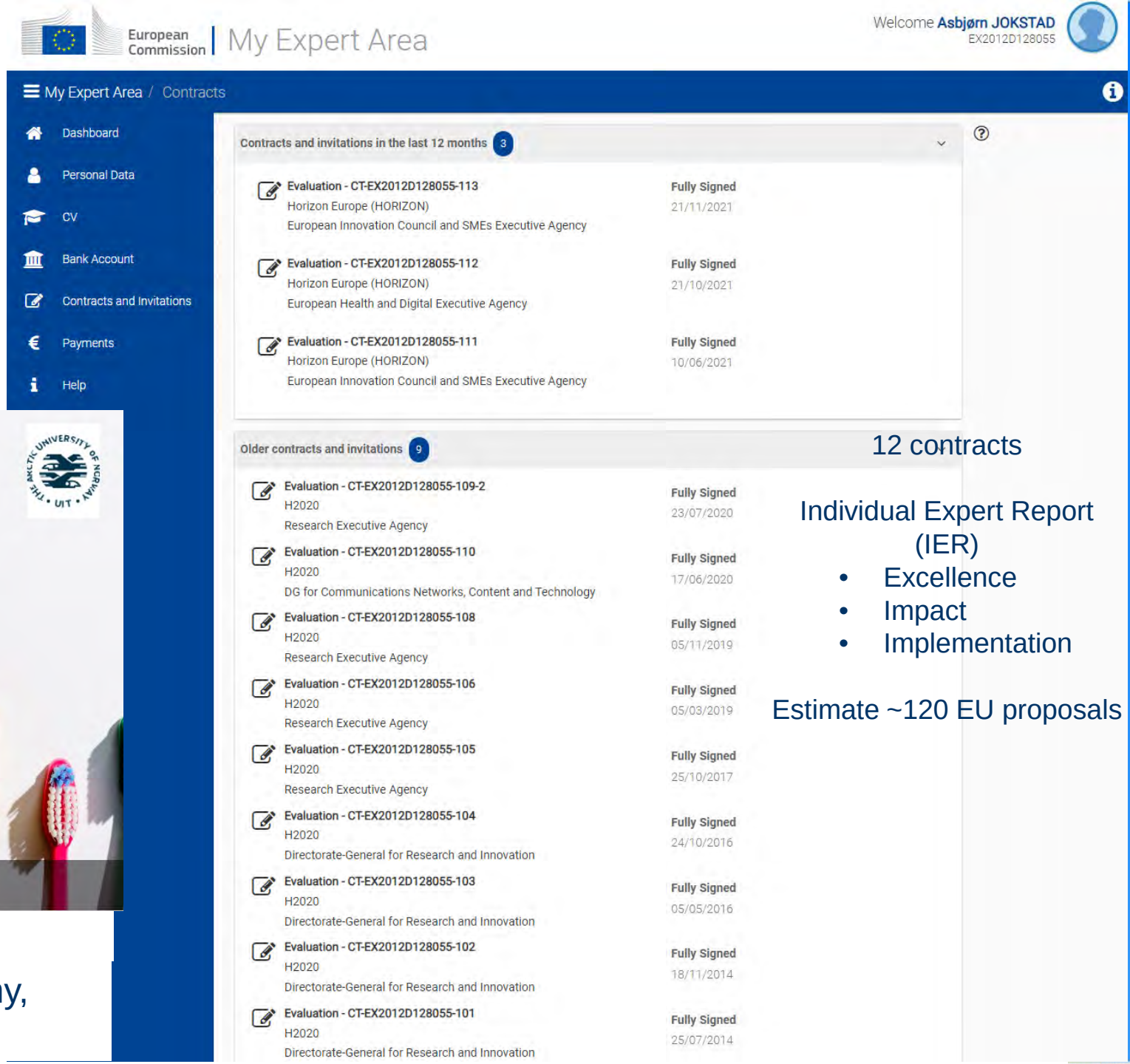


Vision: A successful Horizon2020 application

Potential consortium partners in: Brazil, Germany, The Netherlands, U.K., FDI / IDJ



