functional and technological sophistication as computerised for each of the three countries. For integration sophistication, the means of the items in each section was calculated and tabulated for the Japanese hospitals.

3. Results

3.1 Organisational characteristics of the hospitals

A total of 41 hospitals responded to the survey, with a response rate of 59.4%. There were no significant differences between the responding hospitals and the non-responding hospitals according to ownership, number of beds, age of systems, bed category and hospital category (Table 1). No other information was available on the characteristics of the non-responding hospitals.

When the responding hospitals were compared to the original random sample of 350 hospitals, no differences were observed on organisational characteristics (Table 2).

Responding hospitals included 3 (7.3%) university-affiliated; 5 (12.2%) governmental; 5 (12.2%) semi-governmental; and 28 (68.3%) private hospitals. Survey respondents were mainly computer scientists (48%), with IT management experience ranging from 0 years to 25 years and a median of 7.0 years. Comparison of small hospitals and large hospitals showed no significant differences except on the number of years the CIO has worked in the current hospital and the budget (both total hospital budget and IT budget) (Table 3). Respondents from large hospitals reported to have worked longer in their respective hospitals than the respondents from small hospitals.

3.2 Instrument Properties

The reliability of the questionnaire was assessed and the results were compared to the findings reported by Paré and Sicotte [13] and Jaana et al. [14]. Reliability was measured using

Variable	Small hospitals (n = 20)	Large hospitals (n = 21)	p-values
Ownership			.267
University-affiliated	0 (0)	3 (14.3)	
Governmental	2 (10)	3 (14.3)	
Semi-governmental	2 (10)	3 (14.3)	
Private	16 (100)	12 (57.1)	
Hospital category (5 missing data)			.906
Acute	15 (88.2)	17 (89.5)	
Long-term (chronic)	2 (11.8)	2 (10.5)	
CIO's field of specialisation*			
Computer scientist	11 (45.8)	13 (50.0)	
Administrator	8 (33.3)	7 (26.9)	
MIS	1 (4.2)	4 (15.4)	
Health manager	1 (4.2)	1 (3.8)	
Others	3 (12.5)	1 (3.8)	
Experience in current function (years)			0.652
Median	3.0	3.0	
Range	8.0	11.2	
Experience in current hospital (years)			0.033
Median	6.0	10.5	
Range	29.0	31.0	
Experience in IT (years)			0.419
Median	9.0	7.0	
Range	22.0	25.0	
Annual hospital budget (M$)			0.010
Median	170.0	1059.0	
Range	72.0	200.0	
Annual IT budget (M$)			0.008
Median	1.2	23.0	
Range	0.2	1.7	

Table 3: General characteristics of the responding hospitals. * *Multiple answers accepted.*

Cronbach alpha coefficients of internal consistency of the measures. Table 4 presents the results obtained from the sample hospitals in Japan, State of Iowa in the US, and Canada, based on the questions included in the survey. "Patient care" combines the questions related to patient management and patient care activities from the original instrument [13]. The number of items in each cell, used for the calculation of the *alpha* coefficients, is different for the three samples since the instrument was modified computerised. The most frequent clinical IT application process used in small hospitals was patient index, while the least frequent application processes used in small hospitals were materials (tools) management and case costing. On the other hand, outpatient admissions, patient-index, results capturing (from analysers) were the most frequent processes being used in large hospitals, while the least frequent application process used in large hospitals was case costing.

Overall, the data from our research

	Patient care			Clinical support activities			Overall dimension		
	Japan	Iowa [a]	Canada [b]	Japan	Iowa [a]	Canada [b]	Japan	Iowa [a]	Canada [b]
Functional sophistication	0.87 (32)[†]	0.91 (35)	0.84 (33)	0.87 (21)	0.91 (21)	0.84 (21)	0.91 (53)	0.95 (56)	0.91 (54)
Technological sophistication	0.75 (24)	0.86 (24)	0.79 (24)	0.84 (13)	0.84 (13)	0.83 (13)	0.80 (37)	0.91 (37)	0.88 (37)
Integration sophistication	0.83 (10)	0.93 (10)	0.86 (10)	0.78 (6)	0.84 (6)	0.84 (6)	0.83 (16)	0.94 (16)	0.89 (16)
Overall sophistication							0.91 (106)	0.97 (109)	0.94 (107)

Table 4: Comparison of internal reliability (Cronbach's Alpha) in Japan, Iowa USA and Canada hospitals.
[†] the values in parentheses are the number of items in the survey instrument for the corresponding clinical section. [a] From reference [14]; [b] From reference [13].

cal sophistication. The application and connectivity technology most used was electronic reporting of test results to medical units and local area networks (LAN), respectively. Of the 18 application technologies listed in the survey, only four technologies were available in more than 75% of the sample hospitals. Three application technologies were available in less than 10% of the sample hospitals. Of the connectivity technologies, none of the sample hospitals was using microwave connections and fewer than 10% use in some instances to reflect the practice in Japan without affecting the substance of the instrument. The *alphas* were all above 0.70 levels acceptable for social research.

