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Investigators	<p><u>Oncologist:</u></p> <ol style="list-style-type: none"> 1. Dato Dr Ibrahim A. Wahid 2. Dr Jayendran s/o Dharmaratnam 3. Dr Ho Kean Fatt 4. Dr Kananathan s/o Ratnavelu 5. Dr Gerard Lim Chin Chye 6. Dr. Matin Mellor Abdullah, Dr. Ahmad Kamal Mohamed & Dr. Foo Yoke Ching 7. Dr. Leong Kin Wah <p><u>Breast surgeon:</u></p> <ol style="list-style-type: none"> 1. Dr Nor Aina Emran 2. Prof Dr Yip Cheng Har <p><u>Pathologist:</u></p> <ol style="list-style-type: none"> 1. Dato Dr Norain Karim 2. Dr Arni Talib 3. Dr Jacqueline Wong Oy Leng 4. Dr Wan Anna Md Amin 5. Dr Zakaria Jusoh 6. Dr Faizah Bt Ahmad 7. Dr Pathmanathan s/o Rajadurai 	
	<p><u>Institution:</u></p> <p>Beacon International Specialist Centre Mahkota Medical Centre Mount Miriam Cancer Hospital NCI Hospital Hospital Kuala umpur Sime Darby Medical Centre</p> <p>Gleneagles Medical Centre Pinang</p> <p>Hospital Kuala Lumpur University Malaya Medical Centre/ University of Malaya Specialist Centre</p> <p>Hospital Raja Permaisuri Bainun Hospital Kuala Lumpur Hospital Umum Sarawak Hospital Sultanah Bahiyah Hospital Sultanah Nur Zahirah Hospital Melaka Sime Darby Medical Centre, Subang Jaya</p>	

<p>Site Coordinator</p>	<p><u>Site Coordinator - Oncology:</u></p> <ol style="list-style-type: none"> 1. Ms Yamunah Palaniyandi 2. Ms Audrey Yap Siew Fern 3. Sn Rashidah Abd Rashid 4. Sr Kanageswari Ramasamy 5. Ms Mildred Rosaline Fletcher 6. Ms Tamil Selvi Arumugam 7. Ms. Parameswary a/p Ellamaran 8. Ms. Mandy Yap Seen Mun 9. Ms. Esther Ho Siow Yean <p><u>Site Coordinator - Pathology:</u></p> <ol style="list-style-type: none"> 1. Ms Nurul Farhana Mohd Hamedi 2. Ms Mahiran Mustapha 3. Mr Mohd Fadzly Shaharuddin 4. Madam Chong Ee Wee 5. Madam Lee Lee Moy 6. Ms Chernnie Iyvonny David 7. Ms Roselina Mohamad 8. Ms Lau Sian Kai 9. Ms Chee Ai Lieng 10. Ms Gowarimala Subramaniam
<p>Consultant</p>	<p>Lim T.O. FRCP, M.Stat</p>
<p>Statisticians</p>	<p>Hoo LP PhD, Lena Yeap MSc, Stats Consulting</p>
<p>Data manager</p>	<p>Teo JS MSc, ClinData Consulting</p>
<p>Project manager and staff</p>	<p>Ms Iris Tan Guak Wah, MySMO Ms Intan Munirah Mohd Murad, MySMO Ms Chin Mei Lin, MySMO Ms Jacelyn Tan Ying Ling, MySMO</p>

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Introduction and Rationale

Measuring the performance of health services and using these measurements for accountability purposes or to improve the delivery of care, are increasingly evident in developed countries. Malaysia has lagged behind in this area until in recent years when our government introduced KPI to measure the performance of government services as part of the Government Transformation Programme. This has provided the impetus to measure the performance of our health services too. To this end, the HPMRS (more details at www.hpmrs.com.my) the local healthcare performance measurement system was established to meet this needs. Several projects are underway targeting cancer, cardiac and eye health services in Malaysia. Cancer care services, and specifically breast cancer services, is the focus of this report.

