Refinement of the Target Population for Colorectal Cancer Screening in France, Inventory as a Prelude to the Use of Medico-Administrative Database

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Abstract. The study describes the level of improvement in the risk of misclassification that would be achieved by refining the campaign target population using a query in the French medico-administrative database (SNDS). The SNDS’s use requires other new strategies that can minimize the number of people wrongly included in the campaigns, because its accuracy is less than 100%.

Keywords. Medico-administrative database, Colorectal cancer screening

1. Introduction

The French colorectal cancer (CRC) screening program (CRCSP) targets people aged 50 to 74. The medical exclusion (MEx) rate and the participation rate in 2020-2021 (respectively: 13.2% 35.7%; www.santepubliquefrance.fr) are estimated in an eligible population (EliP) and underestimated. To obtain EliP, a few people (i.e., people at risk of CRC) are excluded from target population (TaP). Unlike some European programs [1], in France, the MEx is assessed after invitations (Response from patients/GPs/physicians), generating a detrimental bias. With a view to interconnecting the health insurance medico-administrative database (SNDS) and the CRCSP database (CRC-DB), we aim to describe the risk of misclassification (Eligible/Not eligible) induced by MEx strategies and the level of risk’s improvement that, would be achieved by refining the TaP upstream of invitations using SNDS.

2. Methodology

The CRCSP’s major MEx strategies are:

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i) MEx made exclusively upstream of the invitations by CRCSP’s management structures (CRCSP-Manager) through the disparate use of: CRC-DB, Cancer registries, Hospital discharge databases and Primary health insurance databases. ii) MEx made following correspondence between CRCSP-Manager and GPs/Physician through the Computerized Medical Record (CMR) of the physician/healthcare facility. iii) MEx carried out by pharmacist by answering the questions of eligibility when collecting a test kit at the pharmacy. iv) The self-exclusion carried out by people either by making a postal response, or by completing an online eligibility form. v) MEx made through the SNDS (In perspective). Each strategy’s risk of misclassification was analyzed in terms of the proportion of people potentially eligible for screening and included appropriately (TP: True positive) or wrongly excluded (FN: False negative) and, in terms of the proportion of people potentially ineligible for screening and wrongly included (FP: False positive) or appropriately excluded (TN: True negative). These FP, FN, TN, and TP were simulated in five scenarios, based on the five MEx strategies.

3. Results

To obtain a test kit, people must: Scenario-1 (Doctor consultation): eligibility by strategies (i) and (ii) with zero risk of misclassification (TP=100%, FP=0%, FN=0%, TN=100%). Scenario-2 (Kit collect in pharmacy): There is a non-zero risk that eligibility (Strategy iii) may be partially proved (TP<100%, FP>0%, FN=0%, TN=100%) due to pharmacist’s lack of access to the CMR or CRC-DB. Scenario-3 (Kit request, no consultation): The kit is received at home following a website request, eligibility is established (Strategy iv) with a non-zero risk (TP<100%, FP>0%, FN>0%, TN<100%). Scenario-4 (SNDS perspective) risks are like those of Scenario-3, because SNDS accuracy <100%. The risk that few people will be wrongly included or not included, in the participation rate’s estimation is >0 in scenarios 2, 3 and 4 and =0 in 1.

4. Discussion and Conclusions

The SNDS’s sensitivity (≤87.7%) and positive predictive value(≤58.9%) are less than 100 [2]. This inaccuracy feed the reflection with an essential question: To what extent refining upstream invitations, by a SNDS query will improve the exclusion rate? To making MEx using the SNDS, other new strategies are needed to minimize the number of people not wrongly included in the campaigns. The definition of these new strategies will have to go through a SNDS’s evaluation using CRC-DB as a benchmark.

References