3.3 Functional sophistication in Japan

Table 5 presents variables measuring the extent of functional sophistication in a hospital. Nearly three fourths of hospitals surveyed in Japan use computer systems in twelve of the listed variables for functional sophistication. The least computerised process among the hospitals surveyed was case costing in the operating room, with only one hospital indicating to have computerised this process. The data also show that the least computerised section was operating room (OR) where only one process (operations booking) was reported by more than half of the sample hospitals as reveal that no significant differences exist between small and large hospitals in terms of *functional sophistication* (t = -1.891; P = 0.066). However, of the variables in the functional sophistication, significant differences between small and large hospitals were noted in five of these variables. These processes were: materials (tools) management (Cramer's V = 0.513; p-value 0.001), anaesthetic notes recording (Cramer's V = 0.488, p-value = 0.002), historical drug information storage (Cramer's V = 0.513, p-value = 0.001), making out refill reports (Cramer's V = 0.350, p-value = 0.025) and label generation (Cramer's V = 0.516, p-value 0.001), were more likely to be computerised in large hospitals than in small hospitals.

3.4 Technological sophistication in Japan

Table 6 presents variables measuring the extent of use of a wide range of technologies in a hospital, technologisatellite connections and infrared connections. None of the small hospitals were using telemedicine for evaluation and triage purposes, bar coding and voice recognition systems for notes transcription in operation room. On the other hand, none of the large hospitals were using expert systems.

Our analysis reveals that technological sophistication was higher in large hospitals than small hospitals (t = -2.080; P = 0.044). Out of the 18 variables, significant differences between small and large hospitals were noted in only three variables, namely connection to external databases (Cramer's V = 0.336, p-value 0.031); bar coding to track tools (Cramer's V = 0.369, p-value 0.023); and telemedicine for results capturing and interpretation (Cramer's V = 0.327, p-value 0.036). In all these technologies, large hospitals were more likely to report use of these technologies than small hospitals. In the connectivity technologies variables, only two variables showed significant dif-

Variable	Small (n = 20)	Large (n = 21)	Japan (n=41)	p-Value
Patient management				
Inpatient pre-admissions	60.0	57.1	58.5	.853
Outpatient admissions	90.0	100.0	95.1	.137
Bed availability estimation	55.0	66.7	61.0	.444
Patient-index	100.0	100.0	100.0	-
Patient care (MD)				
Discharge summary	85.0	81.0	82.9	.731
Face sheet	55.0	76.2	65.9	.153
Patient care (RN)				
Medication administration	60.0	42.9	51.2	.272
Historical record keeping	80.0	66.5	73.2	.335
Vital signs recording	25.0	33.3	29.3	.558
Quality assurance	30.0	9.5	19.5	.098
Nursing flowsheet	95.0	90.5	92.7	.578
Patient care (ER)				
Results reporting	89.5	85.7	87.5	.720
Registrations and admissions	84.2	85.7	85.0	.894
Patient inflow, waiting time, crowding	36.8	57.1	47.5	.199
Patient data collection (consultations, tests)	73.7	76.2	75.0	.855
Physician orders transcriptions	26.3	38.1	32.5	.427
Patient care (OR)				
Operations booking	63.2	81.1	72.5	.208
Staff scheduling	21.1	28.6	25.0	.583
Materials (tools) management	0.0	42.9	22.5	.001
Case costing	0.0	4.8	2.5	.335
Anesthetic notes recording	10.5	57.1	35.0	.002
Clinical support (pharmacy)				
Medication administration	75.0	76.2	75.6	.929
Patient drug profile lookup	25.0	38.1	31.7	.368
Historical drug information storage	30.0	81.0	56.1	.001
Making out refill reports	15.0	47.6	31.7	.025
Drug interaction checking	85.0	81.0	82.9	.731
Clinical support (laboratories)				
Recurring tests management	40.0	47.6	43.9	.623
Specimen archiving	75.0	90.5	82.9	.188
Blood bank management	25.0	47.6	36.6	.133
Results capturing (from analysers)	85.0	100.0	92.7	.065
Clinical support (radiology)				
Label generation	20.0	71.4	46.3	.001
Results capturing and validation	75.0	81.0	78.0	.645

Table 5: Comparison of functional IT sophistication in Japanese hospitals.

ferences between small and large hospitals. These were; use of modems (Cramer's V = 0.372, p-value 0.017) and use of fibre optics (Cramer's V = 0.337, p-value 0.031). Large hospitals were more likely to report use of these technologies than small hospitals.