Survival is a key index of the overall effectiveness of health services in the management of patients with cancer. There is however a wide international difference in cancer survival even among developed countries [1]. The situation is probably worst in developing countries. Little data however exists on the cancer services and survival outcomes in Malaysia. What little data we know has not been flattering. Survival of cancer patients managed by 3 hospitals in Malaysia was studied recently and showed huge differences among institutions (unpublished data), though on the brighter side, survival outcomes reported by a single institution has shown remarkable

improvement from the period 1993-1997 to 1998-2002 [2]. Clearly such persistent wide differences in cancer survival whether among countries or among institutions are unjustified and represent many avoidable deaths. The evidence has increasingly pinpointed 2 health service factors to explain poor and persistent differences in cancer survival outcome. These are late stage diagnosis and lack of timely access to optimal cancer treatment, both of which are amenable to improvement through better managed and resourced health services.

Hence for the purpose of measuring our cancer services performance, we used 3 performance measures:

#	Measure	Description and rationale	Performance metrics (audit indicator) & Standards of care
1	Disease stage at diagnosis	Many patients with cancer are diagnosed at an advanced stage (stages III and IV). Early diagnosis and referral for treatment should lead to a reduction in mortality with cancer.	% of new breast cancer patients diagnosed with late stage cancer No local published standard of care. Assume Malaysia's performance will be no better than the worst performing State in the US, which is 41% diagnosed at late stage <i>Source: CDC report [3]</i>
2	Timely access to treatment	Many patients with cancer do not have timely access to appropriate surgery, radiotherapy and chemotherapy. Early access to treatment should lead to a reduction in mortality with cancer	<ul style="list-style-type: none"> • % of newly diagnosed breast cancer patients receiving initial treatment within two months • % of eligible breast cancer patients post-surgery commencing chemotherapy within two months <i>Source: CPG MANAGEMENT OF BREAST CANCER, 2nd edition, MOH and Academy of Medicine Malaysia 2010 [4]</i> No local published standard of care.
3	Five year patient survival	Survival is a key measure of the overall effectiveness of health services in the management of patients with cancer. Persistent institutional, regional and international differences in cancer survival represent many avoidable deaths.	5-year relative survival (%), age-standardised to International Cancer Survival Standard (ICSS) weights for adults aged 15–99 years No local published standard of care. Assume Malaysia's performance will be no better than the worst performing State in the US, which is 5-year relative survival of 78% <i>Source: CONCORD data [5]</i>

Data

For purpose of performance measurement, data were available from 1203 patients who were diagnosed to have breast cancer between January and December 2011, among whom, 612 patients were diagnosed between January and June (H1 cohort) and 513 between July and December (H2 cohort). Data on these patients were reported by Cancer Treatment Centers participating in the HPMRS. Refer Table 1.0 for the distribution of patients by centre.

Results & Discussion

The mean age of these patients with breast cancer diagnosed in 2011 was only 53 years; about 40% were aged <50 years. Patients treated in the University and Private sector were over-represented due to the lack of participation from public hospitals.

57% of patients were diagnosed with Early Breast Cancer (Stage 1 or 2, EBC), another 31% with Locally Advanced Cancer and 12% with late stage metastatic cancer. 66% were ER+, 60% PR+, 28% HER2+ and 19% triple negative.

Access to diagnostic and treatment services

Among patients who presented between January and June 2011 (H1 cohort), on average, it took 13 days (median 7 days) after first presentation to arrive at a diagnosis (mostly tissue) of breast cancer.

About 90% of patients have had surgery. The mean duration from diagnosis to surgery was only 19 days (median 13 days), and 95% were able to have their surgery less than 60 days from diagnosis. Two thirds have had radical surgery while a third had breast conserving surgery.

74% patients had received systemic therapy. Among those who have received systemic therapy, the mean duration to systemic therapy from diagnosis was 59 days (median 57 days), and 57% were able to initiate systemic therapy in less than 60 days from diagnosis. The corresponding figures for the duration from surgery to systemic therapy was 43 days (median 41 days), and 83% were able to receive systemic therapy in less than 60 days from surgery.

Only 36% of patients in the H1 cohort have had radiotherapy, and another 43% have no information at all on radiotherapy. Among those who had received radiotherapy, the mean duration to radiotherapy from diagnosis was 110 days (median 110 days), and 17% were able to receive radiotherapy in less than 60 days from diagnosis. The corresponding figures for the duration from surgery to radiotherapy was 98 days (median 101 days), and 22% were able to receive radiotherapy in less than 60 days from surgery.

