Conference Proceedings for the International Forum on Quality Cancer Care September 8 and 9, 2018

Keble College
Oxford University
Oxford, UK

Cancer Care Commission

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Preface

It is our pleasure to introduce to our colleagues the Proceedings of the third annual International Forum for Quality Cancer Care (IFQCC2018), which is held in Oxford, UK at Keble College, Oxford University, on September 8 and 9, 2018.

This publication contains 50+ abstracts submitted by contributors from 11 countries tackling various aspects of cancer care. These abstracts will be presented at the IFQCC meeting in oral and poster sessions to facilitate exchange of experience among participants.

These presentations will be alongside a unique program in which oncology global leaders are discussing critical topics in value-driven cancer care as part of the Cancer Care Commission's efforts to enhance the quality of cancer care globally.

We would like to thank all our faculty, authors, and staff who helped in making the Forum a reality.

Prof. David Kerr
President, IFQCC 2018
Oxford University, UK

Prof. Abdul Rahman Jazieh
Chairman, IFQCC 2018
Ministry of National Guards Health Affairs,
Saudi Arabia

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ORAL PRESENTATIONS

A Novel, Web-Based Intervention to Reduce Cancer Treatment-Related Financial Distress: A Randomized Controlled Pilot Study

George Tran, Jonathan Nicolla, Fred Friedman, Gregory Samsa, Peter Ubel, Kathryn Pollak, Yousuf Zafar

Duke University, Durham, NC, USA

Introduction: Many patients on anti-cancer therapy experience treatment-related financial burden. Pathlight, an interactive web application, was designed to: 1) screen for financial distress; 2) educate on health-related financial topics; 3) coach via video-conference on communicating with providers about costs; and 4) navigate to financial assistance. The primary aim of this study was to assess usability of Pathlight and its impact on financial distress, willingness to discuss costs with doctors, and knowledge of financial aspects of cancer care.

Methodology: Adults with cancer who reported moderate financial distress and were receiving treatment in solid tumour oncology clinics were randomized 1:1 to Pathlight or usual care (text and video resources from Cancer.net). Patients randomized to usual care were crossed over to Pathlight after efficacy testing for usability. We used the validated System Usability Scale (SUS) to assess usability (SUS score >68 is above average). We assessed financial distress with the validated 11-item Comprehensive Score for financial Toxicity (COST) measure (lower score correlates with less financial distress). We asked patients if Pathlight "improved my knowledge about financial aspects of cancer care and what can be done about it," and if "using this website was helpful with my financial concerns" with responses measured using a 5-point Likert scale. We assessed desire to discuss costs with, "Will you talk to your doctor about costs?"

Results: 30 patients enrolled. 26 had usability data available. The median SUS score was 70. 94% of patients agreed/strongly agreed that Pathlight improved knowledge of financial aspects of cancer. 71% agreed/strongly agreed that the tool was helpful with financial concerns. Patients using Pathlight experienced a greater absolute decrease in median COST scores (3.5 vs 2.0 decrease). Relative to controls, a higher proportion would consider a cost discussion with their oncologist (33% vs 20%).

Conclusion: Pathlight demonstrates high usability and preliminary effectiveness in decreasing financial distress, improving patients' knowledge of the financial aspects of cancer care, and stimulating cost discussions between patients and providers. By providing multiple resources in one centralized location, Pathlight can help address cost-related barriers in cancer treatment. Interventions such as Pathlight may improve quality of life and outcomes by reducing financial toxicity.

Engaging Partners for Provision of Access to Anti-Cancer Medicines in A Resource Constrained Country: A Success Story

Abid Jameel, Sadaf Chiragh

Hayatabad Medical Complex, Peshawar, Pakistan

Introduction: Access to cancer treatment is extremely limited for patients in developing countries as there is negligible support from governments. In Pakistan, it was observed that majority of patients couldn't complete their treatment since purchase of medicine is mainly out of pocket expense. Many lives were lost prematurely due to financial problems faced by patients. Being aware of this problem and its disastrous effects, we came up with a proposal to form partnerships with pharmaceutical companies in order to share cost of state of the art cancer treatment thereby reducing financial burden for the Government and patients.

Methodology: Our strategy was based on "public-private partnership". We proposed to share the cost of high quality, state-of-the-art cancer treatment with manufacturers as part of their corporate social responsibility. Initially, we found one partner in 2011 who agreed to provide "targeted therapies" for chronic myeloid leukaemia (CML) patients at a highly discounted rate. In four years, we formed partnerships with three other manufacturers who shared the cost of their targeted therapies between 35-70%. In 2018, the

list of partners is still growing resulting in substantial savings to the Government of Khyber Pakhtunkhwa (KP) Province. We studied the overall survival of CML patients at seven years. We also evaluated patient satisfaction and improvement in quality of life (QoL) using FACT questionnaire. We studied the financial impact of cancer treatment on patients using financial toxicity questionnaire. Here we present the data showing results achieved and its impact on patients.

Results: So far 4160 patients with various malignancies have been enrolled in the program from all over KP province who have received free access to cancer treatment. Mean age was 48.5 years, 58% were male. 85% of CML patients were alive at seven years and receiving free treatment. Other top four cancers included breast cancer, prostate cancer, lymphoma and myeloma. Patient compliance was over 80% while interviews with patients by independent evaluators showed excellent QoL and high levels of satisfaction with treatment. Among a sample of 102 patients interviewed for financial toxicity, 52% reported catastrophic stress and would not have started or completed their treatment if they would not have been provided free treatment under this program.

Conclusion: In conclusion, we have shown that the strategy of partnership with pharmaceutical industry and philanthropists for providing access to free medicines is feasible and extremely effective.

Suspected Cancer Program (SCP): Toward an Efficient and Timely Care for Patients with Suspected Cancer

Mohammed Algarni, Ashwaq Al Olayan, Fahad Azzumea, Abdul Rahman Jazieh

King Abdulaziz Medical City, Ministry of National Guard Health Affairs, Riyadh, Saudi Arabia

Introduction: Timely diagnosis of cancer is important for many reasons including patient outcome and relieving the psychological stress of the patient and families. For this reason and to avoid missing of patients with critical findings concerning for cancer diagnosis, the suspected cancer program was established.

Methodology: The program was established and launched in 2014 at King Abdulaziz Medical City (KAMC). A representative from all concerned specialties which are involved in cancer care were included. For abnormal clinical, radiological or laboratory findings with suspicion of cancer diagnosis, a flow algorithm was initiated. The referral sources to SCP including primary care physicians, radiologists, Emergency physicians and any physician within KAMC who requires an assistance with suspected cancer case. All referrals are screened and tracked by the suspected cancer program team which includes medical oncologists and clinical coordinator and the action is taken according to the flow algorithm. The aim of the program is to shorten the time between suspecting and confirming the cancer diagnosis to be less than one month and to avoid loss to follow-up or delay in diagnosis that carries risk on patient's life.

Results: Between 2014 through December 2017, there is an incremental increase of number of referred cases to the suspected cancer program with a total of 1143 referred cases. The diagnosis of cancer was confirmed in 390 cases (33.9%) of all cases. The gastrointestinal malignancies including hepatocellular carcinoma followed by genitourinary malignancies are the most common cancer were diagnosed. With regard to the average time between suspecting and confirming the diagnosis as the main outcome of the suspected cancer program, the average time was 52, 29, 24 and 18 days in years 2014, 2015, 2016 and 2017, respectively.

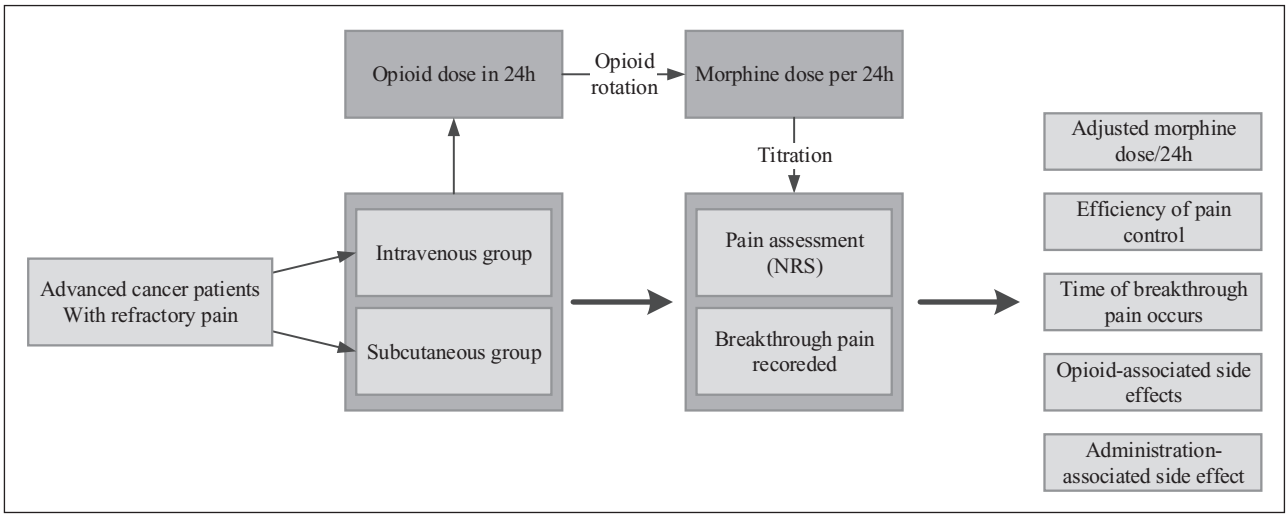
Conclusion: The suspected cancer program has resulted in significant shortening between the suspicion and confirmation of cancer diagnosis. In addition, it served as structured quick and easy access to the diagnostic interventions which has a significant positive impact on patients and their families.

Continuous Intravenous or Subcutaneous Infusion of High Dose Morphine for Refractory Pain Control in Advanced Cancer Patients

Wu Lige, Wang Guohua

The Second Hospital of Wuhan Iron and Steel (Group) Corp., Wuhan, China

Introduction: Oral is the first considered route of administration for chronic opioid therapy. For patients who cannot swallow or absorb opioids, continuous infusion via intravenous or subcutaneous is recommended. However, 10-20% of cancer patients suffer refractory pain, 5-8% of them need high dose morphine but still inadequately controlled. Patient-controlled analgesia pump provides a stable concentration for pain control and a bolus of analgesic on demand to control breakthrough pain. In this study, we use patient-controlled analgesia syringe



pump to deliver high dose morphine for refractory pain control and palliative care in advanced cancer patients.

Methodology: 46 cases of advanced cancer patients with refractory pain were collected and divided into intravenous (IV) group and subcutaneous (SC) group according to the administration route. For each patient, opioids used in previous 24 hours was recorded, then calculate equivalent dose of morphine, also known as opioid rotation, convert to the bolus pump speed. The pain was assessed using numerical rating scale (NRS) during the administration every 12 hours. For NRS is less than 3, or NRS is 4 to 6 with breakthrough pain reported less than 3 times, keep current morphine dose and bolus pump speed; if NRS is 4 to 7, or breakthrough pain reported more than 3 times, increase the morphine dose by 25% to 50%; if NRS is greater than 7, increase the morphine dose by 50% to 100%, then recalculate equivalent dose of morphine, convert it to bolus pump speed. The analgesic efficiency and the incidence of adverse reactions were observed to compare the efficacy and safety of two different ways to give high dose morphine.

Results: No statistically significant differences were found in the number of breakthrough pain during titration (4.79 ± 2.57 in IV group and 6.05 ± 2.13 in SC group), the efficiency of analgesia after opioid rotation (70.8% in IV group and 86.4% in SC group), and the incidence of opioid-related side effects (Constipation: 79.2% in IV group and 77.3% in SC group) between the groups ($P>0.05$). In the SC group, the dose of adjusted morphine was higher than that the IV group (266.32 ± 107.61mg vs. 210.59 ± 29.26mg, respectively, $P<0.05$), and the administration-associated adverse effect was higher than the IV group (local swollen at injection site: 18.2% in SC group vs 0% in IV group). See **Figure** Above.

