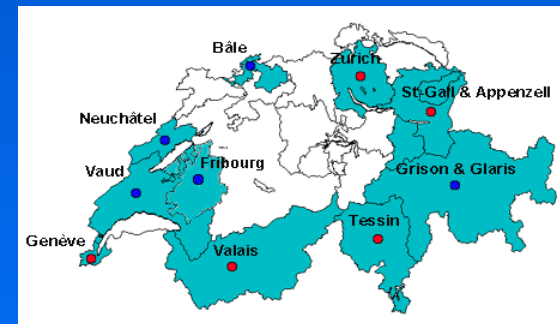


# Coding Treatment in Swiss Cancer Registries Network

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## Why ?

- The basic “yes/no” information on treatment (surgery, chemotherapy, radiotherapy) is not very informative
- No comparability for treatment intensity
- "High resolution" studies allow to use exact treatment but are based on sampling and are expensive
- Cancer Registries need detailed description of treatments for every cases in routine
- Existing coding scheme (e.g. CHOP) far too complex and not fitting the needs of cancer registration

# Method

- Five digit coding scheme, tested, updated and validated since 1998 in Geneva, now in use in 6/10 of Swiss CRs (GE, VS, TI, SG, BA, FR)...
- List of treatments observed within a one-year incident cases, for each of the tumour sites
- Agreement with clinicians for creating classification
- Index of intensity

# Coding principles

1st digit	2nd digit	Definition	3rd digit	Definition	4th & 5th digit	Definition
<b>1</b> <b>SURGERY</b>  <i>N1=134</i> <i>N2=49</i>	00-89	TUMOUR SITE SPECIFIC ICD-O(3)			00-99	00 = NOS 10-99 = Cf list
	9	General terms	0-6	0 = NOS 1 = Organ(s) 2, 3 = Tumour 4, 6 = Other		
<b>2</b> <b>CHEMO</b> <i>N=4</i>	0		0		00-99	00 = NOS 10 = single agent 20 = multiple / protocol 30 = cytostatic

**Quadrantectomy : 1 50 70**

# Specific surgery – breast

Code	Definition	Intensity	Cat.
1 50 10	50- Extended surgery NOS or major surgery NOS	2	Surg
1 50 20	50- Mastectomy	2	Surg
1 50 21	50- Mastectomy "skin sparring"	2	Surg
1 50 30	50- Bilateral mastectomy	3	Surg
1 50 40	50- "Cleaning" mastectomy	1	Surg
1 50 50	50- Patey procedure	3	Surg
1 50 60	50- Small intervention NOS	1	Surg
1 50 70	50- Quadrantectomy	1	Surg
1 50 71	50- Quadrantectomy and nodal clearance	2	Surg
1 50 80	50- Tumorectomy	1	Surg
1 50 81	50- Tumorectomy and nodal clearance	2	Surg

# Non specific site surgery

Code	Definition	Intensity	Cat.
1 91 40	So- Radical surgery (2 or more organs)	3	Surg
1 91 50	So- Surgery on metastases	1	Surg
1 92 00	St- Minor intervention on the tumour, NOS	1	Surg
1 92 10	St- Diathermy/photocoagulation	1	Surg
1 92 20	St- Cryosurgery	1	Surg
1 92 30	St- Laser	1	Surg
1 92 40	St- Partial or incomplete excision	1	Surg
1 92 50	St- Local excision, NOS	2	Surg

# Coding principles

1st digit	2nd digit	Definition	3rd digit	Definition	4th & 5th digit	Definition
3 Rx TH  <i>N=13</i>	<b>0-4</b>	0 = NOS 1 = Rxth only 2 = Rxth + surgery 3 = Rxth + chemoth. 4 = Other	0		00-99	00 = NOS 10-99 = Cf list
4 HORMONAL  <i>N=12</i>	<b>0-2</b>	0 = NOS 1 = Hormones 2 = Castration	0		00-99	00 = NOS 10-99 = Cf list
9 OTHERS  <i>N=13</i>	<b>0-2</b>	0 = NOS 1 = Non stéroïd 2 = Stéroïd	0		00-99	00 = NOS 10-99 = Cf list

**Radiotherapy after surgery : 3 20 40**

# Radiotherapy

Code	Definition	Intensity	Categ.
3 00 00	<b>R.- Radiotherapy NOS</b>	9	Rxth
3 10 00	<b>Rx- Radiotherapy only</b>	9	Rxth
3 20 10	<b>Rx- Radiotherapy before surgery</b>	2	Rxth
3 20 20	<b>Rx- Radiotherapy before and after surgery</b>	3	Rxth
3 20 30	<b>Rx- Radiotherapy during surgery</b>	1	Rxth
3 20 40	<b>Rx- Radiotherapy after surgery</b>	3	Rxth
3 20 50	<b>Rx- Brachytherapy / implants</b>	2	Rxth
3 20 60	<b>Rx- Radiotherapy before bone marrow transplant</b>	1	Rxth
3 30 10	<b>Rx- Radiochemotherapy before surgery</b>	2	Rxth
3 30 20	<b>Rx- Radiochemotherapy before and after surgery</b>	3	Rxth
3 30 30	<b>Rx- Radiochemotherapy during surgery</b>	1	Rxth
3 30 40	<b>Rx- Radiochemotherapy after surgery</b>	3	Rxth
3 40 00	<b>Rx- Radiotherapy on metastasis (es)</b>	1	Rxth