Cancer survival outcome

9 patients among the H1 cohort had died to date.

It is too early to report on cancer survival outcomes.

Conclusion

It has been shown that without clear target and in-built performance monitoring and data collection system, health services for any particular patient groups will invariably fail to improve [6]. The HPMRS is specifically designed to measure the performance of our cancer services through monitoring access to diagnostic and treatment services and survival outcome of representative cohorts of patients diagnosed with breast cancer, and on this basis motivate the improvement in health services for these patients. A high performing health service will ensure that patients be diagnosed early and have timely access to needed treatment, and thereby ensure optimal cancer survival and minimal avoidable deaths.

To our knowledge, this is the first time cancer care in Malaysia has ever been subjected to performance monitoring. Data collection has encountered severe challenges due to the fragmented nature of cancer services in Malaysia (a patient is likely to be seen by multiple providers spanning private, public and university sectors). The length of time taken for patients to complete their often multiple treatment modalities and limited third party access to patient level data have also hampered data collection. Nevertheless, with sufficiently long elapsed time and intensive data collection efforts, we have obtained reasonably complete data for the January to June 2011 cohort. The preliminary results for this patient cohort are reported here

- About 60% had EBC at diagnosis, suggesting there is room for improvement in our breast cancer screening services.
- Access to surgery treatment was reassuringly wide and timely. We may surmise from the data that the vast majority of patients who need breast surgery services were able to access them in a timely manner. However, this result could be skewed by the presence of 2 large breast surgery centres in the sample.
- Access to systemic therapy is also widespread and its timeliness reassuring too. However, access to specific medicine, especially the more costly item, seems problematic.
- The results on access to radiotherapy are more difficult to interpret without higher resolution data. Only 36% of patients had this treatment, while we have no information on radiotherapy for another 43% of patients (many of whom are likely to receive this treatment in another centre not participating in this project). The median duration from surgery to starting radiotherapy was 101 days, which again is hard to interpret given that the time course of radiotherapy varies with nature of the disease (operability, staging, biomarker and risk factors).

No doubt, we need to refine our data collection methods, improve access to data and intensify the data collection efforts for purpose of performance measurement. Notwithstanding these data issues, the results we have reported suggest there is room for improvement in the delivery of cancer services in Malaysia for this growing group of patients. We look forward to publishing the complete results for the entire 2011 cohort by the end of 2012.

References

1. Coleman MP, Forman D, Bryant H, Butler J et al, and the ICBP Module 1 Working Group. Cancer survival in Australia, Canada, Denmark, Norway, Sweden, and the UK, 1995–2007 (the International Cancer Benchmarking Partnership): an analysis of population-based cancer registry data. *Lancet* 2010; Published Online
2. Nur Aishah Taib, MN Akmal, I Mohamed, Cheng-Har Yip. Improvement in Survival of Breast Cancer Patients – Trends in Survival over Two Time Periods in a Single Institution in an Asia Pacific Country, Malaysia. *Asian Pacific J Cancer Prev*, 12, 345-349
3. Centers for Disease Control and Prevention. Surveillance of Screening-Detected Cancers (Colon and Rectum, Breast, and Cervix) — United States, 2004–2006 . *MMWR* 2010;59(No. SS-9):1-9
4. MOH and AMM Malaysia. Clinical Practice Guidelines: Management of Breast Cancer 2nd edition. 2010
5. Coleman MP, Quaresma M, Berrino F, Lutz JM, et al. Cancer survival in fi ve continents: a worldwide population-based study (CONCORD). *Lancet Oncol* 2008; 9: 730–56
6. Editorial. Neurological diseases remain neglected and ignored *Lancet* 2012;379:287