Conclusion: The continuous IV or SC route is a quick and effective method to control pain. Patients can choose appropriate administration route according to the dose of morphine, and the individual will for palliative care, and improve the quality of life.

Concordance of Cancer Moonshot Artificial Intelligence Platform, for Cancer Treatment Decisions and Recommendations in Comparison with Oncologists/ Tumour Board – For 60 Breast Cancer Cases

Deva Reddy[1], Reddy Ram[2], Reddy Sayukta[1]

[1]Cancer Moonshot, Bangalore, India; [2]Care Cancer Hospital, Hyderabad, India

Introduction: Since caner expresses itself differently in each patient, it's difficult for the very few available oncologists to design personalized treatments adhering to cancer treatment standards and guidelines (NCCN) and be in sync with ever growing huge cancer knowledge (article, trials, already treated cases). Our Cancer Moonshot AI software developed using machine learning, natural language processing and expert system will impact oncologists/tumour boards by amplifying them at the point of taking treatment decisions. Patients can use this for second opinion.

Methodology: Cancer Moonshot was used for 60 breast cancer cases by 4 categories: Localised (20), HER2

negative (10), triple negative (10), metastatic disease (10), special condition cases (Pregnant, inflammatory, male) (10). It generates treatment recommendations by taking personalized patient conditions. The predicted treatment reports contain detailed treatment plan with evidences along with survival time of the patient to be followed by oncologists. The treatment recommendations & the time taken by oncologists were compared against Cancer Moonshot software recommendations.

Results: See **Table** below.

Conclusion: For normal case the concordance is same for both Oncologists and Cancer Moonshot software. For typical cases the concordance and time for recommendations is varying. For special cases the concordance and time for recommendations is marginally better than oncologists. Cancer Moonshot is an assisting tool but not to replace the doctor and patient-doctor relationship. It is an augmenting and amplifying artificial intelligence tool for every cancer centre/oncologists/Tumour board and will change the accessibility, availability and consistent outcomes in the cancer care industry.

Table: Concordance percentage with reference to standard recommendations

Categories	Oncologists	Time	Cancer Moonshot
Localised	80-85%	20 minutes	80-85%
HER2 Negative	80-85%	20 minutes	80-85%
Triple Negative	70%	30 minutes	70%
Metastatic Disease	70%	>30 minutes	72%
Special Condition Cases	65%	>30 minutes	70%

Overcoming Appointment Delay in Radiotherapy: A Single Institution Experience

Mohammed Ait Erraisse, Ouafae Masbah, Touria Bouhafa, Khalid Hassouni

University Hospital Hassan II, Fez, Morocco

Introduction: Delay to access to radiation therapy in developing countries is challenging and compromising the cancer prognosis. In our department we have one linear accelerator for a whole region in the country. We treated about 50 to 60 patient a day and appointments were for more than 3 months. The medical and psychological impact on patients was important. Our objective was to shorten this delay.

Methodology: The radiotherapy treatment delivery was to treat 50 to 60 patients from Monday to Friday as the majority of radiation therapy departments. Treatments started at 8 AM to finish at about 7 to 8 PM. The idea was to treat more patients and quickly. Therefore, actions were taken on three levels: 1st Before radiotherapy, we had to shorten the time from first consultation to first radiotherapy fraction. The 2nd during radiation, we extended treatment period to above 8 PM. And the 3rd level concerns fractionation regimens.

Results: The hospital executive decided to transform the oncology hospital to an emergency hospital with the possibility to treat 24/7. With this way, we could treat up to 100 patient a day or more. we also treat on weekends especially palliative patients. Concerning the patient workflow, patients were seen immediately when they arrive to the department, and if medical file is complete and ready to radiation, CT scan simulation was done within a week, contouring, dosimetry and validation with safety checks were done within 3 days. and finally, when possible, we chose hypo-fractionated regimens (Breast, rectum, single fraction for palliative, etc.). The appointment time started to drop from more than 3 months to almost 2 weeks.

Conclusion: In developing countries, access to radiotherapy is a real problem. The number of linear accelerators per capita is very low. Therefore, delays are very long. This kind of approach, if sufficient human resources, could solve the problem while waiting for a second and maybe other machines.

Improving Utilization of PET/CT for Cancer Patients: A Choose Wisely Project

Ashwaq Al Olayan, Ghulam Syed, Mona Alshami, Khadega Abdulgasim, Nour Ibrahim, Salem Alshehri, Nashmia Almutairi, Saadia Ur-razzaq, Abdul Rahman Jazieh

King Abdulaziz Medical City, MNGHA, Riyadh, Saudi Arabia

Introduction: Over-utilization of expensive oncology tests and procedures is not uncommon and has multiple implications including cost, inconvenience, long waiting list and in rare cases harm to the patients. A delay in accommodating new requests for PET/CT prompted this project with aim of eliminating the inappropriate use of PET/CT scan in oncology patients.

Methodology: A multidisciplinary team was established from the members of oncology, nuclear medicine, and quality improvement to address the utilization of PET/CT scan. The team did process mapping of requesting PET/CT scan. Based on the National Comprehensive Cancer Network (NCCN) guidelines, we generated the document

on the indications of PET/CT scan in Oncology patients. We collected baseline data of utilization of PET/CT and studied compliance with guidelines. Based on the document we generated, a policy ordering PET/CT was then devised, disseminated and implemented. Staff education was done and process of rejecting non-indicated test was enforced.

Results: Baseline data of one month prior to the implementation of guidelines and policy revealed that 50% of oncology and 35% of hematology PET/CT orders were not within the indications of the NCCN guideline. After implementation of the project in February 2018, the data for the month of March 2018 showed a drop of about 50% in the PET/CT requests that fell out of the NCCN guidelines. We estimated a cost reduction of 462,000 SR per month or 5.5 million annually (1.46 million USD). A decrease in the waiting list was also noted. Waiting time for new patients came down to 30 days from 7 days prior to the implementation of guidelines and policy. It also saved scanner time by 504 hours annually, which could be diverted to other patient groups.

Conclusion: The project resulted in significant reduction of cost, reducing waiting lists, and saving time on the scanner without compromising the patient care as the recommendations was evidence based. We implemented the order set in our electronic medical records for sustainability. We will implement similar Choose Wisely programs for other types of imaging, laboratory testing and more in the future.

POSTER PRESENTATIONS

The Negative Impact of Media on Quality of Cancer Care

Safaa Al-Zeidaneen[1], Ali Al-Ebuos[2]

[1]Institution Al-Balqa Applied University, Zarqa, Jordan; [2]King Hussein Medical Center, Amman, Jordan

Introduction: The phenomenal explosion of information base and easy access to it has many benefits from disseminating the knowledge to wide range of people. However, there are drawback effects to this phenomenon resulting from the wrong use of the information which is most probably lacked the scientific evidence or inaccurate information regarding health issues. Our case represents an example of the negative impact of media on the disease process and outcome of breast cancer patient.

Methodology: A 34-year-old woman presented with stage III infiltrating ductal carcinoma of the breast. While she was receiving her systemic therapy, she heard from some patients in chemotherapy unit about graviola fruit (*Annona muricate* L. Annonaceae). She read on the Internet about the claimed benefits of this fruit in treating cancers and therefore, she decided to quit her chemotherapy and started self-treating herself by consuming this fruit. Three months later, the patients returned to her oncologist and was found to have metastatic disease to her liver, which is incurable stage of the disease.

Results: This case illustrates the determinantal effect of the media of the patient health and outcome, as an outcome of false claims about health benefits of certain alternative therapies leading patients to abandon proven treatment only to suffer the consequences of this later. This case representing the tip of the iceberg of hundreds or thousands of patients who are suffering from these unfounded claims on the media venues in all its forms, TV, Internet, and social media. The risk is aggravated by easy access to the information that are unregulated and lack of adequate patient's awareness campaigns to counteract them.

Conclusion: While total prevention of the negative impact of the media of people health, reducing this impact requires consorted efforts at multi-levels including regulatory, societal and healthcare interventions. Healthcare professional should spend time and efforts educating their patients about their diseases and the importance of adhering to the evidence based.

Reducing Central Line-Associated Bloodstream Infections Among Haematology Patients at Tertiary Care Facility

Khadega A Abuelgasim, Mona Alshami, Andrea Doherty, Kholoud AlAmeer, Ziad Alzahrani, Yahya Bakheet, Malia Ravestijn, Emelin Anfone, Allyn Alfeche, Erlinda Osmillo, Tayseer Mostafa, Mohsen Alzahrani, Hanan Edrees

King Abdulaziz Medical City, MNGHA, Riyadh, Saudi Arabia

Introduction: Despite global efforts to reduce healthcare associated infections, central line associated bloodstream infections (CLABSI) continue to harm patients. Recent studies have proven the effectiveness and efficacy of implementing a multifaceted intervention to reduce CLABSI. However, little research has been conducted among oncology patients, and relatively little effort has been undertaken in this regard in Saudi Arabia. A total of six hospitalized haematology patients in Ward 41 (total of 24 beds) in King Abdulaziz Medical City, Riyadh developed

CLABSI in the second quarter of 2016. The purpose of this quality improvement project is to reduce CLABSI rate by implementing a Comprehensive Unit-based Safety Program (CUSP), an intervention where healthcare teams improve patient care by discussing and solving patient safety issues.

Methodology: Our CUSP/CLABSI bundle was composed of three parts: (1) adhering to evidence-based practices by utilizing central venous access device (CVAD) maintenance checklist, standardizing policies and clinical practices, and offering infection control training, (2) establishing a multidisciplinary CUSP team, and (3) measuring and monitoring CLABSI rates. We implemented the five required steps to form a multidisciplinary CUSP team: (1) educating everyone in the 'Science of Safety', (2) identifying defects, (3) recruiting an executive to support the CUSP team, (4) learning from one defect per month, and (5) implementing teamwork tools.

Results: The CUSP/CLABSI team succeeded in the following results: (1) development and implementation of a CLABSI prevention policy, (2) quarterly Right Care, Right Now infection control training for physicians and nurses, (3) standardization of physician competencies, (4) monitoring of hand hygiene rates, and (5) offering educational sessions within Ward 41 and throughout the Department of Oncology. Main results include: a significant improvement in hand hygiene rates by December 2017. Also CLABSI rate in ward 41 dropped gradually (see **Table** below). The CUSP/CLABSI team is continuously investigating CLABSI rates as well as actively engaging in training.

Conclusion: There are numerous successful efforts that have resulted from implementing CUSP/CLABSI internationally. With regard to our project, ongoing surveillance and training is required to measure and monitor CLABSI rates; sustainability efforts to maintain low rates are very important. Implementing CUSP in Saudi Arabia will have a significant contribution to the field of quality and patient safety. As CLABSI remain to be a continuous challenge in caring for cancer patients, further research is needed to assess the impact of implementing the CUSP/CLABSI program in the Middle East.

Table: Maintenance-related central line associated bloodstream infection (CLABSI) cases in ward 41

Period	Events
Second quarter 2016	6 CLABSI cases
First quarter 2017	7 CLABSI cases
Third quarter 2017	3 CLABSI cases
Fourth quarter 2017	1 CLABSI cases

Granulocyte Colony Stimulating Factor and Febrile Neutropenia in Patients Receiving Docetaxel Based Chemotherapy for Breast Cancer

Jamal Zekri[1,2], Azhar Nawaz[1], Haleem Rasool[1], Imran Ahmad[1], Hossam Abdel Rahman[1], Reyad Dada[1], Ehab Mosaad Abdelghany[3], Kamel Farag[4], Refaei Belal Ibrahim[5], Mohamed Youssef Deibas[1], Mohamed Kamal Kamel[5], Ahmad Allithy[1]

[1]King Faisal Specialist Hospital & Research Center, Jeddah, Saudi Arabia; [2]Al-Faisal University, Riyadh, Saudi Arabia; [3]National Cancer Institute, Cairo, Egypt; [4]Mansoura University, Mansoura, Egypt; [5]Al- Azhar University, Cairo, Egypt

Introduction: Prophylactic Granulocyte Colony Stimulating Factor (GCSF) is recommended for patients receiving chemotherapy associated with high risk of febrile neutropenia (FN). There is some inconsistency between guidelines in classifying the risk of FN posed by docetaxel. This study aims to investigate FN and the role of GCSF in patients receiving docetaxel-based regimens (DBR) for breast cancer (BC).