12 contracts

Individual Expert Report (IER)

- Excellence
- Impact
- Implementation

Estimate ~120 EU proposals

Given task: to present

1. A self-selected topic: Ensuring best patient care in oral prosthetics on the best evidence
2. A short overview of my research, with a focus on activities over the last years

3. A short overview of my future research plans
    1. Sustainability in dentistry
    2. **Clinical trials in a dedicated research institute clinic**

+

Artificial Intelligence in prosthodontics (Tomography + Surface rendering + Dynamic jaw tracking)
Systematic reviews with meta-analyses + trial sequential analyses
Patient claims analyses in implant-prosthodontics (8 years work at Norsk Pasientskade Erstatning)

Trials in a research institute clinic – adhering to ICH-GCP*

*International Council on Harmonisation - Good Clinical Research Practice

1. Ethics
2. Trial risk vs trial benefit
3. Trial participants
4. Information on the Medicinal Product
5. Good quality trials
6. Compliance with the study protocol
7. Medical decisions
8. Trial staff
9. Informed consent
10. Clinical trial data
11. Confidentiality
12. Good Manufacturing Practice
13. Quality assurance

May open for translational research

- Opportunities for externally funded research - SMEs
- Partnership with our basic scientists
- Partnership with researchers in our Department of Biomaterials
- University contract with funders re. agreements on confidentiality and intellectual property ownership

Example: Optoelectronically guided implant surgery ("Robotic surgery")

Idea → prototyping → bench testing → clinical testing → market launch

2010, Sep → 2011, April

Meeting held on Sep 10, 2010 at Dr Jokstad office; **Participants**: Dr Asbjor Dekel, Zami Yerushalmy

1. Doron Dekel presented Claron and its expertise - Advanced medical i
2. Dr Jokstad described the dentistry unit activities, way of working (get clinical program
3. Doron Dekel presented Dentix - the Claron proposed guided implanto is aware of past efforts to bring such systems to market and believes I critical differentiators: a) Very low purchase price (10-20% of past sy in 3D using the drill just before implantation starts and c) Very simple requiring minimal training.
4. Dr Jokstad did not identify any show stoppers but needs more time fo consideration. He will be invited to Claron to have a better look at the
5. Dr Jokstad made us aware that the edentulous case is the most compli be a challenge for the system. The good news is that the frequency of decreasing. The recommendation is to start with simpler cases involvi
6. Dr Jokstad will look into cooperation with Claron after having meetin Excellence Center where some funding for the university may be offe
7. If such a cooperation will start, Dr Jokstad unit will get the right patie system

Next action items:

1. Dr Jokstad to meet Ontario Excellence Center to find out what they ca support of this effort. Already scheduled for this week
2. Meeting with Dr Jokstad at Claron to look at the proposed system, dis

"VISIT"
Dynamic implant surgery

From: Wanschitz ea COIR 2002

INTELLECTUAL PROPERTY AGREEMENT

between

THE GOVERNING COUNCIL OF THE UNIVERSITY OF TORONTO
having an office at MaRS Centre, Heritage Building,
101 College St., Suite 320, Toronto, Ontario, M5G 1L7
(the "University")

- and -

Claron Technology
having an office at:
120 Carlton Street- Suite 217
Toronto – Ontario – Canada – M5A 4K2
(the "Company")

WHEREAS Company wishes to collaborate with the University on a research project entitled "NaviDent" as set out in the attached project description in Appendix "A" (the "Project"), to be conducted by Professor Asbjorn Jokstad of the University (the "University Researcher");

NOW THEREFORE the parties agree as follows:

1. **Definitions.** In this Agreement:

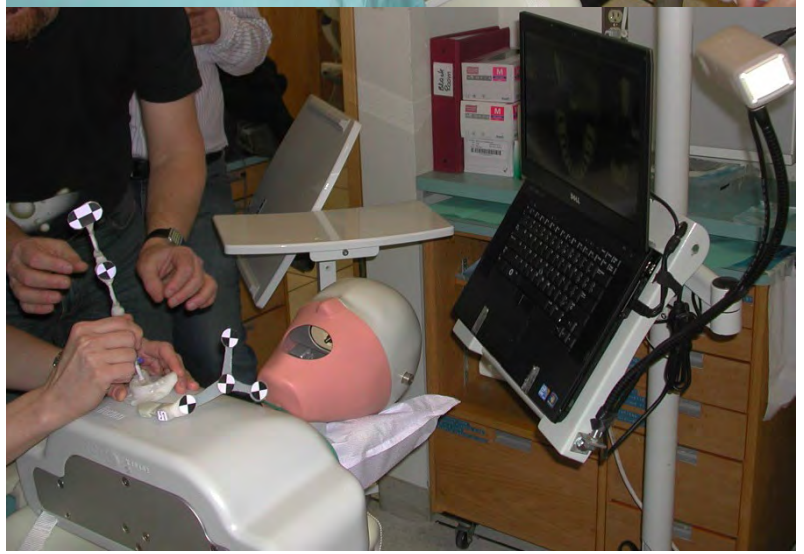
(a) **"Confidential Information"** means all information disclosed by one party to the other that is clearly marked "confidential" or so reduced to writing within ten (10) days thereafter by the disclosing party, but does not include information that: (i) is already known to the party to which it is disclosed; (ii) is or becomes part of the public domain without breach of this Agreement; or, (iii) is obtained from a third party that has no obligation to keep confidential to the parties to this Agreement.

(b) **"Intellectual Property"** means all intellectual property, including without limitation

Example: Optoelectronically guided implant surgery ("Robotic surgery")

Idea → prototyping → bench testing → clinical testing → market launch

2010, Sep → 2011, April → 2011, Oct



Example: Optoelectronically guided implant surgery ("Robotic surgery")

Idea → prototyping → bench testing → clinical testing → market launch

2010, Sep → 2011, April → 2011, Oct → 2013, Feb

CLINICAL ORAL IMPLANTS RESEARCH

Eszter Somogyi-Ganss
Howard I. Holmes
Asbjørn Jokstad

Accuracy of a novel prototype dynamic computer-assisted surgery system

Authors' affiliations:
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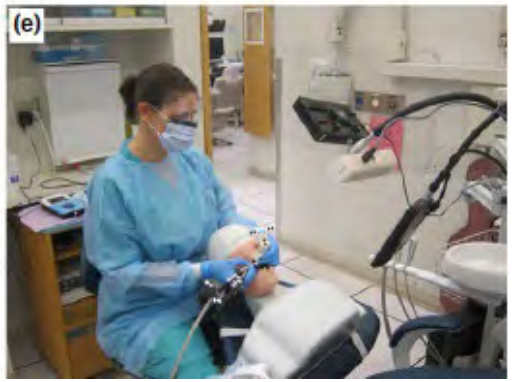
Corresponding author:
Asbjørn Jokstad

