



From Operative Caries Treatment to Non-Operative Caries Treatment. A Danish Paradigm Shift



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Introduction

In this year 2024 it is 25 years ago that Professor Anders Thylstrup, Department of Cariology, Royal Dental College, Copenhagen University died too early. In remembering him and what he has done in Cariology, we will focus on him as the "Father" of a paradigm shift from operative caries treatment to non-operative caries treatment in Denmark in the sense of Kuhn's paradigm shift theory [1].

The Formation of the Concept "Non-Operative Caries Treatment"

1981, Prof. A. Thylstrup visited Nexeo Municipal Dental Health Service for children and adolescents. Here he said "You drill too much and too early" [2].

In the years around 1986 the concept "non-operative caries treatment" were formed and explained in contrast to the traditional operative caries treatment strategy [3-11].

The Content of Non-Operative Caries Treatment

From 1981 Nexeo Municipal Dental Health Service had a close collaboration with prof. A. Thylstrup implementing the newest knowledge in cariology.

The collaboration in the 1980's included some of the Banding-studies [12]. The PhD student J. Carvalho made her thesis in Nexeo [13-15].

The PhD student I. Kuzmina learned in Nexeo the non-operative caries treatment concept and made her thesis in Moscow, Russia [16-18].

1987-2016 Nexeo collaborated in different innovations with KR Ekstrand, including: "Risk Assessment", "Plaque-stagnation Areas", "Papilla diagnostic", "Study of Eruption" and implementing a non-operative caries treatment strategy in Greenland [19-24].

1987-1997 The Nexø dentists Jette Christiansen and Dorte Vinther together with Prof. A. Thylstrup and associate Prof. KR. Ekstrand gave courses and congress-presentations nationally and internationally about "non-operative caries treatment".

1997-2018 Jette Christiansen and associate Prof. KR. Ekstrand, gave extensive courses and congress-presentations nationally and internationally highlighting "non-operative caries treatment" (NOCTP). 1988 Nexø made the first written manual "Nexø metoden" about non-operative caries treatment of erupting first permanent molars, based on the innovative knowledge of Prof. A. Thylstrup, associate Prof. KR Ekstrand, associate Prof. C. Bruun and PhD J. Carvalho.

1991 Nexeo extended the non-operative caries treatment strategy to all surfaces, and in a written form: "The Nexeo Method: A dental health care program based on individualized non-operative caries treatment of children and adolescents aged 0-18. The aim of the program is to maintain sound teeth using the fewest resources possible".

1991-2011: 6 editions of "the Nexeo Method", in Danish, English, German and Portuguese on paper and website [25,26].

Paradigm Shift: From Operative Caries Treatment to Non-Operative Caries Treatment

More and more international scientists have looked at "non-operative caries treatment" as a new paradigm [27-33].

V. Baelum et al. [34,35]: “The best caries diagnostic method is the one that results in the best long-term dental health outcome for the tooth and the patient. It follows that the more relevant approach to caries diagnostic test evaluation uses the randomized, controlled clinical trial (RCCT) study design to determine whether a new caries diagnostic method results in better long-term health outcomes than the traditional method does. The use of the RCCT design allows evaluation of the professionally determined dental health outcome and may also include evaluation of patient preferences and cost aspects. However, no such RCCTs have yet been carried out, and we must therefore make do with a different approach.” Non-operative caries treatment as a principle is integrated in the Danish Municipal Dental Health Services for children and adolescents.

1998-2003 The dental faculty in Greifswald University Germany had: “Die Bornholmermethode” in their curriculum (a variation of “the Nexeo Method” and for several years the faculty

In Nexeo/Denmark (Table 1):

Table: Danish Health Authority: SCOR table 5, table 202 code 8: f-s-surfaces: fissure sealed surfaces.

	1999 Nexeo	1999 Denmark	2001 Nexeo	2001 Denmark	2003 Nexeo	2003 Denmark	2023 Denmark
% 5-yr def-s=0	81%	71%	80%	71%	81%	71%	85%
% 15-yr DMF-S=0	71%	33%	80%	35%	72%	38%	65%
% 18-yr DMF-S=0	55%	19%		22%		23%	58%
Nexeo 2001: 8-yr: 0,32 f-s-surfaces Nexeo 2001: 15-yr: 2,86 f-s-surfaces							

When the results of the “high level of dental health for children and adolescents in Nexø and Denmark” are put together with the references, the “world-wide courses and presentations at congresses” about the issues: “Caries Dentium and Non-operative caries treatment”, “the Dutch RCT of Vermaire JH”, “the Dutch economic evaluation”, “the NZ Cost-benefit analysis”, “Time for a paradigm shift of van Amerongen JP, van Palenstein WH and Helderman”, “Changing paradigms of Fejerskov O”, “New paradigm and caries treatment of Kidd E” “ The dental caries paradigms and nominalistic caries paradigm of Baelum” and “Paradigms and maintaining sound teeth of Paris S, Meyer-Lueckel H og Ekstrand KR”, it seems clear that the concept “non-operative caries treatment”, the content and practice, is now so well documented as a separate treatment in contrast to the over hundred years old “operative caries treatment” paradigm.

According to “Kuhns Paradigm Shift Theory” a paradigm shift has taken place from “operative caries treatment” to the new paradigm “non-operative caries treatment”. This new paradigm in cariology is first shown in Denmark with local and national results, and is now expanding worldwide! Jette Christiansen’s Key-note lecture April 2024 in Utrecht Netherlands [41], and after

sent groups of dental students to a 2 days course in Nexø).

2014- For 10 years a Dutch Association for Oral Health “Ivoren Kruis” in the Netherlands has educated the private clinic’s dental staff in non-operative caries treatment (a variation NOCTP of the Nexø Method after Vermaire JH) [36-38].

In New Zealand TDB ADVISORY Ltd (www.tbd.co.nz) supported of New Health NZ Inc. A cost benefit analysis of Nexeo method compared to the Child smile programme of Scotland [39].

It is reasonable to conclude that Prof. A. Thylstrup and his staff in collaboration with Nexø Municipal Dental Health Service have educated the Danish dental staff to move from unspecific prophylactic programs and traditional operative caries intervention to an individualized non-operative caries treatment strategy and this way have improved the dental health significantly - very few cavities, very few fillings, and nearly no extractions see Table 1 and [40].

the lecture Jette Christiansen and Christian Christiansen were awarded the dr. Carl Witthaus Medal for their work on caries prevention. Unfortunable Prof. Anders Thylstrup died too early to see, that he and his staff with their research in caries on the surfaces of teeth, their proposal of non-operative caries treatment and active communication on this issue have made a paradigm shift. He is the real “Father” of the new Paradigm in cariology.

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