3.5 Integration sophistication in Japan

Integration level is the extent to which internal and external systems/ applications are integrated to each other in a hospital and is measured on 7-point Likert scale ranging from "not at all" to "very much". No statistical tests of significance were done for the sample of hospitals in Japan as was also the case in the studies in Canada [13] and the US [14] using the same instrument. However, as Table 7 shows, the level of integration was all above the midpoint (3.5) in all the four

Variable	Small (n = 20)	Large (n = 21)	Japan (n=41)	p-value
Patient management				
Telemedicine for transmission of diagnostics	20.0	19.0	19.5	.939
Telemedicine for evaluation and triage purposes	0.0	5.0	2.5	.311
Expert systems	5.0	0.0	2.4	.300
Voice recognition systems	15.0	23.8	19.5	.477
Connection to external databases	20.0	52.4	36.6	.031
Patient care (RN & ER)				
PCs or workstations at the bedside	90.0	90.5	90.2	.959
Patient care (OR)				
Bar coding to track tools	0.0	25.0	13.2	.023
Real-time monitoring and reporting of operations' stages	22.2	40.0	31.6	.239
Voice recognition systems for notes transcription	0.0	4.8	2.6	.348
Portable devices for data input	11.1	15.0	13.2	.723
Dictation systems for post-operative reports	16.7	20.0	18.4	.791
Clinical support (pharmacy)				
EDI links to medication suppliers	36.8	33.3	35.0	.816
Electronic requisition for medications from clinical units	95.0	100.0	97.6	.300
Clinical support (laboratories)				
Bar coding to track specimen	80.0	95.2	87.8	.136
Electronic reporting of tests results to medical units	100.0	100.0	100.0	-
Clinical support (radiology				
PACS	68.4	76.2	72.5	.586
Voice recognition system for results transcription	10.0	30.0	20.0	.114
Telemedicine for results capturing and interpretation	10.0	38.1	24.4	.036
Connectivity technologies				
Use of Fax	60.0	81.0	70.7	.141
Use of Modem	25.0	61.9	43.9	.017
Use of Fiber optics	55.0	85.7	70.1	.031
LAN	100.0	100.0	100.0	-
WAN	10.0	28.6	19.5	.134
Microwave connections	0.0	0.0	0.0	-
Satellite connections	0.0	4.8	2.4	.323
Infrared	0.0	4.8	2.4	.323
Wireless connections	75.0	81.0	78.0	.645
Website	100.0	95.2	97.6	.323

Table 6: Comparison of technological IT sophistication in Japanese hospitals.

variables measuring integration level, indicating higher integration sophistication of the clinical IT systems in the sample hospitals.

3.6 Benchmarking

The percent of hospitals within a country that reported each of the listed variables to be available was charted for each of the functional and technological sophistication. Figure 1 demonstrates the variability in the clinical IT sophistication between the three countries. In Japan, 19 of the 32 variables measuring functional sophistication were available in at least 50% of the sample hospitals in Japan, compared to 17 and 12 variables which were available in at least 50% the sample hospitals in Canada and State of Iowa in the US, respectively. On the hand, 10 of the 28 variables measuring technological sophistication were being used in at least 50% of the sample hospitals in Japan compared to 8 and 12 in at least 50% of sample hospitals in Canada and State of Iowa in the US respectively.

4. Discussion

This report presents clinical IT sophistications across a sample of hospitals in Japan. The study was part

Variable	Mean of integration level		
	Small (n=20)	Large (n=21)	Japan (n=41)
[Patient management]			
Integration among patient management applications	5.5	5.8	5.6
Integration of patient management systems to other applications	5.1	5.8	5.5
[Patient care]			
Integration between patient care systems and external entities' computerised systems (clinics, other hospitals)	4.0	3.6	3.8
Integration of ER applications	5.1	5.2	5.2

Table 7: Comparison of IT integration level in Japanese hospitals.
Scale 1-7, "not at all" to "very much".

of an ongoing nationwide longitudinal study whose aim is to evaluate the improvement of the quality of the healthcare services as a result of the introduction of EMR systems. In order to understand the effect of the introduction of clinical IT systems (including EMR systems), it is important that one is able to characterise clinical IT and identify parts which corresponds to the systems' units that would facilitate the utilisation of these systems. Therefore this study was intended to characterise clinical IT sophistication among the Japanese hospitals and to evaluate whether the IT sophistication varies significantly among the small and large hospitals

