QUALITY EVALUATION OF BREAST CANCER SCREENING PROGRAMME IN CANTON TICINO, SOUTHERN SWITZERLAND, THROUGH CANCER REGISTRY DATA

SCREENING MAMMOGRAFICO CANTON TICINO

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OBJECTIVES

Breast cancer is a public health problem, representing the most common cancer and the first cause of death due to cancer in the female population in Switzerland. Early diagnosis of breast cancer favours on less invasive therapies with less side effects and more chances of complete remission and survival. The breast cancer screening programme of canton Ticino ("TI" in Figure 1), southern region of Switzerland, is a public service offering every two years a free and quality-controlled screening mammography to all women aged 50-69 years and resident in the mentioned area (about 48'000 women). A specific regional law allocates the Screening Centre within the Ticino Cancer Registry, thus permitting data linkage for quality control issue of the screening program. The programme activity started progressively in 2015 and 2016 represents the first year of full activity.

Aim of the study is to present the results of quality indicators for the breast cancer screening programme in canton Ticino in 2016.

RESULTS

In 2016, 25'716 women are invited, 22'540 of them are eligible for a screening mammography and 13'558 perform a mammography, equally distributed between public and private radiology centres (Table 1). The corrected activity rate of the programme (i.e. performed mammographies / eligible women) is 60%.

92.8% of women receive the result within 4 working days from the date of the exam (EU: >90% within 10 days). 7.1% of examinations need a third evaluation and are discussed in a Consensus Conference (i.e. a common discussion in video-conference, Figure 2) because of a discordance between first and second reading (EU: <7-15%). 14 women (0.1%) repeat the exam due to technical reasons (EU: <1-3%), while 530 women (3.9%) are recalled for additional investigations following a "positive" result (EU: <3-7%; CH: 3.4-7.8%). The false positive rate is 3.2% (CH: 2.9-7.2%), while 97 women (7.2 ‰) have a definitive diagnosis of invasive or in-situ breast cancer (CH: 4.9-6.5 ‰). The proportion of screen-detected cancers that are invasive is about 80%. Twenty-seven out of 77 (35.1%) invasive cancers present a diameter ≤10; the proportion becomes higher (i.e. 53.2%) when considering diameter ≤15mm.

Table 1. Quality indicators of the Breast cancer screening programme in Canton Ticino (southern Switzerland), in comparison with some other neighbouring regions.

Quality Indicators	Canton Ticino N	Canton Ticino %	EU guidelines	Switzerland, 2012 *	North Italy, 2012 ^
Invited women	25'716				
Eligible invited women ‡	22'530				
Mammographies public setting private setting	13'558 6'476 7'082	 47.8% 52.2%			
Activity rate^^ (performed mammographies / eligible women)		60.2%		*Figure 4^^*	
Proportion of women undergoing a technical repeat screening examination (insufficient quality examination)	14	0.1%	<1-3%		
Proportion of examinations needing a 3° reading (discussed in Consensus Conference) ^^	964	7.1%	<7-15%	Geneva 6.8% Jura 7.1% Neuchâtel 7.1% Jura bernese 8.5%	
Time (in working days) between mammography and result	92.8% within 4 days (*Figure 3*)		>90% within 10 days		
Proportion of women recalled for further assessment (positive mammographies)	530	3.9%	<3-7%	3.4-7.8%	4.1-9.1%
non-invasive examinations invasive examinations (cyto/histo) refused examinations	358 165 7	68% 31% 1%		71% 28% 1%	
False positive rate	434	3.2%		2.9-7.2%	
Breast cancer detection rate: women with a definitive diagnosis of invasive cancer (invasive or ductal carcinoma in-situ (DCIS)), following further assessment	97	7.2‰		4.9-6.5‰	4.8-5.3‰
Proportion of screen-detected breast cancers that are invasive	77	79.4%	80-90%	83.3-87.8%	84.1-87.1%
Proportion of screen-detected breast cancers that are DCIS	20	20.6%	10-20%	12.2-16.7%	12.9-15.9%
Proportion of screen-detected invasive breast cancers with a diameter ≤10mm	27	35.1%	≥25-30%	25.4-31.8%	34%^^^
Proportion of screen-detected invasive breast cancers with a diameter <15mm	41	53.2%	≥50%	33.3-58.5%	
Proportion of screen-detected breast cancers with stage II+ (≥T2, T1N1)	32	33.0%	<25-30%	20.9-35.1%	

‡ Not-eligible women: leaving the region, deceased, serious health problems, recent mammography performed out of the screening programme.

