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Original Research

# The Danish Head and Neck Cancer fast-track program: a tertiary cancer centre experience

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**KEYWORDS**
Head and neck cancer;
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**Abstract** ***Introduction:*** During the 1990s, all Nordic countries except for Denmark experienced a general increase in 5-year survival rates for cancer patients. In 2007, the Danish National Board of Health in collaboration with national multidisciplinary cancer groups and the Danish regions initiated fast-track clinical pathway solutions.
***Objectives:*** The objectives of this study were 1) to present the setup of the head and neck cancer (HNC) fast-track program at Odense University Hospital (OUH) as an example of the Danish model and 2) to present patient characteristics, diagnostic outcome, cancer detection rate, and duration of the fast-track patient courses.
***Materials and methods:*** From 1st July 2012 to 1st September 2015, all patients referred to the HNC fast-track program at OUH for diagnostics and treatment were consecutively included in the study resulting in 3165 patient courses.
***Results:*** The overall malignancy detection rate was 40.6% and for HNC it was 29.2%. The overall median fast-track course duration was 12 days (range 0–74). Overall 2990 (94.5%) of 3165 patients completed their fast-track course within the maximally permitted course duration.
***Discussion and conclusion:*** Based on our findings, it was concluded that: 1) a HNC fast-track program build on pre-booked slots for diagnostics and treatment is feasible and can secure acceptable course durations for more than 90% of patient courses, 2) by using private ENT specialists as a 'filter-function', an acceptable detection rate can be achieved.


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## 1. Introduction

During the 1990s, all Nordic countries except Denmark experienced a general increase in 5-year survival rates for cancer patients [1,2]. Political awareness was established and possible causes were discussed in medical communities. Long waiting time from initial cancer symptoms to the start of treatment was proposed as the main reason for the poor Danish outcome. This assumption was based on a number of studies showing disease progression during waiting time [3–7]. In 2002, Fortin *et al.*[3] addressed delay in radiotherapy to squamous-cell head and neck carcinoma (SCHNC) patients. They found a 15% reduction in survival rate for patients treated more than 40 days after the primary examination compared with patients treated within shorter time. In 2007, Jensen *et al.*[6] addressed the influence of waiting time on tumour volume and progression in SCHNC patients. For patients waiting more than 28 days, 70% had significant increases in tumour volume and 40% had tumour progression according to RECIST criteria.

In 2007, as a response to the long waiting times, the Danish National Board of Health in collaboration with national multidisciplinary cancer groups and the Danish regions initiated fast-track clinical pathway solutions [8]. The primary aim of these fast-track programs was to reduce waiting time from first suspicion of cancer to start of treatment or elimination of suspicion to improve prognosis and decrease patient uncertainty.

Denmark was the first nation to introduce a national Head and Neck Cancer (HNC) fast-track program based on systematic use of pre-booked slots for diagnostic procedures and treatment. Odense University Hospital (OUH) is the main cancer centre for HNC in the Region of Southern Denmark (RSD). Here, the HNC fast-track program was introduced in 2007, and it was one of the first centres to introduce and implement a full-scale fast-track program for HNC [9]. Today, it has been running for almost 10 years, and substantial experience and patient data are available.

The objectives of this study are 1) to present the organisation of the HNC fast-track program at OUH as an example of the Danish model and 2) to present patient characteristics, diagnostic outcome, cancer detection rate and duration of the fast-track courses.

## 2. Materials and method

This study has a prospective descriptive cohort design. From 1st July 2012 to 1st September 2015, all patients referred to the HNC fast-track program at OUH for diagnostics and treatment were consecutively included in the study. The period of approximately three years was considered as representative to illustrate the Danish fast-track program.

'Primary cancer' refers to a newly diagnosed malignant condition, whereas 'recurrent cancer', besides recurrent disease, also includes residual cancer after treatment.

For all patient fast-track courses, data concerning patient age and sex, referring authority, course duration, histological diagnosis and treatment modality were registered in the local HNC quality database. Diagnostic outcomes were separated into either benign or malignant disease. Benign neoplasia and non-neoplastic diseases were categorised as benign. Malignant disease was divided into three categories: HNC, malignant lymphoma and other cancers. The analysis system Medlog® (Medlog Systems, Crystal Bay, USA) was used for data registration and statistical analyses.

Descriptive statistics were used.

The study was approved by the Danish Health and Medicines Authority (j.no. 3-3013-1577/1) and by the Danish Data Protection Agency (j.no. 16/9985).

## 3. Results

### 3.1. HNC fast-track program structure

Patients suspected of cancer in the head and neck region are accepted for enrolment in the Danish HNC fast-track program. The fast-track program is based on three cornerstones: 1) a set of alarm symptoms to the general practitioners (GPs), 2) improved qualification of cancer suspicion by the private ENT specialist and 3) maximum permitted course duration for each different phase of the fast-track program.

1) In Denmark, the suspicion of cancer in the head and neck region usually arises in a GP setting to whom the Danish National Board of Health has developed a set of alarm symptoms or 'red flags' for possible HNC (www.sst.dk; Table 1).
2) GP suspicion of cancer in the head and neck region triggers urgent referral to a private ENT specialist who will investigate the patient the same day or no later than the following day. If the private ENT specialist confirms the suspicion, the level of suspicion is raised to 'well-founded suspicion' and the patient is referred to the local ENT department. The patient is now entrusted to the ENT department and is considered enrolled in the HNC fast-track program. As such, the patient must be investigated in a hospital setting within six calendar days [8]. In RSD, there are four ENT departments including the HNC Centre at OUH. Patients can be diagnosed in all four departments, but all patients should be receiving their treatment at OUH. The private ENT specialist 'filter'-function is possible in Denmark because of a relatively high number of private ENT specialists (32/1 mill. inhabitants).
3) In the establishment of the HNC fast-track program in Denmark, a maximum permitted course duration for each phase of the HNC fast-track program was defined (Table 2). After the first visit, the patients must be

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