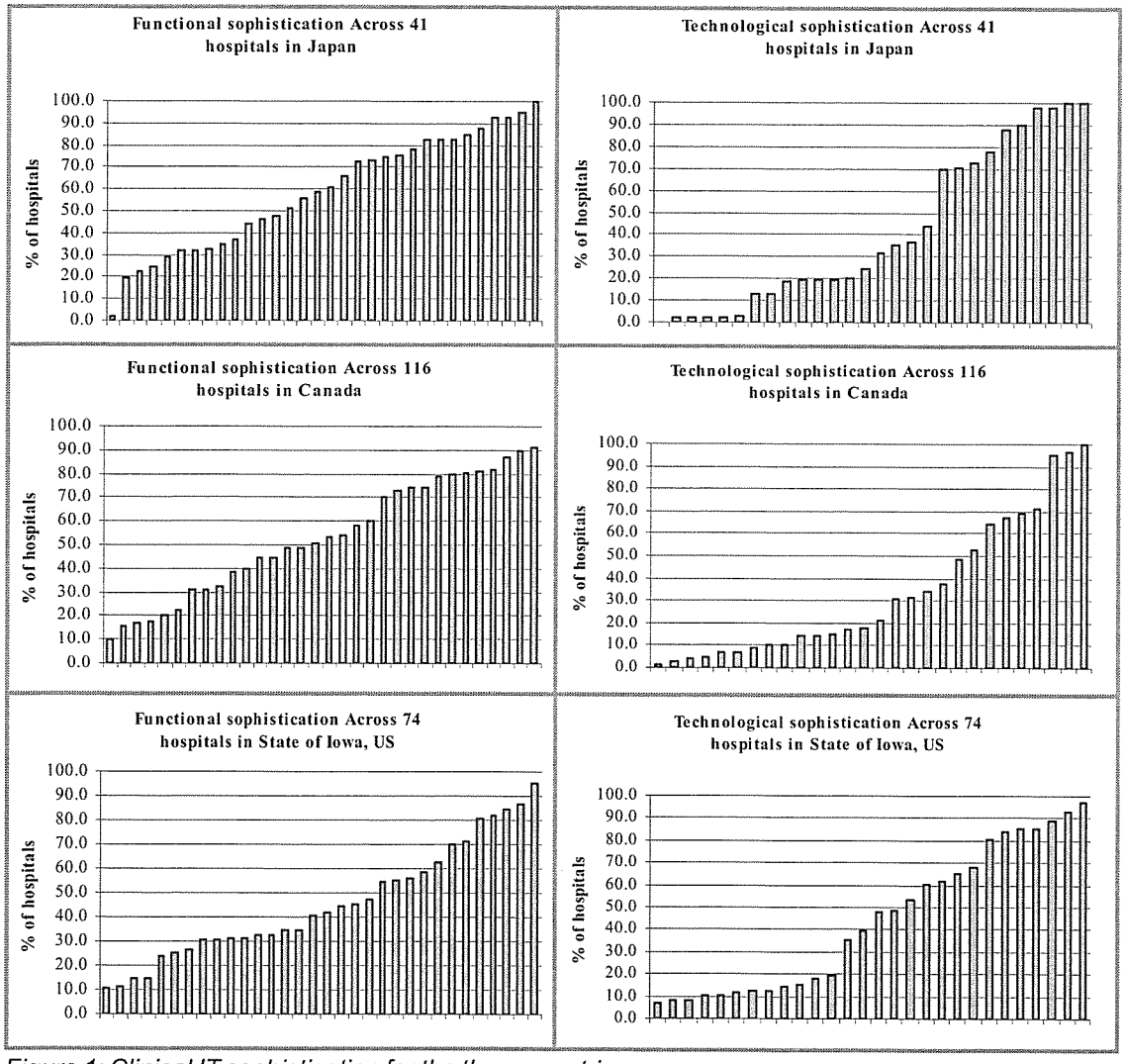

Figure 1: Clinical IT sophistication for the three countries.
Note: % hospitals are computed as the number of hospitals within a country who answered yes to the variables in the survey; Data for Canada and state of Iowa in the US were obtained from Reference [13] and [14] respectively.

surveyed. The response rate was only 12% of the original targeted random sample of 350 hospitals. But the responding hospitals did not differ from the non-responding hospitals on organisational characteristics. We used a measurement instrument that has been validated in both Iowa in the US and Canada. We translated the instrument into Japanese and modified some variables in the instrument, but this did not affect the reliability of the instrument as is exhibited in Table 4. Our Cronbach's alphas were somewhat lower than the ones found in the two previous studies. We suspect that the low *Alphas* obtained in this study could have resulted from the nature of the sample hospitals, which were already having some form of computer-based applications thus restricting variability in the scores. In general, all the alphas were well above the commonly accepted threshold level of 0.70, confirming that the results are reliable measures of clinical IT sophistication in the sample hospitals.