* Swiss Cancer Screening. *Rapport du monitoring des programmes suisses de dépistage du cancer du sein – un bref bilan, 2012.* – www.swisscancerscreening.ch

^ Ventura L et al. Mammographic breast cancer screening in Italy: 2011-2012 survey. *Epidemiol Prev* 2015;39(3) Suppl 1:21-9.

^^ Results 2016, coming from the Annual activity report of Swiss breast cancer screening programmes.

^^^ Osservatorio Nazionale Screening. I programmi di screening in Italia. Zadig Editore: 2014.

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MATERIALS AND METHODS

Figure 2 shows the workflow of the breast cancer screening programme regarding the schema of readings and results communication. Data collection is performed by trained data managers working on both screening and cancer registry database. Quality indicators are calculated as proportion and they are compared with reference values of the *European Guidelines for quality assurance in breast cancer screening and diagnosis* (EU). Whenever possible data are compared with Swiss data (CH).

Figure 1. Breast cancer screening programmes in Switzerland.

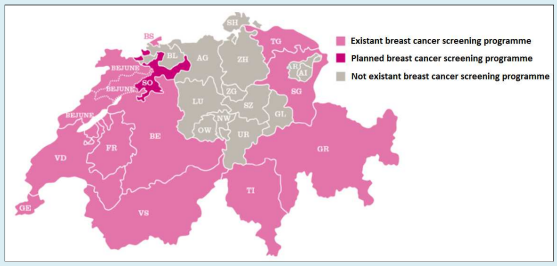


Figure 2: Workflow of the breast cancer screening programme in Canton Ticino: from the mammography to the result.

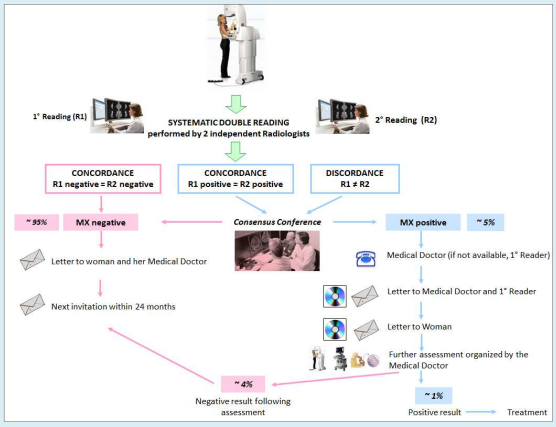


Figure 3: Time in working days between mammography and result in Canton Ticino (southern Switzerland), 2016.

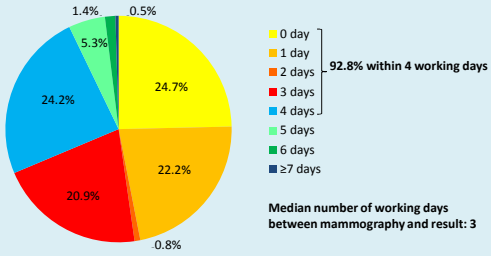
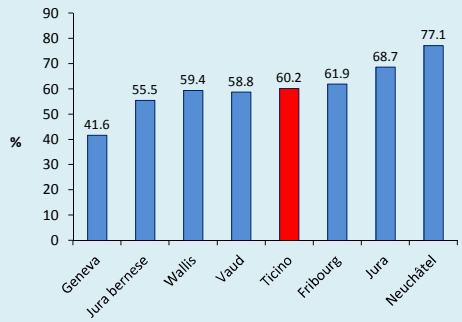


Figure 4: Activity rate (%) of the breast cancer screening programme in Canton Ticino (southern Switzerland), in comparison with some Swiss regions, 2016.



DISCUSSION AND CONCLUSION

The quality control of the breast cancer screening programme of canton Ticino shows encouraging results for 2016, reflecting Swiss data and the recommendations of the European Guidelines (Table 1). The achievement of these results was possible thanks to the excellent collaboration with radiology centres, radiologists, gynaecologists, family doctors, technicians, radiographers and administrative staff. These results confirm the usefulness and relevance to maintain such an offer to the female population resident in southern Switzerland.