Methodology: All BC patients (n=276) who received DBR between January 2015 and December 2017 were included. GCSF prescription and chemotherapy dose modification and delay were implemented at the discretion of the treating oncologist. Data was collected retrospectively. Fisher's exact and independent-t tests were used as appropriate to detect significance of differences.

Results: Median age was 50 (21–75) years. Intention of treatment was curative in 230 (83.3%) patients. Docetaxel was administered in combination with other cytotoxic agents in 50% of the population and as a single agent in the rest. Prophylactic GCSF was prescribed with the first cycle of chemotherapy for 193 (69.9%) and was not for 83 (30.1%) patients with subsequent FN in 6.2% and 15.7% of patients respectively (P=0.020, OR: 95% CI: 0.36; 0.16–0.82). Among the total administered 1009 cycles, the rates of FN were 4.8% and 8.5% (P=0.043, OR: 95% CI: 0.54; 0.30–0.97) and mean days of admission for FN were 3.55 and 5.28 (P=0.037) with and without GCSF

	GCSF	No GCSF	P Value (OR; 95% CI)
FN			Fisher's exact test
After cycle 1	12/193 (6.2%)	13/83 (15.7%)	0.020 (OR: 0.36; 0.16-0.82)
After cycle 2	10/211 (4.7%)	4/54 (7.4%)	0.493 (OR: 0.62; 0.19-2.06)
After cycle 3	12/206 (5.8%)	1/41 (2.4%)	0.701 (OR: 2.47; 0.31-19.6)
After cycle 4	4/185 (2.2%)	0/36 (0%)	1.000 (OR: 1.19; 1.13-1.26)
FN after all cycles (n=1009)	38/796 (4.8%)	18/213 (8.5%)	0.043 (OR: 0.54; 0.30-0.97)
Mean FN Admissions (days)			Independent T-test
After cycle 1	3.67	5.38	0.134 (t= -1.55; df= 23)
After cycle 2	3.7	4.75	0.377 (t= -9.18; df= 12)
After cycle 3	3.08	6	0.056 (t= -2.14; df= 11)
After cycle 4	4.25	No cases	Cannot be calculated
Mean FN Admission (days) after all cycles (n=1009)	3.55	5.28	Independent T-test 0.037 (t= -2.22; df= 22)
Dose Reduction			Fisher's exact test
Cycle 2	41/185 (22.2%)	20/80 (25%)	0.635 (OR: 0.85; 0.46-1.58)
Cycle 3	48/197 (24.4%)	10/50 (20%)	0.579 (OR: 1.29; 0.60-2.77)
Cycle 4	54/185 (29.2%)	5/36 (13.9%)	0.065 (OR: 2.56; 0.94-6.92)
Dose Reduction			Fisher's exact test
Cycles 2, 3 & 4 (n=729)	74/564 (13.1%)	26/165 (15.8%)	0.371 (OR: 0.81; 0.50-1.31)
Dose Delay			Fisher's exact test
Cycle 2	25/185 (13.5%)	13/80 (16.2%)	0.570 (OR: 0.80; 0.39-1.67)
Cycle 3	19/197 (10.6%)	5/50 (10%)	1.00 (OR: 0.96; 0.34-2.71)
Cycle 4	20/185 (10.8%)	2/36 (5.6%)	0.542 (OR: 2.06; 0.46-9.23)
Dose Delay			Fisher's exact test
Cycles 2, 3 & 4 (n=729)	62/564 (11%)	22/165 (13.3%)	0.407 (OR: 0.80; 0.48-1.36)

FN, febrile neutropenia; GCSF, granulocyte colony stimulating factor; OR, odds ratio, CI, confidence interval.

respectively. Detailed results are illustrated in the **Table** above.

Conclusion: DBR carry an intermediate risk of inducing FN. Prophylactic GCSF significantly reduces this risk and shortens the duration of admission for FN.

Measuring the Quality of Life Among Cancer Outpatients at Tertiary Care Facility in Saudi Arabia

Abdullah Algarni, Sultan Alshehri, Riyadh Alghamdi, Abdulrhman Alzamil, Rayan Alturki, Mohammed Almutairi, Humoud Alhoraim, Emad Masuadi

King Saud bin Abdulaziz University for Health Sciences, Riyadh, Saudi Arabia

Introduction: Health-related quality of life is a term that is concerned with the patient's physical, psychological and social well-being. Estimating the quality of life can be utilized to improve the quality of care in palliative care centres. This study aims to measure the health-related quality of life among cancer patients in King Abdulaziz Medical City (KAMC), out-patient clinics, and to find any association between different variables and patient's quality of life.

Methodology: This is a cross-sectional study involving 178 participants who were recruited by non-probability convenience sampling. Data was obtained using an Arabic questionnaire 'EORTC QLQ-C30' developed, translated, and validated by the European Organization for Research and Treatment of Cancer (EORTC).

Results: The youngest age group (≤ 29 years) scored significantly better than other age groups in physical function, fatigue, pain, insomnia and global quality of life, while the middle age group, 30–59 years, suffered more from nausea and vomiting and diarrhoea. Women had more dyspnoea than men ($p < 0.05$). Also, those with high school degree and post-high school degree had better physical function than illiterate population. As a disease, gastric cancer patients suffered more from nausea and vomiting in comparison to breast and hepatocellular cancer. Also, gastric cancer patients scored lower in global quality of life compared to haematological and genitourinary cancer patients (see **Figure**.) Moreover, patients with stage 'I-II' had better scores in physical function, role function, social function and anorexia compared to stage 'III-IV'.

Conclusion: Measuring health-related quality of life of cancer patients is a good tool to assess their overall health. It can also be used to compare the impact of different types of cancer on the quality of life. Some sociodemographic variables such as age, gender, level of education, type of cancer and stage can affect the quality of life of cancer patients.

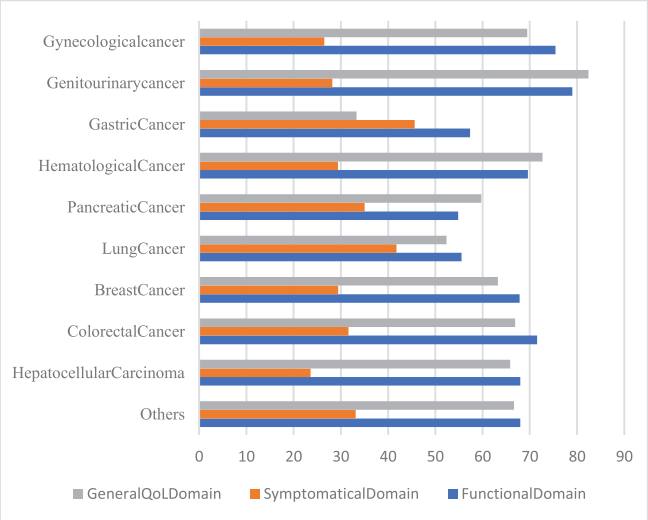


Figure: Mean values for participants' responses in EORTC QLQ-C30 major domains distributed by diagnosis. Function and general QOL domains a higher score means better QOL, while for symptom's domain a higher score means more suffering and lower QOL.

The Impact of International Accreditation in Improving the Quality of Cancer Care: Our Experience with ASCO-QOPI

Nafisa Abdelhafeez, Ziad AlZahrani, Mona Alshami, Mohammed Alkaiyat, Tabrez Pasha, Haytham Hamdan, Abdul Rahman Jazieh

King Abdulaziz Medical City, MNGHA, Riyadh, Saudi Arabia

Introduction: American Society of Clinical Oncology (ASCO) developed a Quality Oncology Practice Initiative (QOPI) that ensures patient safety at the level of oncology outpatient clinics. They evaluate physician practice and assess compliance with certification standards. We participated in this program aiming to assess our practice, benchmark against other oncology centres and to improve our performance to meet QOPI standards. This project took place at Department of Oncology, King Abdulaziz Medical City (KAMC), Riyadh Saudi Arabia. KAMC is a tertiary, referral hospital with more than 1500 beds.

Methodology: A multi-disciplinary team performed three consecutive PDSA (Plan, Do, Study, Act) cycles. We scored 64%, and 68% in cycle one and two, respectively. Prior to cycle three we reviewed our final reports, identified the unmet measures, reviewed learned lessons and an action plan was set. The initial physician note forms were retired and replaced by new ones that meet QOPI standards. We nominated team of super users who are very competent in our electronic health record system (EHRS) and peer-to-peer support was created, we performed another QOPI team orientation to (EHRS), and we standardized certain terms that address QOPI questions. We emphasized on documentation of certain points of patient history, symptoms, psychological assessment, and chemotherapy treatment plan. We established a double check system for charts to be reviewed by two team members before submission. We had two virtual meetings with the ASCO team before our third round to review our action plan. Data for predetermined modules were abstracted from charts that were selected according to QOPI selection criteria (see **Table** below).

Results: Our plans and procedures made noticeable changes in documentation of previously unmet standards (**Table**), we exceeded the bench mark score in fall of 2017 which was 93%. This made our practice eligible for certification, and we had an on-site visit by USA QOPI surveyors to assess practice compliance with certification standards on May 28, 2018.

Conclusion: Our result met the set expectation by QOPI certificate eligibility, and the certification visit was performed. We continue to work on our electronic medical system (EHRS) to improve our documentation to assure safe practice on sustainable basis.

Table: Scores of certain measures in the three PDSA Cycles

Measure	Fall 2016	Spring	Fall 2017
Staging documented	77.5%	N/A	91.76%
Performance Status assessed at every clinic visit	NA	41.18%	100%
Pain assessed by second visit	65%	54.09%	100%
Emotional well-being	5%	16.35%	68.60%
Documented chemotherapy plan	NA	83.2%	97.37%
Chemotherapy intent documentation	NA	68.80%	97.37%

PDSA = Plan, Do, Study, Act.

Results of a Validation Study: Is Idylla a Reliable Technology to Detect RAS Mutation in Colorectal Cancer Tissue?

Jamal Zekri[1,2], Mohammed Baghdadi[2], Hamoud Khallaf[3], Hosam Alardati[2]

[1]Al Faisal University, Riyadh, Saudi Arabia; [2]King Faisal Specialist Hospital & Research Centre, Jeddah, Saudi Arabia; [3]King Fahad Specialist Hospital, Dammam, Saudi Arabia

Introduction: The currently approved techniques for detecting RAS mutations in formalin-fixed paraffin-embedded (FFPE) colorectal cancer (CRC) tissue are labor-intensive and time consuming. The Idylla

technology (IT) is a rapid and fully automated diagnostics system. The primary aim of this study is to compare Idylla performance for RAS mutations testing of archival CRC FFPE samples against that of conventional techniques (CT).

Methodology: Samples from two hospitals were tested in routine clinical service setting for RAS mutations by conventional/standard techniques to guide patients' management by sending the samples overseas to accredited laboratories. For validation purposes, these tumours were additionally tested using the Idylla closed and real-time PCR-based molecular diagnostics system.

Results: Forty-five samples were processed. All samples underwent dual testing (CT and IT) for KRAS mutations which were detected in 23/45 (51%) tumours by CT of which 22 had mutations detected by IT yielding a positive concordance rate of 22/23 (95.7%). This discordant result was verified by additional NGS and the result was similar to that obtained by IT. KRAS was wild type (WT) in 22/45 (48.9%) tumours tested by CT of which 20 were WT by IT yielding a negative concordance rate of 20/22 (91%). In these 2 discordant tumours, mutations were detected by IT due its wider spectrum for mutation testing (exon 4/codon 146 and exon 3/codon 61). NRAS was tested in 19 cases of which 17 were WT by both CT and IT thus yielding a negative concordance rate of 17/17 (100%). Two cases showed mutant NRAS by CT of which one was mutant and the other was WT by IT. This discordant result is not yet verified. The average time from dispatching the specimen for RAS testing by CT until receipt of results was 12 days in comparison to 2 days when validation was performed using IT.

