

Is quality of registry treatment data related to registrar experience and workload? A study of Taiwan cancer registry data



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Background

Although cancer treatment information has been collected through the Cancer Registry system in Taiwan for more than 10 years, the accuracy of such data has never been evaluated. This study examined the accuracy rate between registrar experience and on-site chart review for the first course of treatment. The National Taiwan Cancer Registry (TCR) collects data concerning all new cancer cases submitted by the cancer registry department in each hospital

Results

Regarding surgery type, low accuracy rates were noted for gastric cancer (84.0%), oral cavity cancer (84.6%), and bladder cancer (88.9%). For chemotherapy, low accuracy rates were observed for hematopoietic diseases (81.3%) and esophageal cancer (88.0%). For radiotherapy, low accuracy rates were noted for esophageal cancer (80.0%), cervical cancer (81.8%), and lymphoma (85.7%). When stratifying by surgery type after adjustment for hospital caseload, a high accuracy rate was found for cancer registrars who had progressed from basic to advanced licenses within 5 years of graduating. (table1-3).

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Methods

In this retrospective chart review study, 392 randomly selected medical records from 14 hospitals were re-abstracted by experienced abstractors. The kappa coefficients of accuracy for the abstracting data were calculated against the gold standard. Correlations between registrar background and workload were then identified through regression analysis.

Conclusions

We recommend that cancer registrars with basic licenses upgrade to advanced licenses as soon as possible. Furthermore, continuous education regarding cancer site specific abstracting skills and rules should be emphasized and provided by the Taiwan Society of Cancer Registry. Medical record collaboration should establish the documentation for the structure of radiation oncology and surgical operation records in hospitals, and hospital abstracting sheets, which currently focus on specific cancer types, should be revised to focus on surgery and radiation records.

Table 1 | The accuracy in type of surgery, regiment of chemotherapy and target of radiotherapy among different types of cancer (N=392)

Stages/Treatments	Type of Surgery ^a		Regiment of Chemotherapy ^b		Target of Radiotherapy ^c	
	Accuracy (n)	Accuracy Rate(%)	Accuracy (n)	Accuracy Rate(%)	Accuracy (n)	Accuracy Rate(%)
Total	370	94.4	372	94.9	371	94.6
Head and Neck	43	93.5	44	95.7	41	89.1
Oral cavity	11	84.6	13	100	12	92.3
Pharynx	32	97.0	31	93.9	29	87.9
Digestive System	130	95.6	129	94.9	131	96.3
Esophagus	25	100	22	88.0	20	80.0
Stomach	21	84.0	24	96.0	25	100
Colorectal	59	98.3	59	98.3	60	100
Liver	25	96.2	24	92.3	26	100
Respiration System	43	95.6	43	95.6	44	97.8
lung	43	95.6	43	95.6	44	97.8
Breast	43	95.6	42	93.3	43	95.6
Female Genital System	43	97.7	44	100	41	93.2
Cervix uteri	11	100	11	100	9	81.8
Endometrial	13	92.9	14	100	13	92.9
Ovary	19	100	19	100	19	100
Prostate	22	91.7	24	100	21	87.5
Bladder	24	88.9	25	92.6	26	96.3
Hematopoietic Diseases	15	NA	13	81.3	15	93.8
Others*	7	77.8	8	88.9	9	100

^aType of surgery: local excision, total excision, radical excision, and extended excision. ^bRegiment of chemotherapy: no chemotherapy, single chemotherapy, multiple chemotherapy, trans-arterial hepatic arterial chemotherapy (TACE), Haddler intravesical instillation, and not done for specific reason. ^cTarget of radiotherapy: no radiotherapy, primary-site radiotherapy, primary-site and regional lymph node radiotherapy, and others. *Others included: Pancreatic(1), Small intestine(2), Anus(1), Heteroplasia(1), testis(1), endometrium(1), Lip(1), prostate(1).

Table 3 | Factor related to the accuracy of type of surgery, regiment of chemotherapy and target of radiotherapy

Characteristics	Type of Surgery ^a				Regiment of Chemotherapy ^b				Target of Radiotherapy ^c			
	Unadjusted	95%CI	Adjusted*	95%CI	Unadjusted	95%CI	Adjusted*	95%CI	Unadjusted	95%CI	Adjusted*	95%CI
Hospital Caseload												
Low			1				1				1	
High		0.606 (0.24-1.52)		0.717 (0.28-1.82)	0.883	(0.35-2.21)		0.936 (0.37-2.36)	1.838	(0.76-4.47)		1.826 (0.75-4.47)
Interval from basic to advance license												
<5 year		1		1		1		1		1		1
≥5 year		12.248 (1.64-92.81)		11.850 (1.57-89.35)	1.669	(0.59-4.70)		1.655 (0.58-4.69)	0.877	(0.35-2.17)		0.949 (0.38-2.37)

^aType of surgery: no surgery, local excision, total excision, radical excision, and extended excision. ^bRegiment of chemotherapy: no chemotherapy, single chemotherapy, multiple chemotherapy, trans-arterial hepatic arterial chemotherapy (TACE), Haddler intravesical instillation, and not done for specific reason. ^cTarget of radiotherapy: no radiotherapy, primary-site radiotherapy, primary-site and regional lymph node radiotherapy, and others. *Adjusted: Hospital Caseload and Interval from basic to advance license.

Table 2 | The accuracy in type of surgery, regiment of chemotherapy and target of radiotherapy in Taiwan Cancer Registry in 2013 (N=392)

Characteristics	Type of Surgery ^a		Regiment of Chemotherapy ^b		Target of Radiotherapy ^c	
	Accuracy (n)	Accuracy Rate(%)	Accuracy (n)	Accuracy Rate(%)	Accuracy (n)	Accuracy Rate(%)
Total	370	94.4	372	94.9	371	94.6
Age						
≤49	62	96.9	61	95.3	63	98.4
50-64	130	94.9	134	97.8	127	92.7
≥65	178	93.2	177	92.7	181	94.8
Stages						
Stage I-II	126	94.7	128	96.2	126	94.7
Stage III-IV	190	95.0	191	95.5	188	94.0
Unknown	54	91.5	53	89.8	57	96.6
Hospital Caseload						
Low	209	93.3	212	94.6	215	96.0
High	161	95.8	160	95.2	156	92.9
Hospital Location						
North	131	93.6	133	95.0	129	92.1
Central	111	99.1	104	92.9	106	94.6
South	75	89.3	80	95.2	81	96.4
East	53	94.6	55	98.2	55	98.2
Volume per registrar (2012-2014)						
Low volume	106	95.5	108	97.3	108	97.3
High volume	264	94.0	264	94.0	263	93.6
Interval from basic to advance license						
<5 year	137	99.3	133	96.4	130	94.2
≥5 year	233	91.7	239	94.1	241	94.9

^aType of surgery: no surgery, local excision, total excision, radical excision, and extended excision. ^bRegiment of chemotherapy: no chemotherapy, single chemotherapy, multiple chemotherapy, trans-arterial hepatic arterial chemotherapy (TACE), Haddler intravesical instillation, and not done for specific reason. ^cTarget of radiotherapy: no radiotherapy, primary-site radiotherapy, primary-site and regional lymph node radiotherapy, and others.