# Validation

1. Comparison with official clinical coding in hospitals (CHOP 7 in 1998, CHOP 11 since 01/01/2009) used in Switzerland
2. Observation of treatments for colon-rectum and breast over the period 2000-2006 in GE (n=1'652) and VS (n=1'129) and for 2005 only in TI (n=236)
  - Quality of information
  - Trends
  - Inter cantonal comparison for 2005

# NICER coding

## PRO & CONS

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- More simple than hospital codes (CHOP), with complete overview of surgical techniques (Geneva) for oncology
- Not restricted to surgery as in CHOP (only recent and uncomplete list in CHOP V11)
- Comparable intensity scale
- Fit with CRs needs
- Easy to update and/or to add local codes...
- Less detailed (>11'000 codes in CHOP 11, only 229 in our list)
- "Home made", national use only.

## Nb of codes in use

Cantons	GE		VS		TI
	2000	2005	2000	2005	2005
<b>Colon - Rectum</b>					
Nb of codes used	<b>28</b>	<b>25</b>	<b>8</b>	<b>15</b>	<b>21</b>
Nb of cases	<b>205</b>	<b>245</b>	<b>133</b>	<b>192</b>	<b>236</b>
<b>Breast</b>					
Nb of codes used	<b>23</b>	<b>22</b>	<b>12</b>	<b>17</b>	<b>21</b>
Nb of cases	<b>440</b>	<b>457</b>	<b>238</b>	<b>238</b>	<b>311</b>

# Quality of information : proportion of "NOS" unspecified codes for colon-Rectum (%)

Code	1st treatment	GE		VS		TI
		2000	2005	2000	2005	2005
1 18 10	18-Colectomy NOS	2.0	1.2	0.0	2.1	0.4
1 90 00	S.- Surgery NOS	0.0	0.0	<b>6.9</b>	<b>4.2</b>	-
1 91 00	So- Small intervention on organ, NOS	0.0	1.6	0.0	0.5	-
1 92 00	St- Small intervention on tumour, NOS	1.5	0.8	-	-	-
1 92 50	St- Local excision, NOS	0.0	0.0	0.0	0.0	-
1 93 00	St- Wide excision on tumour, NOS	1.0	2.0	-	-	-
2 00 00	C.- Chemotherapy NOS	0.5	1.6	<b>21.1</b>	<b>2.1</b>	1.7
3 00 00	R.- Radiotherapy NOS	0.0	0.8	0.0	1.0	0.4
9 00 00	X.- Other treatment NOS	0.0	0.4	1.5	0.0	-
<b>Missing</b>		<b>9.3</b>	<b>7.4</b>	<b>4.5</b>	<b>3.7</b>	<b>6.4</b>

## 2000-2006 trends for colon-rectum for the most frequent codes, first treatment only (%)

Code	1st Treatment Geneva	2000	2001	2002	2003	2004	2005	2006
1 18 30	18- Hemicolectomy or more	22.9	22.6	24.0	30.6	34.6	40.0	31.9
1 18 20	18- Partial colectomy	14.2	15.1	23.0	16.5	13.5	15.1	18.5
1 93 20	St- Biopsy exeresis of colonic tumour	13.7	9.5	10.6	7.9	9.7	5.7	13.4
Code	1st Treatment Valais	2000	2001	2002	2003	2004	2005	2006
1 90 00	S.- Surgery NOS	60.9	46.4	45.5	57.0	38.3	4.2	1.2
2 00 00	C.- Chemotherapy NOS	21.1	18.8	27.6	9.9	14.3	2.1	0.0
1 18 30	18- Hemicolectomy or more	1.5	0.0	0.0	0.6	6.3	27.6	31.0

# Comparisons for 2005, colon-rectum, first treatment only (%)

Code	1st Treatment	GE	VS	TI
1 18 30	18- Hemicolectomy or more	40.0	27.6	5.5
1 18 20	18- Partial colectomy (less than 1/2 colon)	15.1	10.9	43.2
3 30 10	Rx- Radiochemotherapy BEFORE surgery	2.9	7.8	13.6
1 20 10	20- Antero-posterior resection (Hartmann)	3.7	8.9	8.9
1 93 20	St- Biopsy-exeresis of colonic tumour	5.7	1.0	5.1
1 93 30	St- Endoscopic removal of tumour	1.2	13.5	0.0