Conclusion: IT provides quick and reliable mean for RAS testing. In addition, it may identify mutations that are not detected by CT and thus providing better guidance to treatment choice.

Oncotype-DX Assay and PREDICT tool in Guiding Decisions of Adjuvant Chemotherapy in Early Breast Cancer

Jamal Zekri[1,2], Maaz Alata[1], Reem Zabani[3]

[1]King Faisal Specialist Hospital & Research Center, Jeddah, Saudi Arabia; [2]Al-Faisal University, Riyadh, Saudi Arabia; [3]Ibn Sina National Medical College, Jeddah, Saudi Arabia

Introduction: Adjuvant chemotherapy (ACT) can benefit a small proportion of patients with breast cancer (BC). Clinical and molecular models that predict the risk of recurrence have been used to select patients for ACT. Nevertheless, majority of these patients are likely to be over treated. We aim to report our initial experience after routine adoption of the Oncotype-DX assay (ODXA) and explore the outcome according to the PREDICT tool.

Methodology: All consecutive patients who underwent ODXA testing between years 2015 and 2017 after curative surgical resection of estrogen receptor positive (ER+), HER2 non-over-expressed (HER2-) and lymph node negative (LN-) BC were included. Patients with micro-metastases to LNs were excluded. Data was collected retrospectively from the electronic records. In addition, benefit from chemotherapy was calculated utilizing the PREDICT tool which is based on clinical and pathological factors.

Results: Thirty-two patients fulfilled the inclusion criteria. Median age was 50.5 (range: 21–73) years and 21 out of 31 female patients (67.7%) were pre-menopausal. One patient was a male. Pathologically, the median/mean tumor size was 20/22.9 (range: 12-55) mm and the grade was I, II and III in 3 (9.4%), 25 (78.1%) and 4 (12.5%) patients respectively. Risk of recurrence according to ODXA recurrence score (RS) was low, intermediate and high in 20 (62.5%), 7 (21.9%) and 5 (15.6%), respectively. All patients with low risk RS did not receive ACT. One out of 7 (14.3%) and 4/5 (80%) with intermediate and high RS received ACT, respectively. In patients with low RS, the PREDICT tool estimated that 3rd generation ACT is likely to have only minor impact (benefit of 0-4%) on 5 and 10-year survival rates in 20/20 (100%) and 18/20 (90%) patients. The corresponding figures for patients with intermediate RS are 7/7 (100%) and 6/7 (86%) and for those with high RS are 5/5 (100%) and 4/5 (80%). All patients are alive and disease free at time of analysis after a median follow of 17 (range: 4–38) months.

Conclusion: Patients with ER+/HER2-/LN- early BC have excellent short-term outcome when decision for ACT was guided by results of ODXA. Our results suggest that the PREDICT tool seems to provide similar guidance and thus can be used as a reasonable alternative. Larger well-designed studies are needed to compare ODXA and PREDICT tool as predictive models.

Identifying Potential Therapeutic Targets in HER2 Over- Expressed Breast Cancer

Jamal Zekri[1,2], Mohammed Baghdadi[2], Turki Sobahy[2], Hossam Alardati[2]

[1]Al Faisal University, Riyadh, Saudi Arabia; [2]King Faisal Specialist Hospital and Research Center, Jeddah, Saudi Arabia

Introduction: Treatments targeting HER2 receptors for patients with HER2 over-expressed (HER2OE) breast cancer (BC) have been the focus of drug development over the recent decades. Resistance to anti-HER2 therapy ultimately develops, and thus other therapeutic targets need to be identified. We aim to identify potential targets for future drug development exclusively in Her2OE BC tumours.

Methodology: Formalin fixed paraffin embedded samples of 47 Her2OE BC tumours underwent DNA sequencing of 16 relevant target genes including P53, BRCA1/2, 4 Mismatch repair (MMR) genes and 9 PI3K-AKT-mTOR pathway (PAM-P) genes. The bioinformatics output included tumour-specific filtration and variants pathogenicity assessment according to recent American College of Medical Genetics and Genomics recommendations.

Results: Genes mutated in ≥ 10% of samples are P53 (40.4%), PIK3CA (36.2%), TSC2 (14.9%), TSC1 (10.6%), and CBL (10.6%). Eight (17%) and 4 (8.5%) tumours had mutations in the MMR and BRCA1/2 genes respectively. The **Table** below depicts frequency of mutations in the 16 target genes.

Conclusion: This study confirms the existence of somatic P53, BRCA, MMR and PAM-P gene alterations in HER2OE BC. Our results can be regarded as rationale for developing clinical trials to investigate existing and novel agents targeting these altered genes and/or their products.

Gene	Frequency of Mutations	Notes
P53	19 (40.4%)	
BRCA1	1 (2%)	One of the samples had mutation in both genes
BRCA2	3 (6%)	
MMR Genes		One of the samples had mutations in *MLH1* and *MSH6*. One of the samples had 2 variants in *MLH1* gene.
MLH1	2 (4.3%)	
MSH2	2 (4.3%)	
MSH6	2 (4.3%)	
PMS2	3 (6.4%)	
PAM Pathway Genes		
AKT	4 (8.5%)	
CDKN1	1 (2.1%)	
EGFR	4 (8.5%)	
CBL	5 (10.6%)	
PTEN	2 (4.3%)	
CDK4	2 (2.3%)	
PIK3CA	17 (36.2%)	
TSC2	7 (14.9%)	
TSC1	5 (10.6%)	

Bone Modifying Agent in the Treatment of Bone Metastases in Patients with Metastatic Breast Cancer: Real-Life Practice

Kamel Farag[1], Jamal Zekri[2,3], Osama Yousof[3], Yazeed Zabani[4], Wael Mohammed[5], Amal Abdulwahab[6], Gomaa Abdelfattah Ahmed[7]

[1]Mansoura University, Mansoura, Egypt; [2]Al Faisal University, Riyadh, Saudi Arabia; [3]King Faisal Specialist Hospital & Research Center, Jeddah, Saudi Arabia; [4]National Cancer Institute, Cairo, Egypt; [5]King Saud bin Abdul-Aziz University for Health Sciences, Jeddah, Saudi Arabia; [6]Port Said University, Port Said, Egypt; [7]King Abdullah Medical City, Jeddah, Saudi Arabia; [8]Beni Suef University, Beni Suef, Egypt

Introduction: Bone metastases (BMs) are common in patients with breast cancer (BC) and can lead to pain and skeletal-related events (SREs). Bone modifying agents (BMAs) are licensed to be used for these patients based on results of phase III trials. We report the outcome of Zoledronic acid (ZA) and Denosumab in real-life routine practice.

Methodology: This report presents the results of combined analysis of 2 projects conducted separately at 2 cancer units. Women with BMs from BC who have started Denosumab or ZA between 2001 and 2014 from one unit and between 2014 and 2016 from another unit were eligible.

Results: In total, 163 women were included. Ninety-six (58.9%) and 67 (41.1%) had M0 and M1 stage at primary BC diagnosis of BC, respectively. ER was positive in 138 (84.7%) and HER2 receptor was over-expressed in 46 (28.2%) patients. At time of developing BMs, metastases were limited to bones in 64 (39.3%) and mixed in 99 (60.7%) patients. Number of SREs prior to starting BMA was 0, 1, 2 and 3 in 91 (55.8%), 53 (32.5%), 13 (8%) and 6 (3.7%) respectively. ZA was started for 107 (65.6%) and Denosumab for 56 (34.4%) patients. Number of SREs during the first 12 months of starting BMA was 0, 1, 2 and 3 in 106 (65%), 45 (27.6%), 9 (5.5%) and 3 (1.8%), respectively. Over the total BMA treatment period, 0, 1, 2, 3 and 4 SREs were reported in 97 (59.5%), 43 (26.4%), 14 (8.6%), 6 (3.7%) and 3 (1.8%), respectively. In general, SREs were less frequent in patients on Denosumab compared to those on ZA during the first 12 months and later (**Table**). After a median follow up of (ZA: 37 and Denosumab: 33 months), there was no significant difference in median survival (ZA: not reached and Denosumab: 60 months; Log rank P=0.956).

Conclusion: In patients with BMs from BC managed in real-life routine setting, Denosumab is superior to ZA in reducing risk of SREs. However, overall survival is similar with both treatments. Our findings mirror those reported in scrutinized environment of landmark clinical trials.

Duration	Number of SREs	ZA (n=107)	Denosumab (n=56)	Fisher's exact (P value)
First 12 months	None	65 (60.7%)	41 (73.2%)	0.078
	≥ 1	42 (39.3%)	15 (26.8%)	
Total follow up	None	58 (54.2%)	39 (69.6%)	0.04
	≥ 1	49 (45.8%)	17 (30.4%)	

SRE, skeletal-related events; ZA, Zoledronic acid.

PICC Line-Related Venous Thrombosis in Medical Oncology: A Single Centre Experience

Syed Azhar Javed Rizvi, SM Reza, Manar Almusarhed, Osamah Al-Asadi, Hany Eldeeb, Maria Karina, Wasiru Saka

Milton Keynes University Hospital, Milton Keynes, United Kingdom

Introduction: Peripherally inserted central catheters (PICC) are becoming increasingly used in oncology for the administration of chemotherapy and other intravenous infusions. Incidence of PICC line related deep venous thrombosis (DVT) varies widely in different studies, with the symptomatic DVT in this scenario is reported to be varying around 6% to up to 18%. We studied our medical oncology patient's population alone in Macmillan Unit, Milton Keynes University Hospital to assess the risk in this particular setting.

Methodology: All patients in medical oncology, Macmillan Unit of Milton Keynes University Hospital, who received chemotherapy with PICC line in 2016, were included. Electronic patient records were reviewed for their age, gender and pathological features including diagnosis and setting such as early (neoadjuvant and adjuvant) vs palliative setting. Incidence of PICC related venous thrombosis was confirmed on US Doppler in all symptomatic patients. Other contributory factors like smoking, BMI and previous thrombo-embolism were also documented in all patients with the diagnosis of venous thromboembolism.

Results: A total of 87 patients received chemotherapy in this unit in various settings. Out of 87, patients with metastatic colorectal carcinoma accounted for single largest group with 38 patients (43.6%), followed by patient with early (in neo-adjuvant and adjuvant setting) breast cancer with 28 (32%) patients. Patients with metastatic breast and adjuvant colon cancer had 5 (6%) patients each. 11 (13%) patients were counted as miscellaneous, which included patients with pancreatic-biliary, gynaecological, and neuro-endocrine cancers. See **Table** below for additional information.

Conclusion: This study was done in outpatient chemotherapy day unit, hence on ambulatory patients. VTE was found to be common this cohort with 10% incidence of symptomatic PICC line associated VTE. No other risk factor was found to be a contributory in these patients such as obesity; smoking status and previous thrombo-embolic events. Most of these episodes were noted in the first four weeks of the insertion of PICC line. As data is lacking for the use of new oral anti-coagulants in cancer patients, all these patients were treated with sub-cutaneous injection of fractionated heparin for a prolonged period of time (3-6 months), based on data extrapolated from lower limb deep venous thrombosis. Therefore, we suggest conducting studies of NOACs (new oral anti-coagulants) in cancer patient undergoing chemotherapy.

Total Patients (%)	Number of Positive Doppler (%)	Average Age in years (range)	Average BMI (range)	Average time from insertion to VTE in days
87 (100)	9	57.4 (34-77)	27 (23.7-44)	28 (8-88)

VTE, venous thromboembolism.