4.1 Functional sophistication

Overall, functional clinical IT sophistication did not vary significantly between small and large hospitals. Nevertheless, some differences existed between the hospitals in the two categories as shown in Table 4. Materials (tools) management for operation, anaesthetic notes recording, historical drug information storage, refill reports making in pharmacy and label generation in radiology were supported by computer-based application in larger proportion of large hospitals than small hospitals. The fact that large hospitals were more computerised on these variables could be attributed to the fact that large hospitals tend to see more patients than small ones. For example, none of the small hospitals reported materials (tools) management in operation room to be computerised. Small hospitals see fewer and less complex cases than large hospitals and therefore tools tracking in the operating room can easily be managed manually. Similarly, anaesthetic notes recording, historical drug information storage, and making out drug refill reports in the pharmacy and label generation for radiology are not common in small hospitals due probably to the workload available in such hospitals. Moreover, large hospitals had significantly higher total hospital budget and IT budget than the small ones (Table 3), a fact that could be enhancing computerisation in the large hospitals. However, as the trend elsewhere [17], most basic processes for patients' registration and admission have been computerised in large proportions across the sample hospitals. Particularly, processes in patient management and patient care were computerised in more than half of the sample hospitals. In all the clinical sections, processes and activities in the operating room were the least computerised.

It is noteworthy that all the sample hospitals had patient index computerised. This is a significant step in the implementation of computer-based applications in healthcare. The patient index if integrated to all other departments can form the first building block for expansion of the computer-based applications including but not limited to decision support systems.

4.2 Technological sophistication

Technological sophistication was significantly higher in large hospitals than small hospitals. On further inspection, differences between the proportion of small and large hospitals (Table 6) were noted in three of the 18 variables measuring technological sophistication. A larger proportion of large hospitals were having connection to external databases, bar coding to track tools and telemedicine for results capturing compared to small hospitals. Overall, the proportions of hospitals with technologies were limited. Satisfactory technological sophistication (over 50% of the hospitals) was only observed in five variables namely, PCs or workstations at the bedside, electronic requisition for medications from clinical units, bar coding in laboratories and use of picture archiving systems (PACS) in radiology. As shown in Table 6, availability of many of the technologies in sample hospitals was very low to almost nonexistent. Telemedicine for evaluation and triage purposes, expert systems and voice recognition systems for notes transcription were only available in less than 5% of sample hospitals. Some of the technologies that can improve patient safety (e.g. bar coding in operating room), and facilitate the care process (e.g. portable devices for data input) have not been implemented by a large number of sample hospitals. However, many of the sample hospitals have implemented technologies such as computerised physician order entry (CPOE) systems for drug requisitions, tests orders and results viewing which if incorporated with decision-making capabilities, can greatly reduce medical errors [18]. The use of CPOE should be carefully monitored and evaluated to avoid introduction of unintended medication errors [19]. The study also show that, apart from PACS system which is available in a large proportion of the sample hospitals, complex advanced technologies such as expert systems, voice recognition systems, dictation for post-operative reports and telemedicine remains low in the sample hospitals. We suspect that low adoption of these technologies could be due to large budgets required in implementing them. And since majority of the sample hospitals were mainly private hospitals (Table 2) that rarely receive grants from government, their adoption is constrained by the finances required to implement these technologies.

A majority of the sample hospitals in Japan are already having simple connectivity technologies (e.g. fax, LAN, fibre optics, wireless connections and websites) (Table 6). However, more advanced technologies such as microwave, satellite connections and infrared are almost nonexistent. We suspect that the low adoption of the more advanced connectivity technologies could be related to issues of maintaining security of data and the budget required to implement such connectivity technologies.

4.3 Integration sophistication

On a scale ranging from 1-7, "not at all" to "very much", the level of integration of the clinical sections were all above 5 (Table 7) except the integration between patient care systems and external entities' systems. This is consistent with the fact that WAN are not as common in the sample hospitals as LAN (Table 6). Healthcare in Japan is not characterised by integrated delivery networks (IDNS) such as the ones seen in the US [20] and therefore use of WAN is not common in Japan. In Japan, even in instances where some institutions have branches spread across the country (e.g. The Red Cross group of hospitals), each branch operate as an independent entity and does not share clinical data with any other branch. The high integration level found in this study was only within institutions (internal integration) rather than between institutions. This did not come as a surprise given that most of the hospitals surveyed were already using some form of computer-based applications. With the international standards (such as HL7) being adhered to by hardware and software developers, it has become much easier for systems within an institution to be integrated. Moreover, integration of systems within a single institution is much easier to implement as the number of stakeholders, especially the leader of the institution (the president of the hospital amongst others) can be easily convinced to take up integrated systems. It is much more difficult to integrated geographically dispersed institutions (external integration) with many stakeholders, each with a different opinion and view of patient data security across institutions. No wonder therefore that the overall level of external integration among the hospitals in Japan was only 3.8 (Table 7).

4.4 Benchmarking data

The benchmarking comparison made in this report is based on the results of the comprehensive analysis of clinical functional sophistication and technological sophistication from data collected at different points (in time) in three countries -Japan, the US and Canada. The results are reported here in as far as they can elucidate the extent clinical IT sophistication in Japan compares to those of Canada and the US. No statistical tests were done due to the following reasons: First, in Japan we deliberately invited hospitals that were already having some form of computer-based processes and activities, unlike in the US and Canada where all hospitals regardless of their computerisation status were invited. This was likely to exaggerate the level of clinical IT sophistication in the sample hospitals in Japan. This approach was adopted purposefully to use the group that has adopted clinical information technology systems to convince other hospitals of the value of these systems. Secondly, the study in the US and Canada did not report the IT maturity level of the sample hospitals; we could not therefore determine whether the hospitals in the three countries are similar in terms of their IT maturity status. Above all, the data for the three studies were collected at different points of time, i.e. Canada (2001), the state o f Iowa in the US (2002) and Japan (2006). These results may not be reflecting the current level of clinical sophistication in Canada and the state o f Iowa in the US.