Tables and Graphs

Table 1.0: Data reporting for Breast cancer in the year 2011

	Data reporting by participating centres	Jan-Jun	July-Dec	Total
#		No. of records (%)	No. of records (%)	No. of records (%)
1.	Beacon International Specialist Centre	12(1)	7(1)	19(2)
2.	Gleneagles Medical Centre – Penang	28(2)	21(2)	49(4)
3.	Hospital Kuala Lumpur	201(17)	89(7)	290(24)
4.	Mahkota Medical Centre (MMC)	67(6)	52(4)	119(10)
5.	Mount Miriam Cancer Hospital	48(4)	36(3)	84(7)
6.	Nilai Cancer Institute NCI Hospital	12(1)	9(1)	21(2)
7.	Sime Darby Medical Centre Subang Jaya	62(5)	55(5)	117(10)
8.	UMMC & UMSC	221(18)	283(24)	504(42)
	Total Number of records	651(54)	552(46)	1203(100)
	Corresponding Total Number of patients	612	513	1125(100)

Table 2.0: Patients' Characteristics at diagnosis, All Patients diagnosed in 2011 (H1 and H2 Cohorts)

Patient characteristics	Statistics	Results
Number of patients	Number	1125(100%)
Age, years	Mean (SD)	53(12)
	Median (IQR)	53(44, 61)
	(Min, Max)	(23, 92)
Age distribution	No. (%) Age<40	150(13)
	No. (%) Age 40 to 49	297(26)
	No. (%) Age 50 to 59	370(33)
	No. (%) Age>=60	308(27)
Sex	No. (%) Male	2(0)
	No. (%) Female	1123(100)
Race	No. (%) Malay	314(28)
	No. (%) Chinese	564(50)
	No. (%) Indian	121(11)
	No. (%) Orang Asli	2(0)
	No. (%) Bumiputera Sabah	1(0)
	No. (%) Foreigner	97(9)
	No. (%) Others	26(2)
Healthcare Sector	No (%) Public (MOH)	259(23)
	No (%) University	453(40)
	No (%) Private	379(34)
	No (%) Public (MOH) & University*	5(0)
	No (%) Public(MOH) & Private*	1(0)
	No (%) University & Private*	28(2)

*These patients were reported by multiple centres from different sectors.

Table 3.0: Tumor Characteristics at diagnosis, Patients diagnosed between January to June 2011 (H1 Cohort) only†

Tumor characteristics	Statistics	Results
Number of patients	Number (%)	612(100)
Stage at diagnosis	No. (%) Early Breast Cancer (EBC)	350(57)
	No. (%) Locally Advanced Breast Cancer (LABC)	191(31)
	No. (%) Metastatic Breast Cancer (MBC)	71(12)
	No. (%) Infiltrating duct carcinoma, NOS	310(82)
Tumor histology	No (%) Intraductal carcinoma, noninfiltrating, NOS	21(6)
	No (%) other Carcinomas	35(9)
	No (%) Phyllodes tumor, malignant	3(1)
	No (%) Others	8(2)
Grading	No (%) Grade 1	25(9)
Biomarkers	No (%) Grade 2	133(47)
	No (%) Grade 3	127(45)
	Number(%)	542(100)
	No. (%) ER+*	357(66)
	No. (%) PR+*	322(60)
	No. (%) HER2 IHC+*	95(25)
	No. (%) HER2 ISH+*	29(34)
	No. (%) HER2 ISH+ or IHC+ if ISH missing or unknown**	103(28)
	No. (%) Triple positive (ER+, PR+ HER+)***	41(12)
	No. (%) Double positive (ER+, PR+ HER-)***	158(44)
	No. (%) Double positive (ER+, PR- HER+)***	8(2)
	No. (%) Single positive (ER+, PR- HER-)***	22(6)
	No. (%) Single positive (ER-, PR+ HER+)***	2(1)
	No. (%) Single positive (ER-, PR+ HER-)***	6(2)
	No. (%) Single positive (ER-, PR- HER+)***	50(14)
	No. (%) Triple negative (ER-, PR- HER-)***	69(19)

*Denominator exclude unknown or missing which are 546, 544, 414, 87 for ER, PR, HER2 IHC and HER2 ISH respectively .