Beijing YanHua Hospital Carried Out International Multidisciplinary Treatment (MDT)

Zhang Qing Chun

Beijing YanHua Hospital, Beijing, China

Introduction: The traditional cancer treatment model is lack of interdisciplinary links, and the clinical treatment is single. It is difficult to implement comprehensive treatment for patients, and the effect is also difficult to guarantee. International multidisciplinary collaborative treatment model is different from traditional cancer treatment model. The former one has broken the disciplinary boundaries and provides patients with standardized individualized comprehensive treatment plans through the discussion of domestic and foreign experts in different fields, which could result rational clinical decision making. Phoenix Oxford Cancer Center (hereinafter POCC) was established in January 2016 and located in Beijing YanHua Hospital. POCC together with Yanhua Hospital has regularly organized MDT participated by international cancer experts, and they are also working together to create a unique cancer diagnosis and treatment center with international leading level. It will make a huge difference in cancer treatment model of Beijing Yanhua Hospital, which is transforming to the international multidisciplinary comprehensive treatment.

2016 5 MDTs, 2 academic conferences				2017 23 MDTs, 2 academic conferences		
Date	**Department**	**Cancer type**	**No. of participants**	**No.**	**Department**	**No. of cases**
2016.8.31	Oncology	Parotid cancer	13	1	Oncology	7
2016.10.13	Thoracic surgery	Left bronchus cancer	13	2	General surgery	7
2016.10.20	Thoracic surgery	Left bronchus cancer	10	3	Thoracic surgery	6
2016.11.10	Oncology, Gastroenterology, General surgery	Liver cancer and rectal cancer	13+	4	Respiratory	1
				5	ENT	1
2016.12.8	General surgery	Colon cancer	11	6	Gynecology	1
2016.12.15	Chemotherapy form discussion	-	10	7	Live Astro and ESMO Guideline Conferences held in Saudi	-
2016.12.22	Chemotherapy drugs lectures	-	30+	8	MDT panel discussion in IFQCC	4

2017-2018: 6 MDTs			
Date	**Department**	**Cancer type**	**No. of participants**
2017.6.14	General surgery and Oncology	Gastric cancer and colorectal cancer	13+
2017.12.8	Oncology	Lung cancer	13
2017.12.22	General surgery	Gastric cancer and intestine cancer	15
2018.01.12	Thoracic surgery	Lung cancer	16
2018.01.19	Oncology	Colon cancer	14
2018.02.09	Thoracic surgery	Gastric cancer	12

Date presented as Year.Month.Day. MDT, multidisciplinary treatment; Dept. department; ENT, ear, nose, and throat; ESMO, European Society for Medical Oncology; IFQCC, International Forum on Quality Cancer Care.

Methodology: The MDT is held in the classroom at regular time, fixed cycle, and fixed place, that is, every Thursday afternoon at 14:00 in the classroom. *(1) Appointment application:* The patient's attending doctor selects difficult cases, controversial cases, or cases with teaching significance and submit application, the medical department and the international department coordinate the arrangements for the time of the relevant oncologists, oncology, radiology, pathology departments, etc. *(2) International MDT*: An expert team consisting of international oncologists, oncologists, surgeons, imaging doctors, pathologists, and other related department physicians conducts discussions and clarify the diagnosis and determine the treatment plan. *(3) Implementation of the treatment plan*: The treatment plan will be implemented by the patient's department doctors, and Adjuvant treatment will be performed by surgery, radiotherapy, chemotherapy and other doctors. *(4) Clinical follow-up:* One or multiple medical staff in the patient's department performs the clinical follow-up, identify and resolve the problem. *(5) Evaluation of MDT treatment plan effectiveness:* To conduct a comparative analysis of the data (patient's survival time, quality of life, satisfaction etc.) to assess the effectiveness of the implementation of MDT.

Results: A total of 34 MDT and 4 academic conference were held during 2016-2018 (see **Table** below for details).

Conclusion: The implementation of the international MDT has positive impact on all parties: for the department, it has strengthened the preponderant discipline and technology, making medical staff work together with international team to formulate sustainable diagnosis and treatment plans, which ensured the safety of diagnosis and treatment. For patients, it can provide medical services in multiple disciplines at home and abroad, as well as one-step service for evaluation, inspection and consensus diagnosis and treatment plans just need one time seeing doctor. For hospitals, it has improved standardized treatment level and patient satisfaction of cancer, attracting more patients from home and abroad seeking multidisciplinary treatment.

MDT needs a good atmosphere and platform, strong administrative support, interest and needs of participants, as well as performance support. The future direction is to implement MDT by information means.

Relationship between Expression of β-tubulin-III plus ERCC1 in Advanced Ovarian Cancer and Chemotherapy Sensitivity of Palitaxel plus Platin Chemotherapy

Yufei Fan[1], Yonghua Hu[1], Dinggang Li[1], David Kerr[2]

[1]Beijing YanHua Hospital, Beijing, China; [2]Oxford University, London, UK

Introduction: Ovarian cancer is one of the three major malignancies in the female reproductive system. The histological types are numerous, and early diagnosis is difficult. Although surgery and radiotherapy and chemotherapy have made great progress, mortality still ranks first among female reproductive system malignancies, which seriously threatens patient's life. To explore the expression of β-tubulin-III plus ERCC1 in advanced ovarian cancer and analyze its correlation with the chemotherapeutic effect of Paclitaxel or Docetaxel plus Cisplatin or Carboplatin.

Methodology: Sixty-four chemotherapy patients with advanced ovarian cancer were treated with Paclitaxel (175mg/m2) or Docetaxel (75mg/m^2) and Cisplatin (75mg/m^2) or Carboplatin (AUC 5) days1. Expression of β-tubulin-III and ERCC1 in 64 cases of ovarian cancer were detected by immunohistochemical method. According to the different expression of Tubulin III and ERCC1, the patients were divided into 2 groups, then statistical analysis of the efficiency was conducted between the 2 groups. Efficiency rate, progression free survival (PFS) and overall survival (OS) were analyzed.

Results: *ERCC1+ group*: chemotherapy recent effective rate is 57.90% (11/19). ERCC1- group: chemotherapy recent effective rate is 84.4% (38/45). The efficiency rate between the two groups was significantly different and was statistically significant, P value <0.05. ERCC1+ group: Mean progression free survival (PFS) is 12.16±11.092 months. *ERCC1- group*: Mean progression free survival (PFS) is 21.93±23.516 months. There was no significant difference between the two groups P value >0.05. ERCC1+ group: overall survival (OS) is 21.58±15.774 months. *ERCC1- group*: mean overall survival (OS) is 38.82±34.770 months. The overall survival (OS) between the two groups was significantly different and was statistically significant, P value <0.05. *β-Tubulin III- group*: chemotherapy recent effective rate is 88.6% (31/35), *β-Tubulin III+ group*: chemotherapy recent effective rate is 62.1% (18/29), The efficiency rate between the two groups was significantly different and was statistically significant, P value <0.05. *β-Tubulin III- group*: Mean progression free survival (PFS) is 26.86±25.617 months. β-Tubulin III+: Mean progression free survival (PFS) is 9.59±5.281 months. The progression free survival (PFS) between the two groups was significantly different and was statistically significant, P value P<0.05. *β-Tubulin III- group*: mean overall survival (OS) is 44.80±37.623 months. *β-Tubulin III+ group*: mean overall survival (OS) is 20.31±11.962 months. The overall survival (OS) between the two groups was significantly different and was statistically significant, P<0.05.

Conclusion: Expression of *β*-tubulin-III plus ERCC1 in ovarian cancer is closely related with paclitaxel and Platinum drugs sensitivity, so detection of the expression of *β*-tubulin-III and ERCC1 before chemotherapy maybe be beneficial to predict the sensitivity of ovarian cancer to paclitaxel and platinum drugs.

Access to Erythropoiesis-Stimulating Agent (ESA) and Transfusion in Chemotherapy-Induced Anaemia: The Experience of Medical Oncology Department of Hassan II University Hospital Center of Fez

Bouchra Abou El Jaoud, Zineb Benbrahim, Hanae Bedoudou, Karima Oualla, Lamiae Amaadour, Samia Arifi, Naoufel Mellas

Hassan II University Hospital Center, Fez, Morocco

Introduction: Anemia is a frequent complication of myelosuppressive chemotherapy. Its severity depends on the extent of disease and the intensity of treatment. The most common patient complaints are fatigue and dyspnea, which can have adverse effects on a patient's ability to perform normal daily activities and increase the quality of life. The objective is to determine the access to erythropoiesis-stimulating agent (ESA) injections and transfusion in chemotherapy-induced anaemia.

Methodology: We present the preliminary results of a prospective study that started at January 01, 2017 with a current follow up of 17 months. ESA injections were required when: Hemoglobin (Hb) was between 9 and 11 g/dl (Darbapoetin Alfa) and blood transfusion was needed if Hb rate was lower than 8 g/dL.

Results: 102 patients were evaluated until now with an age average of 46 years and a male: female ratio of 2. Patients were mainly treated for lung and breast tumors. 29 % of our patients required transfusion before ESA injections. However, only 30% of them received enough red blood cells because of blood unavailability related to lack of blood donation. The median time to transfusion was 2 days. 4.5% of patients presented a deficit in iron and were all supplemented orally for it. None of them received intravenous iron because of its unavailability in our department. 8% of patients requiring ESA didn't receive the treatment because of its non-refund by their health cover system. All patients who received ASE responded to the treatment after at least 3 injections with an Hb rate of 10 to 12 g/dL. Among those who responded to ESA, 89% received first line chemotherapy.

Conclusion: So far, these results reflect the efficiency of ESA injections. They also reflect that we need to criticize our healthcare system for not enabling us to provide needed care to all our patients.

Access to Targeted Therapy in Metastatic Renal Cell Carcinoma Patients in Morocco

Mariam Benhami, Zineb Benbrahim, Lamiae Amaadou, Karima Oualla, Samia Arifi, Naoufal Mellas

Hassan II University Hospital Center, Fez, Morocco

Introduction: Renal cell carcinoma (RCC) accounts for 3%–5% of all adult malignancies. The outcome of patients with metastatic renal cell carcinoma has been substantially improved with administration of the currently available molecularly targeted therapies. However, these therapies are mostly inaccessible to developing countries patients what is causing a major health care problem.

Methodology: A retrospective study of 80 patients was conducted from January 2013 to December 2017 in the Department of Medical Oncology of Hassan II University Hospital, FEZ. Patients were analyzed for accessibility to standard of care drugs in metastatic renal cell carcinoma.

Results: The median age of patients was 55.23 years. The average time of diagnosis was 8 months. The main symptoms were hematuria (23%) and a lump in the abdomen (90%). Eighty five percent of the patients had synchronous metastatic diseases. The most frequent histological subtype was clear cell renal carcinoma (80%). 16% of patients belonged to the poor-risk group according to MSKCC score. They were all candidates for treatment with Temsirolimus. However, because of unavailability, they received an antiangiogenic therapy based on Sunitinib in first line treatment. The objective response rate in this group was 26%, with a median PFS of 6 month and a median OS of 8 months. All patients with intermediate and good prognoses groups received Pazopanib or Sunitinib with an objective response rate of 53 %, a median PFS of 10.60 months and a median OS of 23 months.

Conclusion: The prognosis of the poor risk group of metastatic renal cell carcinoma is poor and might be improved with Temsirolimus. However, the costs of these treatments make them inaccessible for hundreds of patients and should be re-negotiated for developing countries.

Efficacy and Toxicity of Target Therapy in Metastatic Renal Cell Carcinoma at Department of Medical Oncology Fez

Mariam Benhami, Zineb Benbrahim, Lamiae Amaadou, Karima Oualla, Samia Arifi, Naoufal Mellas

Medical Oncology Department of the Hassan II University Hospital Center, Fez, Morocco

Introduction: Renal cell carcinoma (RCC) accounts for 3%–5% of all adult malignancies, Clear-cell RCC is the most frequent sub-type of sporadic RCC in the adult (70%–85%). The outcome of patients with metastatic renal cell carcinoma has been substantially improved with administration of the currently available molecularly targeted therapies. However, proper selection of therapy and management of toxicities remain challenging.