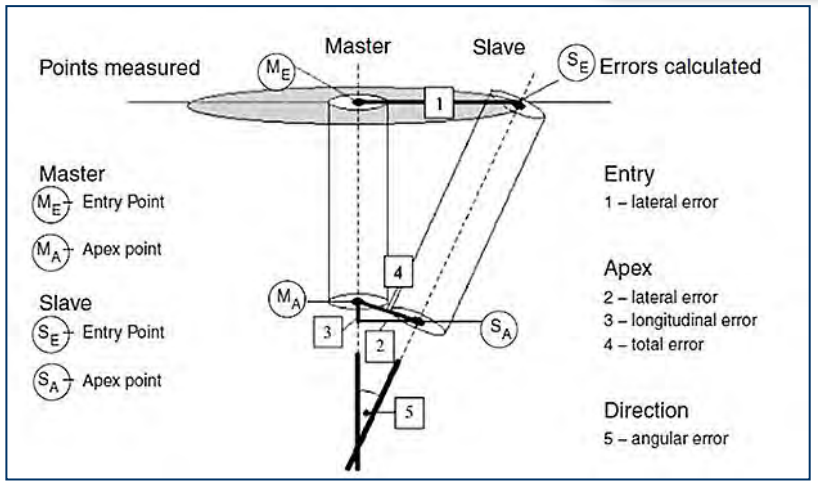
Key words: accuracy, computer aided, computer guided, dental implant, navigation, static guide, stereolithographic guide

Abstract

Objectives: To implement and evaluate the accuracy of a prototype dynamic computer-assisted surgery (CAS) system for implant osteotomy preparation and compare its accuracy vs. three commercial static CAS systems and the use of an acrylic stent.

Material and methods: Eight osteotomies were prepared in radiopaque partially edentulous mandible and maxilla typodonts. After cone-beam CT acquisition, DICOM files were imported into a prototype dynamic, and three static CAS systems (NobelClinician, Simplant, and CoDiagnostiX). Implant placements were planned to replicate the existing osteotomies and respective guides were





Example: Optoelectronically guided implant surgery ("Robotic surgery")

Idea → prototyping → bench testing → clinical testing → market launch

2010, Sep → 2011, April → 2011, Oct → 2013, Feb → 2015, Dec

Health Canada / Santé Canada

Health Products and Food Branch / Direction générale des produits de santé et des aliments

Therapeutic Products Directorate
2934 Baseline Road, Tower B
Address Locator: 3403A
Ottawa, ON K1A 0K9

DATE: MAR 1 1 2013

Application No. 207594

Zami Yerushalmy
Executive, Surgical Navigation & Management
Claron Technology Inc.
120 Carlton Street, Suite 217
Toronto ON M5A 4K2

Investigational Testing Authorization - Class II

Dear Zami Yerushalmy:

This is in reference to your application for Authorization to conduct Investigational Testing in Canada, received on 11 February 2013 and submitted pursuant to Part 3 of the *Medical Devices Regulations*. Thi pertains to the following:

Protocol: A Pilot Clinical Trial of the NaviDent System

Number: 28344

Objectives: Primary:

i) To evaluate and compare between conventional surgery and NaviDent the correspondence between computer-assisted surgery plan and the actual intra-oral locatio of the dental implant(s)

ii) The surgeons perception of ease-of-use of NaviDent during implant placement:

Secondary: To evaluate and compare between conventional surgery and NaviDent with regard to:

Example: Optoelectronically guided implant surgery **("Robotic surgery")**

Idea → prototyping → bench testing → clinical testing → regulator → market

2010, Sep → 2011, April → 2011, Oct → 2013, Feb → 2015, Dec → 2016, Sep

DEPARTMENT OF HEALTH & HUMAN SERVICES — Public Health Service

Food and Drug Administration
10903 New Hampshire Avenue
Document Control Center - WO66-G
Silver Spring, MD 20993-0002

September 8, 2016

ClaroNav Inc.
Doron Dekel
CEO
1140 Sheppard Avenue West, Unit 10
Toronto, Ontario M3K 2A2
Canada

Re: K161406
Trade/Device Name: Navident
Regulation Number: 21 CFR 872.4120
Regulation Name: Bone Cutting Instrument and Accessories
Regulatory Class: Class II
Product Code: PLV
Dated: August 9, 2016
Received: August 15, 2016