**Denominator for both HER2 IHC+ and ISH+ with positive and negative results only which is 399.

*** Only those has passed through all three tests were considered in the denominator which is 395.

Table 4.0: Access to Cancer services, Patients diagnosed between January to June 2011 (H1 Cohort) only

Access to Diagnostic and Treatment services	Statistics	Results
Number of patients in the H1 2011 cohort who had received one or more therapies	Number of patients	557
Number of patients in H1 2011 cohort who did not receive any therapies for any reasons	Number of patients	55
Number of patients in H1 2011 cohort who had died to date	Number of patients	9
Cancer Diagnosis	Number of patients	612
Number of patients with information on date of presentation (at any centre)*	Number of patients	412
Duration from first presentation (at any centre) to diagnosis, in day	Mean (SD)	13(24)
	Median (IQR)	7(5, 8)
	(Min, Max)	(0, 173)
Surgical treatment		
Number of patients in H1 2011 cohort who did not undergo surgery	Number of patients	51
Number of patients in H1 2011 cohort whom we did not have information on surgery		57
Number of patients who had surgery**	Number of patients	504(100)
Duration from diagnosis to surgery, in day	Mean (SD)	19(21)
	Median (IQR)	13(6, 22)
	(Min, Max)	(1, 137)
	No. (%) Duration less or equal to 60 days	480(95)
	No. (%) Duration less or equal to 120 days	502(100)
	No. (%) Duration less or equal to 180 days	504(100)
Type of Surgical treatment	No. (%) Breast conserving surgery	160(32)
	No. (%) Radical surgery	359(71)
	No. (%) Axillary nodes surgery	437(87)
	No. (%) Others	5(1)

	No. (%) No information	4(1)
Systemic therapies		
Number of patients in H1 2011 cohort who did not undergo systemic therapy	Number of patients	101
Number of patients in H1 2011 cohort whom we did not have information on systemic therapy	Number of patients	100
Number of patients who had Systemic therapy**	Number of patients	411(100)
Duration from diagnosis to starting Systemic therapy, in day	Mean (SD)	59(31)
	Median (IQR)	57(39, 66)
	(Min, Max)	(1, 173)
	No. (%) Duration less or equal to 60 days	235(57)
	No. (%) Duration less or equal to 120 days	387(94)
	No. (%) Duration less or equal to 180 days	411(100)
Duration from surgery to starting Systemic therapy, in day***	Mean (SD)	43(21)
	Median (IQR)	41(29, 55)
	(Min, Max)	(1, 103)
	No. (%) Duration less or equal to 60 days	283(83)
	No. (%) Duration less or equal to 120 days	341(100)
	No. (%) Duration less or equal to 180 days	341(100)
Type of Systemic therapy	No (%) Chemotherapy	309(75)
	No (%) Hormonal therapy	240(58)
	No (%) Targeted therapy	21(5)
Exposure to drug classes of chemotherapy	No (%) Anthracycline antibiotics	212(69)
	No (%) Antimetabolites	175(57)
	No (%) Alkylating agents	234(76)
	No (%) Vinca alkaloids	5(2)
	No (%) Taxane	119(39)
	No(%) Platinum compounds	2(1)
	No (%) Others	65(21)
Exposure to drug classes of hormonal therapy	No (%) Oestrogen receptor antagonist	170(71)
	No (%) Aromatase Inhibitor	28(12)
	No (%) Gonadotrophin	1(0)
	No (%) Progestogens	0(0)

	No (%) Others	45(19)
Radiotherapy		
Number of patients in H1 2011 cohort who did not undergo radiotherapy	Number of patients	172
Number of patients in H1 2011 cohort whom we did not have information on radiotherapy		238
Number of patients who had radiotherapy**	Number of patients	202(100)
Duration from diagnosis to starting Radiotherapy, in day	Mean (SD)	110(43)
	Median (IQR)	110(82, 138)
	(Min, Max)	(5, 179)
	No. (%) Duration less or equal to 60 days	34(17)
	No. (%) Duration less or equal to 120 days	114(56)
	No. (%) Duration less or equal to 180 days	202(100)
Duration from surgery to starting Radiotherapy, in day***	Mean (SD)	98(42)
	Median (IQR)	101(64, 128)
	(Min, Max)	(4, 172)
	No. (%) Duration less or equal to 60 days	42(22)
	No. (%) Duration less or equal to 120 days	123(66)
	No. (%) Duration less or equal to 180 days	187(100)
Type of Radiotherapy treatment	No (%) Whole breast external irradiation	103(51)
	No (%) Tumour bed (boost) irradiation	51(25)
	No (%) Brachytherapy	1(0)
	No (%) Partial breast external irradiation	2(1)
	No (%) Intra-operative radiotherapy	0(0)
	No (%) Others	69(34)
	No. (%) No information	31(15)
Radiotherapy treatment regimen	Mean Total dose in Gy (SD)	42(6)
	Median (IQR)	40(40, 45)
	(Min, Max)	(11, 60)
	Mean Number of fractions (SD)	17(5)
	Median (IQR)	15(15, 20)
	(Min, Max)	(5, 26)
	Mean duration in weeks (SD)	4(1)
	Median (IQR)	3(3, 4)