However, though the charts (Fig 1) reveal a similar trend between the three countries, a closer look suggests that some differences in the pattern of adoption exist between the three countries. Japan showed a rather higher level of functional clinical IT sophistication than Canada and the US. Based on the individual variables measuring functional clinical IT sophistication, 19 (59.4%) of the variables were reported by more than half of the sample hospitals in Japan compared to 17 (53.1%) in Canada and 12 (37.5%) in the US. Even though our sample was biased, contrary to our expectation, we did not see a much higher functional sophistication as compared to Canada and the US. On a hierarchical scale ranging from "1" (only departmental systems without any integration at all) to "5" (longitudinal collection of personal health information with systems integrated across healthcare facilities) [15], most of the sample hospitals (56.0% [data not shown]) in Japan reported their IT maturity to be at level "3" (System that captures and stores significant data about clinical encounter with an institution-wide network has been implemented). The results clearly demonstrate that functional clinical IT sophistication remains limited even in hospitals that have adopted computer-based systems.

Technological sophistication appears to be higher in Japan than Canada but lower than the US. However, less than half of the variables measuring technological sophistication were reported by at least 50% of the sample hospitals in the three countries.

A detailed discussion between the survey in the state of Iowa in the US and Canada has been reported by Jaana et. al. [14].

4.5 Limitations

Several limitations concerning this study are worth mentioning. First, even though our sample of 42 hospitals did not differ on organisational characteristics from the original random sample of 350 hospitals, the response rate was very low (12%) that is likely to limit the extent the results could be generalised to the original 350 hospitals. Secondly, the Japanese version of the instrument used in this study was not fully validated through a rigorous measurement study [21]. However, the result of the internal consistency analysis revealed acceptable level of Cronbach's alphas (Table 4). Finally, this study uses both primary and secondary data collected at different points in time between three countries. Therefore to what extent the conclusion can be drawn regarding the level of IT sophistication between the three countries remains limited: the hospitals could be different and the respondents could also have interpreted the concepts in the instrument differently. However, we tried to maintain the original meaning of the items through review of health informatics experts. Furthermore, the majority of our respondents were computer scientists as was the case in the Canada survey, giv-

ing us confidence that the respondents could be having the same interpretation of the concepts in the survey. Lastly, in reporting integration sophistication, mean scores were used. This is not methodologically sound in statistical sense [22]. However, this approach was adopted to be consistent with the reporting of results of the study in Canada [13] and the US [14] from which we drew our secondary data.

5. Conclusion

To the best of our knowledge, this is the first research reporting on the clinical IT sophistication profile in Japanese hospitals to the international medical informatics community. This study suggests that clinical IT sophistication remains limited and variable across the clinical areas. As the profile reflects, majority of the already computerised processes and activities (and the accompanying technology to support them) are relatively basic and simple to implement. Due to complex nature of healthcare, the tendency has always been to computerise order entry processes and admission procedure first [23] before implementing advanced procedure such as telemedicine for consultations, expert systems etc. And since the mean age of the program (systems) for the sample hospitals was about 3.7 years, these hospitals might still be at the initial stage of computerisation. As time goes on, we believe the hospitals are likely to expand the current systems by adding more advanced modules.

The Japanese Government policy targeting hospitals with 400 beds or more to computerise patient records by 2006 was based on the fact that large hospitals have resources and infrastructure necessary to implement computerised systems. Overall, this view was only supported on the technological dimension of clinical IT sophistication in the sample hospitals. The results suggest that even large hospitals have not been able to meet the target and may require extra incentives and motivation to implement more advanced systems.

The extent of clinical IT sophistication across countries is an important contribution and input to policy-making. We made an attempt to benchmark our results to other better-performing countries as a way of measuring outcome of policies, and monitoring progress in clinical IT diffusion. Using a standard selection of indicators, our results show that the extent of clinical IT sophistication is yet to reach 'saturation level' (the state where all patient-related activities and processes in hospital are done using computers in a paperless environment) even in hospitals that could be classified as "adopters". Though many hospitals in this study are moving towards the 'saturation level', it will take some time for hospitals to be fully paperless [24, 25]. To this end, this report has provided straightforward evidence as an essential input to policy analysis.

In summary, the results demonstrated that there exists substantial room for expanding clinical IT systems in hospitals.