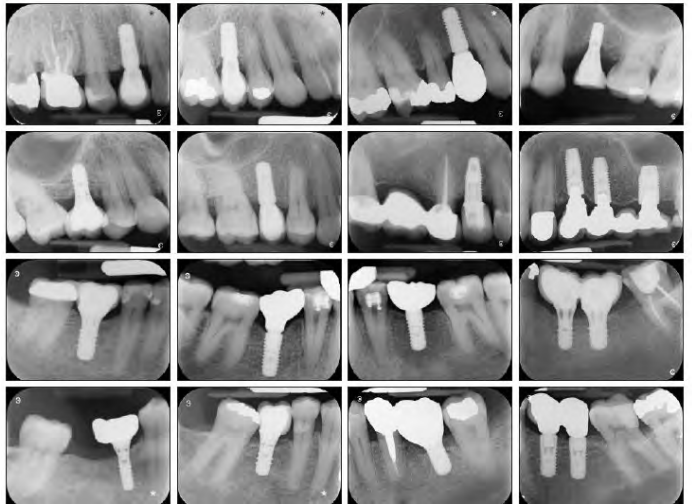
Dear Doron Dekel:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate

Investigational Clinical Trial of a Prototype Optoelectronic Computer-Aided Navigation Device for Dental Implant Surgery

Asbjørn Jokstad, DDS, PhD[1]/Brenton Winnett, MSc, DDS, MSc[2]/Joseph Fava, DDS, MSc[3]/ David Powell, DDS, MSc[3]/Eszter Somogyi-Ganss, DMD, MSc, PhD[4]

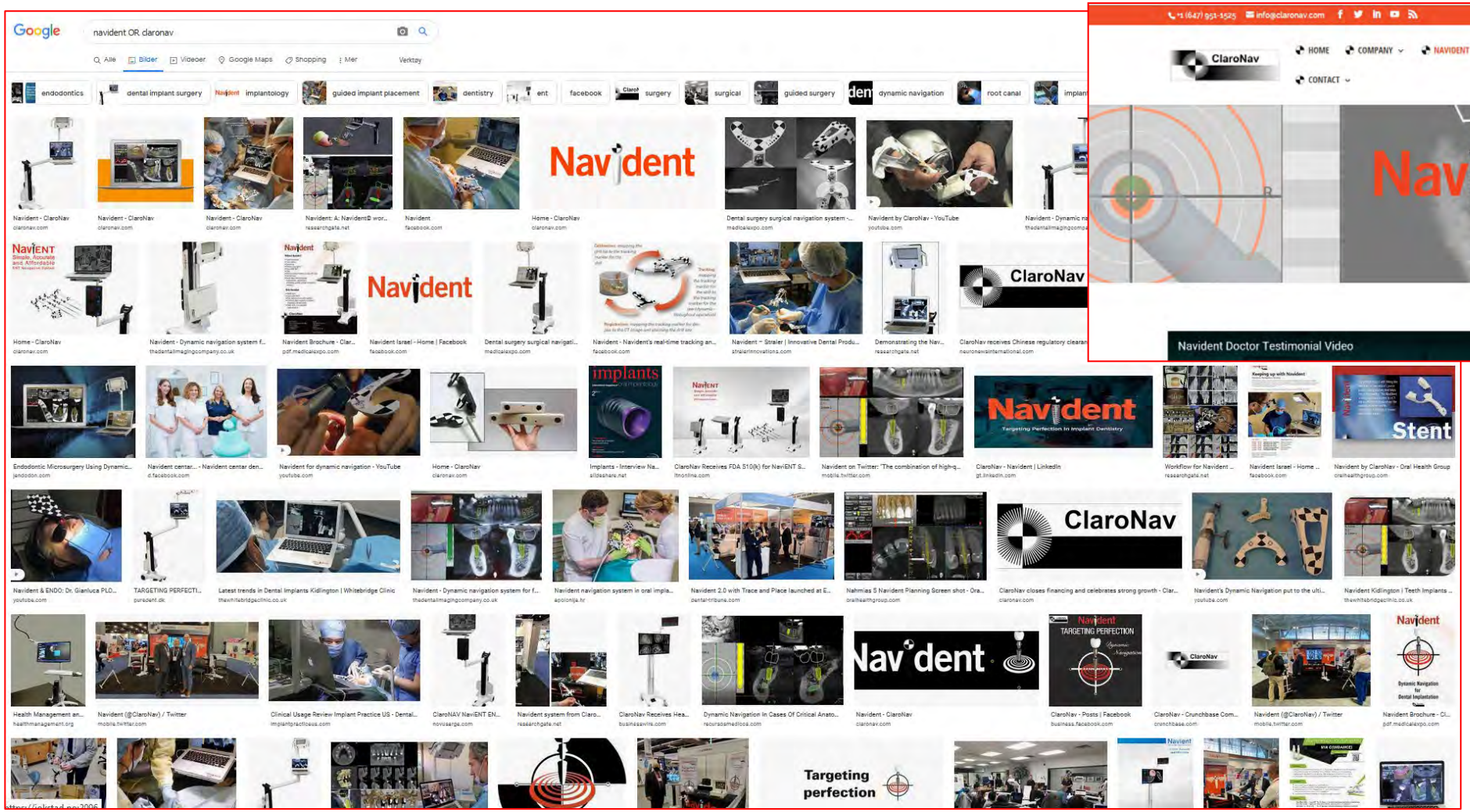
Purpose: *New digital technologies enable real-time computer-aided (CA) three-dimensional (3D) guidance during dental implant surgery. The aim of this investigational clinical trial was to demonstrate the safety and effectiveness of a prototype optoelectronic CA-navigation device in comparison with the conventional approach for planning and effecting dental implant surgery.* ***Materials and Methods:*** *Study participants with up to four missing teeth were recruited from the pool of patients referred to the University of Toronto Graduate Prosthodontics clinic. The first 10 participants were allocated to either a conventional or a prototype device study arm in a randomized trial. The next 10 participants received implants using the prototype device. All*