	(Min, Max)	(1, 14)
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* One center could not provide data on date of 1st presentation.

**This number of patients will vary from analysis to analysis because of missing data / non-treatment.

***Only patients who have had both surgical and radiotherapy/systemic therapy, and whose surgery were prior to the 2 therapies were included in the analysis.

Table 5.0: Exposure specific medicines among patients who had Systemic Therapy, Patients diagnosed between January to June 2011 (H1 Cohort) only

Exposure specific medicines	Results	Exposure specific medicines	Results
Chemotherapy		Hormonal therapy	
<i>All patients on Anthracycline antibiotics</i>	212(100)	<i>All patients on Oestrogen receptor antagonist</i>	170(100)
No (%) Epirubicin	166(78)	No. (%) Tamoxifen	170(100)
No (%) Doxorubicin	48(23)	No. (%) Fulvestrant	0(0)
No (%) Daunorubicin	0(0)	No. (%) Others	0(0)
No (%) Others	8(4)	<i>All patients on Aromatase Inhibitor</i>	28(100)
<i>All patients on Antimetabolites,</i>	175(100)	No. (%) Anastrozole(Arimidex)	15(54)
No (%) Fluorouracil	171(98)	No. (%) Letrozole (Femara)	13(46)
No (%) Capecitabine	6(3)	No. (%) Exemestane (Aromasin)	0(0)
No (%) Methotrexate	3(2)	No. (%) Others	0(0)
No (%) Gemcitabine	0(0)	<i>All patients on Gonadotrophin</i>	1(100)
No (%) Others	0(0)	No. (%) Goserelin (Zoladex)	1(100)
<i>All patients on Alkylating agents</i>	234(100)	No (%) Others	0(0)
No (%) Cyclophosphamide	231(99)	Targeted therapy	
No (%) Others	6(3)	No (%) Trastuzumab (Herceptin)	21(100)
<i>All patients on Vinca alkaloids</i>	5(100)	No (%) Bevacizumab (Avastin)	0(0)
No. (%) Vinorelbine	5(100)	No (%) Lapatinib (Tykerb)	0(0)
No. (%) Vincristine	0(0)	No (%) Others	1(5)
No. (%) Vindesine	0(0)		
No. (%) Vinblastine	0(0)		
No. (%) Others	0(0)		
Taxanes, Number(%)	119(100)		
No. (%) Docetaxel(Taxotere)	115(97)		
No. (%) Paclitaxel(Taxol)	4(3)		
No.(%) Cabazitaxel(Jevtana)	0(0)		
No.(%) Others	4(3)		

Platinum compounds, Number(%)	2(100)			
No. (%) Cisplatin	1(50)			
No. (%) Carboplatin	1(50)			
No. (%) Oxaliplatin	0(0)			
No. (%) Others	0(0)			

Appendix: Analysis set

In 2011, data were available from 1232 records for 1152 patients who were reported to have breast cancer diagnosed in 2011 by centres participating in the HPMRS.

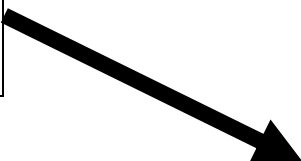
Of these, only 1125 patients were eligible for inclusion in this analysis for the purpose of performance measurement.

For demographic:

1232 records reported for 1152 patients with breast cancer diagnosis in 2011



1125 patients eligible for inclusion in this analysis for demographic results.



107 records for 27 patients were excluded from analysis

- 29 records (2%) for 27 patients (2%) had recurrent cancers.
- 74 (6%) records for patients with 2 duplicate records and 4 (0%) for patients with 3 duplicate records.