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診療部長用

病院における電子カルテシステム化と
電子カルテシステム利用状況に関するアンケート調査

お問い合わせ先

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アンケート調査にご協力いただく診療部長の皆様へ

このアンケート調査は、平成１８年度厚生労働科学研究費補助金（医療安全・医療技術評価総合研究事業）「電子カルテシステム導入が診療記録の質に与えた影響と、その結果としての医療の質の改善の評価に関する研究（１７―医療―０３８）」において、電子カルテシステムの利用状況をより良く把握することを目的としております。

本アンケート調査から得えられた結果は、本研究の目的の為に統計的な分析に利用致します。また、貴病院殿における電子カルテシステムに関しての皆様の忌憚のないご意見、ご感想を反映することにより、この調査結果をより有効なものに致したいと存じます。何卒、皆様方のご協力をよろしくお願いいたします。

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貴病院殿のコンピュータによる電子カルテシステムの現状あるいはご意見に最も適した箇所に○印にてご回答いただきたくお願いいたします。

ご回答いただきましたアンケート用紙は、貴病院殿の当アンケート調査のご担当窓口の方にお手渡しいただきたくお願いいたします。

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＊必ずご記入下さい！

記入開始日時	記入終了日時
平成１８年　　月　　日　　時　　分	平成１８年　　月　　日　　時　　分

＊本アンケートは、国際医療福祉大学 大学院 医療福祉経営学分野 保健医療学専攻 博士課程在学のジョージO.オティエノ君（指導教授：外山 比南子及び阿曽沼元博）によって作成されたものを基本に構成されています。本アンケート調査の結果は、厚生科研の研究発表の他、彼の博士論文としても利用することをご承諾下さい。なお、本件は国際医療福祉大学における倫理委員会での承認事項であることを申し添えます。

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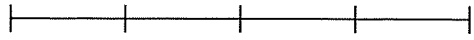
□ の回答欄にはチェック（レ）印 ☑

 の回答欄には目盛り上に丸(○)印

1. 貴病院では以下の職務において電子カルテシステムの支援がありますか?（電子カルテシステムの機能として具備されていますか？）	はい	いいえ	わからない
患者の診療記録の入力	□	□	□
病歴の閲覧	□	□	□
薬の禁忌（アレルギー反応、薬剤間、病気）に対する注意事項のワーニング	□	□	□
患者診療支援のための人工知能・エキスパートシステムの利用	□	□	□
問題リスト（または看護診断リスト）の閲覧	□	□	□
薬剤の処方指示	□	□	□
アナムネーゼの記録(例：診断結果、外来・入院・救急等)	□	□	□
患者の健康改善指導に関する記録の作成	□	□	□
薬の副作用についての既往歴	□	□	□
個々の医師が独自に必要とする患者データのグラフ表示	□	□	□
部門として必要とする総合的な患者データのグラフ式シート（熱型表など）	□	□	□
遠隔地医療機関よりの貴病院の電子カルテシステムへのアクセス	□	□	□
患者指導用資料の作成	□	□	□

2. 貴病院では以下に挙げた医師の指示は、電子カルテシステムを通して関係する部門に直接伝えられますか?	はい	いいえ	わからない
経口与薬	□	□	□
静脈内注射	□	□	□
点滴静脈内注射	□	□	□
輸血	□	□	□
化学療法(抗がん剤)	□	□	□
非経口的栄養法	□	□	□
病理組織検査	□	□	□
X線検査	□	□	□
核医学検査	□	□	□
心臓病学的検査（循環機能検査）	□	□	□
呼吸機能検査	□	□	□
神経機能検査（脳波・筋電図）	□	□	□
専門的治療（癌放射線治療など）	□	□	□
転科サマリ	□	□	□

3. 貴病院では、以下の検査結果を医師が電子カルテシステムを通して利用可能ですか?

	はい	いいえ	わからない
一般検査結果	☐	☐	☐
血液検査結果	☐	☐	☐
病理検査、診断結果	☐	☐	☐
病理組織標本(画像)	☐	☐	☐
細胞診、診断結果	☐	☐	☐
細胞診、塗抹標本	☐	☐	☐
微生物検査結果	☐	☐	☐
X線検査結果	☐	☐	☐
X線撮影フィルム(画像)	☐	☐	☐
CT 画像	☐	☐	☐
MRI 画像	☐	☐	☐
超音波画像	☐	☐	☐
核医学診断結果	☐	☐	☐
核医学診断画像（シンチグラム等の画像フィルム）	☐	☐	☐
心電図 (ECG)の診断結果	C	☐	☐
心電図 (ECG) グラフ	☐	☐	☐
血管造影 や超音波心臓検査結果の記録	☐	☐	☐
血管造影や超音波心臓検査の画像	☐	☐	☐
呼吸機能診断結果	☐	☐	☐
呼吸機能診断結果の波形グラフ	☐	☐	☐
脳波検査 (EEG) の診断結果	☐	☐	☐
脳波検査(EMG) の診断結果グラフ	☐	☐	☐