Methodology: A retrospective study was conducted from January 2013 to December 2017 in the department of medical oncology at Hassan II University Hospital in Fez, Morocco, during which 80 patients were analyzed for metastatic renal cell carcinoma.

Results: The mean age was 55.23 years (30–79 years). The average time of diagnosis was 8 months. Main symptoms were blood in the urine (23%) and a lump in the abdomen (90%). 85% of patients have synchronous metastatic diseases. 65% of patients have a prior nephrectomy. The most frequent histology was clear cell renal carcinoma (76%). The treatment received in the first line was Sunitinib in 88%, Pazopanib in 8% and Sorafenib in 4%. One complete response was seen, 33% of patients presented partial response; 14% presented a progressive disease and 53% were stable. After failure of the first line, 9 patients were placed on the second line to receive: Sorafenib (n = 4), and Pazopanib (n = 2) and Everolimus (n = 3). An acceptable safety profile was objectified (asthenia, grade 2 hand foot syndrome and hypothyroidism) The progression-free survival was 10.60 (4–16.26 mos.). The median survival was 23 months (range, 1–47 mos.).

Conclusion: Our efficacy data were comparable to the published literature in terms of progression free survival and overall survival, while toxicity profile is different from Asian and western countries. However, adverse events were manageable and tolerable in most of our patients.

Palliative Care in Egypt: the experience of the Gharbiah Cancer Society

Mohamed Hablas

Gharbia Cancer Society, Tanta, Egypt

Introduction: The need for palliative care in middle and low resources countries, including Egypt, is emerging. The Gharbiah Cancer Society (GCS) is a non-profit, nongovernmental hospital, located in Tanta, the Capital of the Gharbiah governorate in the Mid-Nile Delta. The Society provides acute care to patients with cancer including surgery, chemo, and radiotherapy.

Review of 9 year-data of Gharbiah population-based cancer registry from 1999 to 2007 revealed 3480 cancer cases/year, with Age Standardized Rate (ASR) of 161.7/100,000 for males and 120.8/100,000 for females.

Methodology: About 70 % of cases present in advanced stages (III and IV) with liver cancer the most frequent cancer in male and breast cancer as the most frequent cancer in females. The GCS started a comprehensive palliative care services in April 2011 with 10-bed inpatient unit and 6 days/week outpatient clinic. All palliative care equipment was provided by public donations. Through collaboration with National Cancer Institute, Bethesda, Maryland and the San Diego Hospice and the Institute for Palliative Medicine and Middle East Cancer Consortium, a fellowship training program was developed for a medical oncologist in palliative medicine and End-of-Life Care training course for nurses.

Results: The program succeeded in convincing local health authorities to increase the recommended opioids dose and to allow more physicians to prescribe opioids for cancer pain. In a period of 24 months, symptom management and palliative care were provided to 195 patients with advanced malignancies. The opioids consumption was increased by 30 fold.

Conclusion: The major challenges for the program were inadequate awareness among the public and health professionals about palliative care services and lack of vehicles and finances to cover home visits. The initial results of the program warrant allocating more resources for coverage of a large number of trainees and instituting a home visits program.

Multidisciplinary Tumour Board in Oncology: A single Institution Experience

Mohammed Ait Erraise, Touria Bouhafa, Khalid Hassouni

University Hospital Hassan II, Fez, Morocco

Introduction: Multidisciplinary management in cancer treatment is crucial for best result. In developed countries, this is still not the case for the majority of patients. Often, every specialist treats separately without collaborating with others. The patient in this situation has less chances of best results in term of efficacy and safety. The objective of our study is to illustrate the experience of multidisciplinary tumour boards at the university hospital Hassan II in Fez, morocco and to evaluate its benefits and challenges.

Methodology: Our work describes the different tumour boards actually running at the university hospital Hassan II in Fez, Morocco. We have several tumour boards: Breast-gynaecological, gastro-intestinal, head and neck, thoracic, soft tissue sarcoma and dermatology. In each tumour board, we try to have a pathologist, a surgeon, an organ specialist, a radiation oncologist, a medical oncologist and a radiologist. The idea was to have most of our cancer patient passing through a specific tumour board.

Results: All of our boards are weekly, except for the head and neck which is every two weeks. The number of patients vary from week to week and from board to board. For example: at the breast-gyn, there are 20 to 30 patients every week. for the head and neck, less than 10 patients. for the GI, 25 to 35 patients. Most of the patients are discussed at the board with a final decision signed on a specific board form. We use paper forms. The boards are held in the Radiology Department to access images or in other departments like breast-gyn. The challenges are actually that there are still a good number of patient that are initially treated outside the institution. the other difficulty is that in some cases, waiting for the board could delay the treatment. We still don't have regional tumour board where other doctors from other hospitals (private and public) could discuss their cases. Online version or teleconference could solve this problem.

Conclusion: Tumour boards in oncology are mandatory. The implementation needs discipline and regularity. The quality of cancer management is improved. The patient circuit is well established. However, they should not delay the treatment. Creating regional and virtual tumour board is a good future direction to disseminate the access to best quality treatment decision for the patient.

Screening for Cervical Cancer in Morocco: Through a Mass Screening Campaign in the Rhamnas Region

Mohammed Ait Erraisse[1], Mohamed Amine Benhmidoune[2], Najib Derhem[3], Ali Tahri[2], Najib Bouras[2]

[1]University Hospital Hassan II, Fez, Morocco; [2]Private Oncology Clinic, Marrakech, Morocco; [3]Private Oncology Clinic, Agadir, Morocco

Introduction: Cervical cancer is a major public health problem in Morocco. However, there is no organized screening program. Screening is individual with only one-off campaigns launched by non-governmental organizations (NGOs) working in this area.

Methodology: We report a campaign that we carried out, in collaboration with many NGOs and public and private health structures, in the region of Rhamnas (Centre-South of Morocco), using the technique of classical smears.

Results: A total of 861 cervicovaginal smears were performed in a population of women of sexual activity, divided into seven centres, ranging in age from 17 to 82 years; 17% were menopaused, 68.1% were multiparous and gynaecological examination was normal in 55.3% of cases. Of the 861 cervicovaginal smears performed, 5.3% were uninterpretable (0.9% bruised, 4.4% unsatisfactory). Of the cervicovaginal smears judged to be satisfactory (815), 23.8% were normal, 70.9% had benign cellular changes, and 5.3% had squamous cell atypia, high grade in only three cases, and two moderate dysplasia. one of severe dysplasia. The age group of 30 to 50 years was the most affected by atypical squamous cells, while no cases were found at extreme ages (under 20 and over 60 years).

Conclusion: In Morocco, the development of recommendations adapted to our epidemiological and socio-economic context seems to be the initial and unavoidable step, which is needed before the introduction of a national mass screening policy, which is expected to provide an acceptable coverage rate. in view of the recent introduction of a universal social security system.

Multidisciplinary Tumor Boards: Our Local Experience

Rahma Djouabi, Chouaib Hellal, Assia Bensalem

Hospital Establishment Didouche Mourad and University Salah Boubnider, Constantine, Algeria

Introduction: The multidisciplinary tumor board meetings (MDTB) in oncology are forums for formalized exchanges between specialists in several disciplines on diagnostic and therapeutic strategies in cancer, to provide an opinion adapted to the patient's situation by bringing together skills. They make it possible to legitimize medicals decisions in a collegial way, which is all more justified for complex clinicals situations. The purpose of this work is to confirm the positive aspects of MDTB related to exchanges between specialists.

Methodology: This study was a descriptive study of MDTB of onco-urology on duration of six months in the year 2017–2018. These meetings were held once a month, within the department of urology. The number of files submitted was ten in 70% of the cases. Each meeting was made up of oncologists, urologists, radiation therapists, anatomical-pathologists.

Results: 55 files were discussed during the evaluation period with an average duration of two hours. Only those patients for whom the situation was complex or controversial were included. The average age of the patients was 62.6 years old. Of the 55 patients, 50 were men and 05 were women. The information recorded in MDTB related to the TNM stage, age, sex, tumour location and pathological findings in a systematic way in 100% of cases. The Guidelines used were, in the vast majority of cases, that of Euro, France and MENA-NCCN, ESMO, and ASCO. The subject of the discussion, the elements of the decision and follow-up are mentioned in a report. The analysis grid included 4 domains related to the patient, the disease, the science data and the expected objectives of the different therapeutic weapons.

Conclusion: MDTB has changed our approach to oncology and care protocols. They now integrate into our practice in oncology, a multidisciplinary culture and a cooperation of specialties having the same look on the disease or the same therapeutic weapons is a source of enrichment for practitioners and quality of care for patients. The future is to include all cases of cancers in MDTB, not just whom that the situation was complex to unify the supported care of patients.

Nipple Sparing Mastectomy: Our Experience with Outcomes and Complications

Hiba Rauf[1], Muhammad Rauf Shaikh[1], Maha Rauf[2], Noshad Shaikh[1], Fatima Rawish[1]

[1]Dow Medical College, Karachi, Pakistan; [2]University of Waterloo, Waterloo, Canada

Introduction: Nipple Sparing Mastectomy (NSM) is an evolving trend in breast surgery. NSM is associated with good cosmetic appearance and good psychological impact. But the main concerns are ischemia of the nipple areolar complex and local recurrence of the tumour. There is limited knowledge and inadequate studies that evaluate these complications. The aim of our study is to evaluate the complication, oncological and cosmetic outcome with NSM.

Methodology: We performed a retrospective study over a period of eight years, from April 2009 to March 2017, on patients who underwent NSM in surgical Unit 1 at Civil Hospital and Bantva Memon Hospital in Karachi, Pakistan. 132 female patients were included in the study who had tumour at least 2cm from the Nipple Areolar Complex (NAC). The age group of the patients selected ranged from 22 to 74 years with a mean age of 49 years. NSM was performed on 154 breasts in 132 patients, with 22 of the patients receiving bilateral NSM. All statistical analysis was performed on SPSS Version 20. Variables

were compared using chi-square test with P-value < 0.05 was considered significant.

Results: Invasive ductal carcinoma was the commonest (73.0%) while lobular carcinoma in situ was the least common (4.5%). 30% patients had positive lymph nodes. In 26.0% cases NAC became partially ischemic, while in 9.1% cases it was full thickness ischemia. Local recurrence was observed in 8.4% cases. 4.5% cases showed systemic recurrence in the mean follow up of 32 months (see **Table** below).

Conclusion: With our study, we conclude that NSM is safe, provided patients are carefully selected. It gives good cosmetic result and good psychological impact which will cascade less burden on the health system for recurrent cosmetic surgeries and psychiatric referrals. Local recurrence is not significantly higher after NSM in selected patients, however, NAC ischemia is a significant complication after NSM. It can be improved with the experience of the surgeon and good surgical technique. Finally, larger study with long follow-up is needed to find out the long-term outcome after NSM.

Table: Complications After Nipple Sparing Mastectomy

Outcome	N	%
Hematoma	14	9.1%
Wound infection	8	5.2%
Partial thickness ischemia	40	26.0%
Full thickness ischemia	14	9.1%
Local recurrence	13	8.4%
Systemic recurrence	7	4.5%
No. of cases expired	13	8.4%

Prostate Cancer: Patients' Quality of Life

Soumia Berrad, Zineb Benbrahim, Hayat Erraichi, Karima Oualla, Samia Arifi, Naoufal Mellas

Hassan II University Hospital, Fez, Morocco

Introduction: Maintaining the quality of life of patients with prostate cancer is important as they have a long-life expectancy after diagnosis. Different therapeutic options including surgery, radiotherapy, chemotherapy and endocrine therapy, influence patient's quality of life in addition to his decision regarding treatment choice. The objective of this study is to report the prevalence of mental and physical disorders, in addition to urinary, digestive and sexual troubles in prostate cancer patients. The study aims also to assess the associated factors predisposing to these disorders and evaluate their impact on the quality of life of patients.