# Quality of information : proportion of "NOS" unspecified codes for breast (%)

Code	1st treatment	GE		VS		TI
		2000	2005	2000	2005	2005
1 50 10	50- Extended surgery NOS, or major surgery NOS	0.0	0.0	-	-	-
1 50 60	50- Minor intervention NOS	2.3	2.0	0.4	0.5	-
1 90 00	S.- Surgery NOS	0.0	0.0	<b>12.2</b>	<b>2.4</b>	-
1 92 00	St.- Minor intervention on tumour, NOS	0.0	0.3	-	-	-
1 95 03	Sx- Nodal removal NOS	0.0	0.2	-	-	-
2 00 00	C.- Chemotherapy NOS	0.5	0.4	<b>14.7</b>	<b>1.0</b>	1.0
3 00 00	R.- Radiotherapy NOS	0.5	0.0	0.0	0.0	-
4 00 00	H.- Hormonal Treatment NOS	0.0	0.0	<b>13.5</b>	<b>0.5</b>	0.3
9 00 00	X.- Other treatment NOS	0.0	0.2	-	-	-
9 10 10	Xc- Immunotherapy NOS	0.0	0.0	-	-	-
Missing		<b>5.5</b>	<b>4.2</b>	<b>2.2</b>	<b>2.2</b>	-

## 2000-2006 trends for breast, Geneva, for the most frequent codes, first treatment only (%)

Code	1st Treatment Geneva	2000	2001	2002	2003	2004	2005	2006
1 50 80	50- Tumorectomy	8.2	18.3	27.7	31.7	36.7	40.3	41.6
1 50 81	50- Tumorectomy and nodal clearance	38.0	35.4	23.3	17.2	13.9	11.9	12.3
1 50 50	50- Patey procedure	12.1	8.3	9.3	6.5	7.2	7.2	4.4
2 00 20	Ch- Chemotherapy, several agents under protocol	6.1	6.0	8.1	6.7	8.5	9.0	9.4
1 50 70	50- Quadrantectomy	3.4	4.0	5.4	11.1	6.3	6.5	6.1
1 50 71	50- Quadrantectomy and nodal clearance	12.3	8.3	6.4	3.5	3.6	2.8	0.9
4 10 30	Hh- Anti oestrogenic treatment NOS	5.5	6.9	9.1	5.9	0.5	0.5	0.2
1 50 20	50- Mastectomy	2.5	3.1	3.4	5.7	3.4	3.4	5.7



## 2000-2006 trends for breast, Valais, for the most frequent codes, first treatment only (%)

Code	1st Treatment Valais	2000	2001	2002	2003	2004	2005	2006
3 20 40	Rx- Radiotherapy after surgery	33.2	40.7	63.1	56.2	38.9	1.5	0.4
1 50 80	50- Tumorectomy	0.4	0.0	0.4	0.0	6.2	27.2	38.7
1 50 81	50- Tumorectomy and nodal clearance	0.4	0.0	1.2	0.5	13.7	33.0	18.1
1 90 00	S.- Surgery NOS	12.2	14.4	11.1	16.1	4.7	2.4	0.0
4 00 00	H.- Hormonal therapy NOS	13.5	11.1	11.5	10.1	11.4	0.5	0.0
2 00 00	C.- Chemotherapy NOS	14.7	10.7	6.2	7.8	4.3	1.0	0.4
1 50 50	50- Patey procedure	0.0	0.8	0.0	1.8	8.5	17.5	17.7
3 40 20	Rx- Radiotherapy after chemotherapy	18.9	17.3	2.9	1.8	0.5	0.0	0.0

# Comparisons for 2005, breast, first treatment only (%)

Code	1st Treatment	GE	VS	TI
1 50 80	50- Tumorectomy	40.3	27.2	24.1
1 50 81	50- Tumorectomy and nodal clearance	11.9	33.0	6.4
1 95 05	Sx- Sentinel lymph node procedure	0.0	0.0	29.9
1 50 20	50- Patey procedure	7.2	17.5	0.0
1 50 20	50- Mastectomy	3.4	2.9	11.9
1 50 70	50- Quadrantectomy	6.5	4.4	4.2
2 00 20	Ch- Chemotherapy, several agents under protocol	9.0	1.0	1.9
4 10 32	Hh- Antiaromatase therapy	5.4	0.0	4.5
1 50 21	50- Skin sparring mastectomy	3.9	0.0	5.5
1 50 71	50- Quadrantectomy and nodal clearance	2.8	4.9	1.9

# Discussion

- Current scheme has 230 codes.
  - Is all treatment range fully covered ?
  - Comparison with hospital coding (CHOP)
- Language handicap within Switzerland
- Impact of NOS rates
- Home made codes to be avoided

# Conclusion

- Since 1998, Swiss cancer registries record information on cancer treatment beyond the classical yes/no simple way
- Our coding scheme allows keeping (more) detailed information, useful for looking at trends, geographical differences and (next step) for improving the ability to interpret results on survival analysis
- No additional cost
- Current results show true differences between cantons.