4. あなた自身のことについてお聞きします

貴病院での職位は何ですか？: _____

現在の職位になって何年経ちますか？: _____年

現在の病院に勤務されて何年経ちますか？: _____年

フリーコメント欄

＊電子カルテシステムが医療の質の向上や患者安全性の向上に貢献しているかなど、
ご意見があればご自由にお書き下さい。

＊貴病院の電子カルテシステムの利活用の価値を向上させる為に、ご自身で、または病院独自で（ベンダー提供システム以外で）開発されたツール（Excel や Access 等のツールも含む）があれば、簡単な利用状況をお教え下さい！

お忙しいところ、ご協力いただきありがとうございました。

以　上

医師用

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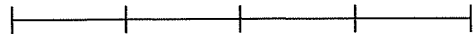
の回答欄には目盛り上に丸(○)印

5. 下記の行為を行うとき、どの程度の頻度でパソコン（電子カルテシステム）を使用しますか？

	全く・殆んど無い 1	まれに 2	半々程度 3	ほぼ常時 4	常時 5	不明
患者の病状のレビュー						□
病院情報システムから特定の情報を検索						□
毎日の診療記録の作成						□
検査・処置の情報取得						□
医学的情報の取得（処置、症状、合併症等）						□
特定の患者グループに関するデータの作成（合併症併発率、診断等）						□
臨床検査・画像撮影の指示						□
新しく検査した結果の取得						□
患者の他診療科または専門医への紹介						□
投薬指示（注射、投薬）						□
禁忌情報のチェック（アレルギー、副作用等の警告）						□
処方箋作成						□
診断書作成						□
患者への説明文書の作成（入院診療計画書、薬剤の服用法、病状について等）						□
患者サマリの情報収集						□
口述記録のチェックと署名						□
病状と薬剤の禁忌事項の警告						□

6. 貴病院の電子カルテシステムの質について

	全く・殆ど無い 1	まれに 2	半々程度 3	ほぼ常時 4	常時 5	不明
あなたが必要とする内容の情報を提供してくれますか？						□
システムから得た情報の内容が、必要としていた内容とどの程度一致していましたか？						□
システムは、必要としていたものと同じサマリを提供しましたか？						□
内容・量的に充分な情報を提供しましたか？						□
正確な情報はどの程度得られましたか？						□
情報の正確性について、どの程度満足していますか？						□
情報が役に立つ形式でどの程度提供されましたか？						□
どの程度、情報は明確であると感じましたか？						□
使用し易いシステムだとどの程度感じましたか？						□
どの程度頻繁に、必要とする情報を必要とする時に得られましたか？						□
どの程度頻繁に、最新の情報を得ましたか						□

電子カルテシステムが使用できない時が度々ありますか？ □

電子カルテシステムが故障することが度々ありますか？ □

7. 貴病院に関して、下記事項についてどのように思われますか？:

	全く	少し	まあまあ	多く	大変多く	不明
	1	2	3	4	5	
コンピュータによる電子カルテシステムは役立つと思いますか?						□
電子カルテシステムの講習を受けましたか？						□
あなたは、診療行為への電子カルテシステムの利用は危険であると思いますか？						□
コンピュータ機能の不足が電子カルテシステムの利用を阻害していると思いますか？						□
医師が使用できるパソコンの数は充分と思いますか？						□
電子カルテシステムを用いた資料の作成は、あなたの診療行為の中に組み込まれていますか？						□
電子カルテシステムにより、あなたの業務効率が改善されたと思いますか？						□
電子カルテシステムにより、あなたの業務の質が向上したと思いますか？						□
電子カルテシステムを使用するため、その習得に時間を割いたり、努力する価値はあると思いますか？						□
電子カルテシステムは診療の質を高めると思いますか？						□
電子カルテシステムは診療録の情報の質を高めると思いますか？						□
電子カルテシステムは患者安全の確保に寄与できると思いますか？						□
あなたは電子カルテシステムの一部変更を依頼する場合の手続きを知っていますか？						□
貴病院の電子カルテシステムの導入は成功していると思いますか？						□
電子カルテシステムは貴病院にとって重要なものだと思いますか？						□
総合的に見て、貴病院の電子カルテシステムは満足できるものだと思いますか？						□

8. あなた自身についてお伺いいたします。

性別　　□男　　□女

該当する年齢層の箇所にチェックしてください。

□	□	□	□	□	□
20-29 才	30-39 才	40-49 才	50-59 才	60-69 才	70 才以上

貴病院に何年間お勤めですか？　　＿＿＿＿年

あなたの職種にチェックをご記入ください

□ 医師　　□ 研修医:

フリーコメント欄

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以　上

看護部長

病院における電子カルテシステム化と電子カルテシステム利用状況に関するアンケート調査

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