Methodology: An observational, descriptive cross-sectional study was conducted in departments of medical oncology and urology of Hassan II University Hospital from January 2016 to January 2017, including 18 prostate cancer patients. We used standard indicators, including urinary questionnaires, PR25, IPSS, and the International Index of Erectile Function (IIEF 15), as well as a global quality of life assessment tool (EORTC-QLQ-30).

Results: The mean age of patients in the study was 69.8 years and 50% of patients were diagnosed at a metastatic stage. Twenty eight percent (28%) of patients underwent a radical prostatectomy. Thirty nine percent (39%) of patients received post-prostatectomy radiotherapy and only 2 patients received radiotherapy alone. Urinary incontinence was noted in 17% of patients who underwent surgery. Bladder toxicity was found in 28.7% of cases with 5.5% of post-radiotherapy cystitis. A significant alteration of erectile function was noted in 38.8% of patients with severe disorders whereas the score was not interpretable in 33.3% of cases. Eighty three percent of patients had a significant moderate fatigue. Ten percent (10%) of patients presented a decrease in their physical activity with an average score of 46.2 ± 18. Sixty one percent (61.1%) of patients were fully functional whereas 11.1% reported extreme difficulties in remaining functional with a median score of 43 ± 24.6.

Conclusion: All therapeutic modalities have side effects that impact significantly the daily life of patients. Consequently, the assessment of the quality of life of patients that remains a daily challenge must be done based on precise and validated scales.

Improving Boarding Time for Patients in Emergency Department

Faisal Farooqui, Ali Al Khathami, Andrea E. Doherty, Tabrez Pasha, Ashwaq Al Olayan, Ayman Hejazi, Abdullah Al Qarni, Mohsen Al Zahrani, Faisal Al Safi, Abdul Rahman Jazieh

King Abdulaziz Medical City, Ministry of National Guard Health Affairs, Riyadh

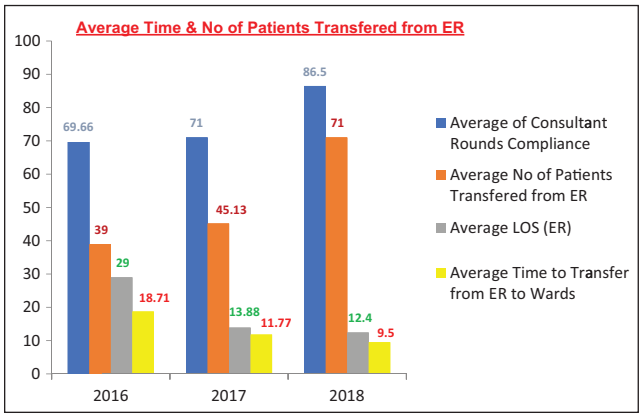
Introduction: Delays in moving patients from Emergency Department (ED) to Oncology wards may result in patient boarding in ED, which may expose patient to risk of infection and delay in delivering proper treatment. Our project aimed at reducing the time of boarding in ED to < 6 hours, set by the organization leadership.

Methodology: A multidisciplinary team critically reviewed the patient intake process from ED to various Oncology wards at the new facility. Process mapping was done to identify the areas of improvement that include initial assessment of the patients in ED, accepting the patient into Oncology care, assigning bed in the relevant Oncology

ward and transferring the patients to the assigned bed. Several simulations and scenario-based studies were conducted to foresee all the possibilities to be encountered while transferring care and transferring patients. Daily consultant rounds were scheduled to start before 9:00 am. A daily bed management meeting was scheduled every morning to discuss various aspects of patient's flow.

Results: Medical and operational decisions were made in a timely fashion with better communication among the staff and patients and their families. Better communication between Department of Oncology, Emergency Department and Bed Management Department was established on a daily basis. Patient waiting time in the ER was reduced from 22 hours (April–September 2016) to 12.4 hours (October–December 2016). (January 2017–December 2017) average waiting time has been 11.90 hours. During same period, average length of stay (LOS) was reduced from 29 days to 13.88 days. Adherence to daily rounds before 9 am was 71%. See **Figure** below.

Conclusion: Our project showed that improved communication among involved departments, centralized decision making based on different oncology specialty criteria and forming a detailed algorithm reduced the ED boarding time of patients and shortened length of stay by improving discharge planning. Our team is working on additional interventions to reduce boarding time to the set < 6-hour goal.



Optimization of Clinic Management to Reduce Walk-Ins

Faisal Farooqui, Nashmia Al Mutairi, Faisal Al Safi, Tabrez Pasha, Abdul Rahman Jazieh

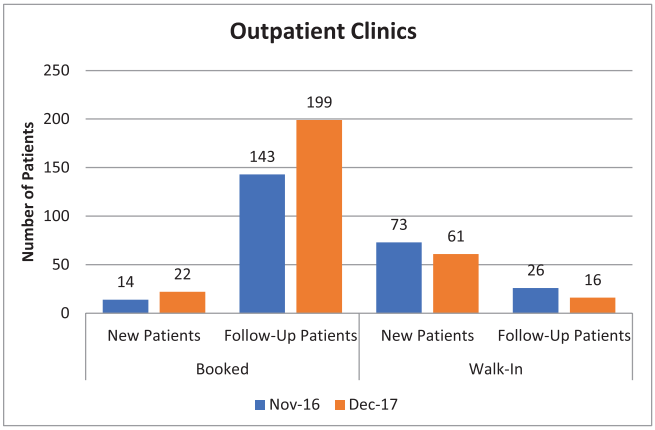
King Abdulaziz Medical City, Ministry of National Guard Health Affairs, Riyadh, Saudi Arabia

Introduction: Due to increased walk-in patient visits in Gynaecology Oncology clinics, physicians could not accommodate scheduled patients and were also unable to prioritize on critical patients due to non-availability of appointment slots. Too many walk-in patients were visiting the clinic who were not requiring any medical attention.

Methodology: Close monitoring of number of scheduled visits and walk in visits to see the ratios in departmental statistics and data. Increased number of clinics, clinic allocation for each consultant to discuss results with the patients, removed clinics such as the miscellaneous clinic.

Results: *Scheduled patient in the clinics:* Total new patients seen in new scheduled clinic increased from 14 patients in November 2016 to 22 patients in December 2017. Follow up patients seen increased from 143 in November 2016 to 199 patients in December 2017. *Walk-in patients:* New patients seen decreased from 73 in November 2016 to 61 in December 2017 Follow-up patients also shows a decrease from 26 in November 2016 to 16 in December 2017. See **Figure** below.

Conclusion: Results display a trend of decrease in walk-in patients in the clinic, increased number of patients seen in scheduled clinics which validates the outcomes. Team work used in developing new clinics, deleting existing clinics was effective and collaborative behaviour gave birth to process ownership. Number of scheduled patients "seen" with a regular appointment increased.



Enhancing Timely Response of Physicians to Critical Laboratory Values

Faisal Farooqui, Ashwaq Al Olayan, Mohsen Al Zahrani, Abdullah Al Qarni, Nashmia Al Mutairi, Tabrez Pasha, Abdulaziz Zaben, Abdul Rahman Jazieh

King Abdulaziz Medical City, Ministry of National Guard Health Affairs, Riyadh, Saudi Arabia

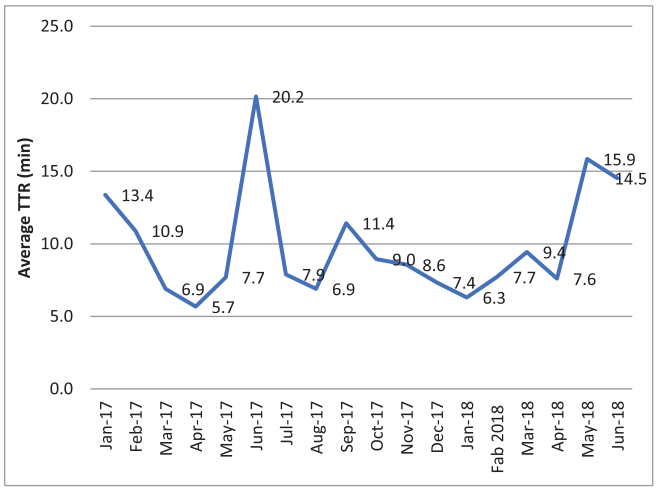
Introduction: We identified a delay in response of physicians to critical laboratory values, which poses risk to the patients' health and overall quality of care.

Therefore, we implemented a program to improve physician's time to respond (TTR) to critical lab value notification to less than 45 minutes, as set by hospital policy.

Methodology: A multidisciplinary team performed process mapping to identify reasons of delay in response and determine possible interventions. Repeated PDSA (Plan, Do, Study, Act) cycles were conducted exploring different methods of communication and monitor time to respond. All change requirements were implemented in the work process. All the communication possibilities were researched and closely studied which included communication via email, SMS (text message), mobile phone, and paging system. A dedicated pager/bleep was provided to one physician for each section of Oncology taking care of the critical lab values. All pager/bleep numbers were written clearly in the On-call roster for each section on a monthly-basis. The on-call physician list was shared with laboratory/pathology department for easy access to communicate. Escalation of paging to chairman/operations administrator lead to direct phone calls to the divisional leadership and the on-call physician taking care of all the critical care results (7 minutes to escalate from first level to the second level). Exclusions from the results included: weekends, late evenings (after 4:30 pm), and expired results not responded to by any physician.

Results: Physician TTR has been maintained at an average of 9.8 minutes between January 2017 and June 2018. The TTR maintained at < 9.8 minutes with good sustainability and has remained well below the 45 minutes mark set as a standard target by the hospital. See **Figure** below for more details.

Conclusion: Our project revealed sustained impact of physician TTR as a result of multi-disciplinary team work to improve the communication process and motivation by comparison and competition among team members.



TTR, time to respond.

Impact of Effective Communication Among In-Patient Palliative Care Providers

Faisal Farooqui, Abdullah Al Qarni, Ahmed Bin Ahmed, Tabrez Pasha, Abdul Rahman Jazieh

King Abdulaziz Medical City, Ministry of National of Health Affairs, Riyadh, Saudi Arabia

Introduction: The decision to admit palliative care patients to related wards was delayed due to lack of communication. Those patients who needed medical attention were delayed for admissions and those who could be discharged were staying longer. Weekend process for decision making (admissions and discharge) was sluggish.

Methodology: Department introduced the "Morning Consultant Rounds" to start at 8:00 am, where they discuss patient condition, possible discharges and planned admissions for the day. Communication reports generated were reviewed, monitored, and a final Daily Bed Management report was generated by 10:00 am, and a monthly report was consolidated and shared with a multi-disciplinary team and nursing department.

Results: Palliative care started with 30% compliance in January, and after August 2017, they reached 100% compliance for the rest of the year which displays a sustained trend in communication that resulted in the following. Average length of stay for 2017 was 21 days and in the last quarter it went up to 25 days. This trend in increased length of stay should continue for Palliative Care patients. Average Emergency Department (ED boarding time remained well below the hospital targeted boarding time of 6 hours or less (with variations in Aug–Oct 2017). This shows an improvement in communication and decision making to bring patients to the ward. Bed Occupancy rate was 86% in January 2017, and in December 2017, it increased to 96%. Steady growth in bed occupancy shows quick decisions to admit patients to the ward from other areas. Patients admitted from other areas of oncology in the first quarter: 31% admissions were from other services and in the last quarter it increased to 48% patients.

Conclusion: Communication among the multidisciplinary team improved number of admissions, did not achieve the targeted time of discharge, increased number of elective admissions compared to ED patients. ER boarding time was maintained below the hospital target

of 6 hours or less. Patients were taken care of in timely fashion and less patients ended up in ER.