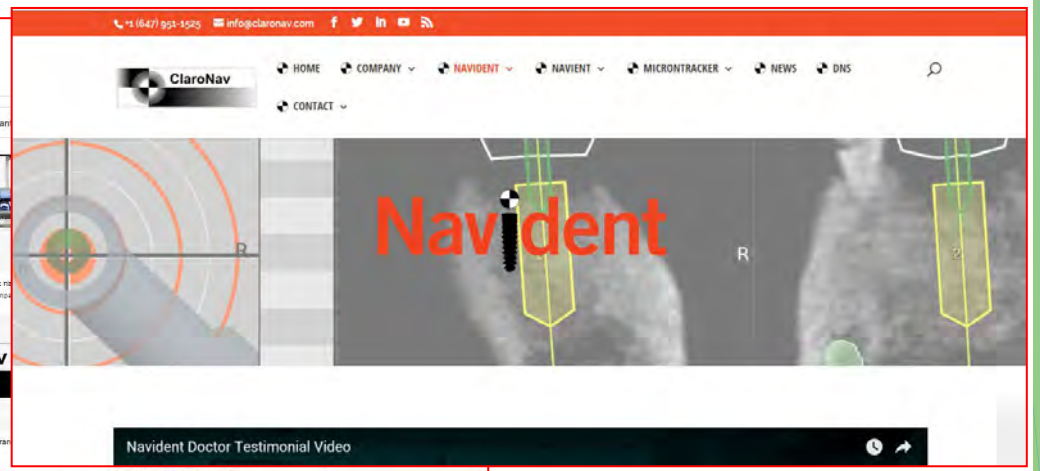


Example: Optoelectronically guided implant surgery ("Robotic surgery")

Idea → prototyping → bench testing → clinical testing → regulator → **market**

2010, Sep→ 2011, April→ 2011, Oct → 2013, Feb→ 2015, Dec→ 2016, Sep→ 2017, Jan





Thank you for your attention