Prediction of Lung Metastases and Recognizing MicroRNAs (miR-210) as Novel in Cancer Prognosis Biomarkers Using Radio-Genomics in Soft-Tissue Sarcomas for Precision Medicine

Deva Reddy[1], Reddy Ram[2], Reddy Sayukta[1]

[1]Cancer Moonshot, Bangalore, India; [2]Care Cancer Hospital, Hyderabad, India

Introduction: Clinical care and outcome in soft tissue sarcoma (STS) remains challenging due to the tumour's heterogenetic and metastatic nature. To establish personalized treatment in STS discovery of tumour phenotypes for metastatic and recognizing novel cancer prognosis biomarkers. Decoding the tumour phenotype with non-invasive imaging to identify the genomics of cancer without the use of a biopsy, enable prognosis and Treatment response prediction for precision medicine.

Methods: Data of two independent data sets were used: FDG-PET/CT STS cohort (51 patients) and genes STS cohort (173 patients, 52K genes). Tumor segmentation was done using Auto Segmentation Deep Learning -3D and feature extraction was done using 2D and 3D techniques consisting of Non-Texture (9) & Texture (41) to Metastasis Prediction Model was computed using Deep learning (CNN)/J48 resulted 15 ranked features. We established a radio genomics correlation map of pairwise association between metagenes with image features, using Significance of Microarrays (SAM) to identify statistically significant associations between metagenes and image features, and subsequently we recognized MicroRNAs (miR-210) as a novel cancer prognosis biomarker.

Results: Texture analysis based on radio genomics significantly predicted the features and genes responsible for lung metastases in STS and ranked features for metastasis. Correctly classified Instances: 485 (95.098%); incorrectly classified instances: 25 (4.902%). See **Tables 1** and **2** for more detail.

Conclusion: The described features and genes could be essential drivers of tumour heterogeneity, molecular subtypes, and tumour metastases in STS. Non-invasive radio genomics-based identification of tumour subgroups and potential treatment approaches can significantly contribute to personalized therapy.

Table 1:

Features	Ranking
GLRLM.RLV	0.079422
Global. Variance	0.076966
GLRLM.GLV	0.049879
GLSZM.ZP	0.035781
GLSZM.SZHGE	0.028741

Table 2: Genes Array Analysis of the Top Genes

Gene Name	Symbol
X inactive specific transcript (non-protein coding)	XIST
Lysine (K)-specific demethylase 6A	KDM6A
Taxilin gamma	TXLNG
DEAD (Asp-Glu-Ala-Asp) box helicase 3, X-linked	DDX3X

Predicting Drug Response in Cancer in Cancer Cell Lines Using Deep Learning for Precision Treatments

Deva Reddy[1], Reddy Ram[2], Reddy Sayukta[1]

[1]Cancer Moonshot, Bangalore, India; [2]Care Cancer Hospital, Hyderabad, India

Introduction: Precision oncology aims to improve cancer patient outcomes but major challenge in cancer treatment is predicting the clinical response to anticancer drugs for each individual patient. Since cancer is characterized by high inter-patient variance, the implementation of precision medicine approaches is dependent upon understanding the disease process at the molecular level. While the 'OMICS' era provides unique opportunities to understand the molecular features of diseases, the ability to apply it to targeted therapeutic efforts is hindered by both the massive size and diverse nature of the 'OMIC' data. We are applying recent advances with Deep Learning Neural Networks (DLNN), suggests that DLNN could be trained on large data sets to efficiently predict therapeutic responses.

Methodology: We compiled data from CCLP & GDSC, 10001 Cell lines, 251 drugs. We used GDSC 8 as our drug response data source for 139 therapeutic compounds, which provided IC-50 values for each compound, as well as information on tissue origin. Given their molecular profiling data, both large cell-line panels (CCLE and GDSC) have been utilized in attempts to identify biomarkers for predicting drug response of specific cancer cell lines. Today's complex "OMIC" data sets have been proven too multi-dimensional to be effectively managed by classical Machine Learning algorithms. To our knowledge, this is the first time that the DLNN framework is systematically applied to predict drug efficacy against cancer. DLNN architecture demonstrate

that it is well suited for complex biological data because it can automatically construct complex features and allows for multi-task learning. For our drug response classification framework, we selected the deep learning framework because it has redefined the state-of-the-art in many applications ranging from image recognition to genomics.

Results: According to the widely accepted AUC-based classification quality grading scale, classifiers that produce AUCs 0.90–1 are considered excellent, 0.80–0.90 are good, 0.70–0.80 are fair, 0.60–0.70 are poor classifiers, while classifiers with an AUCs < 0.6 are considered failed or random classifiers. Out of a total of 278 classification tasks corresponding to 139 drugs, each with two responses (sensitivity and resistance), our pipeline produced 276 classifiers. Out of the 276 trained and tested DLNN classifiers, approximately 1% were excellent, 17% good, 54% fair, and 24% poor.

Conclusion: Recent advances with DLNN suggests that DLNN could be trained on large data sets to efficiently predict therapeutic responses.

Quality of Life and Sexuality of Women with Breast Cancer: Impact of Mastectomy

Meryem Azegrar, Zineb Benbrahim, Lamiae Amadour, Karima Oualla, Samia Arifi, Naoufal Mellas

University Hospital Hassan II, Fez, Morocco

Introduction: Breast cancer is the leading cause of cancer. Its radical treatment is surgery which may cause significant disorders in the patients, including dissatisfaction with appearance, perceived loss of femininity and body integrity. These conditions affect the perceived body image and sexual attractiveness in approximately 33% of breast cancer patients. The objective of this study is to understand the body image and sexual disorders of a group of women with mastectomy younger than 45 years old.

Methods: This is a cross sectional study of 100 women with breast cancer conducted in the Medical Oncology Department of Hassan II University Hospital. We used the Hospital Anxiety and Depression Scale (HADS) and the Body Image Scale (BIS) to measure body image, symptom distress, anxiety, depression and psychological impact of disease in these patients.

Results: The median age of the subjects was 36 years (28–45 years). 30% of patients were 40 years-old or younger. Most of them were married (76.5%), had elementary education (72.9%), and were non-employed (76.9%). 59 % of patients were at early stage of cancer. A large majority of subjects underwent radical mastectomy (96.8%). 38.7% and 27.7% of the patients were classified as having clinical anxiety and depression, respectively. Overall body image score for the breast cancer patients was 7.55. The subdimensions of body image mean scores were: cognitive (mean = 4.45), affective (mean = 3.35), and behavioral (mean= 0.74). Factors correlated with body image concerns were the young age and the radical mastectomy.

Conclusion: Body image issues among breast cancer patients is becoming more prevalent. This study demonstrates that age, symptom distress, depression, intrusion, and operation procedure are important predictors of body image among breast cancer patients younger than 45 years old. It should consider how best to help breast cancer patients relieve their symptoms, decrease the psychological impact of the disease, and enhance self-confidence.

Adherence to Capecitabine Among Patients with Gastro-Intestinal and Breast Cancers

Meryem Azegrar, Zineb Benbrahim, Lamiae Amadour, Karima Oualla, Samia Arifi, Naoufal Mellas

University Hospital Hassan II, Fez, Morocco

Introduction: Oral chemotherapy is increasingly used in oncology. This therapy seems to have few toxic effects and offers patients good quality of life. However, poor adherence is the main risk associated with this administration route.

Methods: We report results of a prospective study of 140 patients followed for Gastro-intestinal or breast cancer under oral chemotherapy (Capecitabine) for minimum period of 3 months. Poor observance was defined as: drug taking under 90% or upper 110% of the daily dose, forgetting more than two doses per cycle or non-respect of the dose schedule (doses spaced less than 8 hours or more than 12 hours).

Results: The median age of patients was 48 years old (range, 32–76). Capecitabine therapy was perceived necessary by 96% of patients. A Poor observance was objective in 34% of patients. Non-adherence to medication was due to many reasons often linked with a change in the daily routine: visiting friends or going on holidays. The criteria to choose oral chemotherapy were convenience (79%), intravenous route problems (85%) and the simplicity to use oral route (72%). Non-adherence was also associated with a higher mean age, low education, and polypharmacy, without any correlation with gender, type, or stage of cancer.

Conclusion: This study showed a high level of patients' observance to Capecitabine. However, health professionals need a greater focus in the monitoring of older and low-education patients with this oral

treatment regimen. In light of our findings, patients should receive 'therapy education' to help them and their support groups better understand the disease and its treatment and to achieve optimal health management and improved treatment effectiveness.

Impact of Persistent Pain after Mastectomy in Patients Treated for Breast Cancer

Mermey Azegrar, Zineb Benbrahim, Lamiae Amadour, Karima Oualla, Samia Arifi, Naoufal Mellas

University Hospital Hassan II, Fez, Morocco

Introduction: Breast cancer is the most common female malignancy; 75% of these patients may have chronic pain, lymphoedema, post-irradiation neuropathy or phantom pain following the cancer treatment. Persistent post-mastectomy pain (PPMP) is an increasingly recognized problem leading to disability, psychological distress. It is multi-factorial and is due to extensive surgery and reconstruction, axillary lymph node dissection and adjuvant treatments (radiation, chemotherapy, and hormone therapy).

Methodology: This is a cross sectional study including 130 patients treated with mastectomy and followed in the medical oncology department at the Hassan II University Hospital of Fez. Data were collected on a questionnaire to characterize pain symptom distress, anxiety and depression. The purpose of this study was to investigate demographic, psychophysical, psychosocial and treatment-related factors associated with PPMP.

Results: The median age was 48 years (30-74 years). 33% of patients were younger than 40 years, most were married (67%) and had elementary education (52%). Forty-six patients (38%) had a PPMP. The breast was the most common location (92%) with a mean pain severity of 3.6 (0 to 10). Pain in the axilla was also relatively common (62%), with reported mean severity of 4.2. Class I and II analgesics were used in 18% and 5%, respectively of the pain group patients. Comparison between the PPMP and PPMP-free patients did not objective any difference in mean time since mastectomy (27 Vs. 29 months), in radiation therapy rates (65% vs 68%), in chemotherapy rates (78% vs 81%) or in hormone therapy rates (74% vs 76%). The analysis of demographic and psychosocial variables: age, body mass index, education, marital status, and exercise did not show any difference between the 2 groups. However, measures of anxiety, depression and somatization were significantly higher in patients with PPMP.

Conclusion: Pain can be severe enough to cause long-term disabilities and interfere with sleep, performance of daily activities. Treatment should start as early as possible and requires multidisciplinary collaboration combining medicinal, physical, social and psychological therapies. Prevention remains difficult and pain screening should be early to obviate medical nomadism.

Quality of Life Evaluation of Algerian Patients Under Platinum-Based Chemotherapy

Mohamed Aimene Melzi[1,2], Zoubir Derbouz[1], Adda Bounedjar[1,2]

[1]University Hospital Frantz Fanon of Blida, Blida, Algeria, [2]University Saad DAHLEB of Blida, Blida, Algeria

Introduction: Platinum salts are widely used in medical treatment of malignant tumours. We performed this study to evaluate the quality of life of patients receiving platinum salts-based chemotherapy.

Methods: We performed a prospective study on the quality of life of patients receiving a platinum salts-based chemotherapy (Cisplatin, Carboplatin and Oxaliplatin) between January 2017 and April 2017. We used the EORTC QLQ-C30 questionnaire version 3.0 (Arabic translation) to evaluate the quality of life of patient, before the first administration of chemotherapy (baseline), and then after the 3rd cycle. We calculated the difference between the baseline score and after three chemotherapy cycles for each of questionnaire's items: global health status, functional scales (physical functioning, role functioning, emotional functioning, cognitive functioning and social functioning) and symptom scales (fatigue, nausea and vomiting, pain, dyspnoea, insomnia, appetite loss, constipation, diarrhoea, and financial difficulties). The obtained results were divided in three groups: improved score, unchanged score and deteriorated score. The results were then analysed depending on the platinum salt. Fisher's exact test was used.

Results: Forty-four patients were included. 50% of the study population were male. Cisplatin was given to 22% of patients, Carboplatin to 48% and Oxaliplatin to 30%. The mean age was 54 years. Deterioration in the global health status score was found in 54.4% of patients (Cisplatin 30%, carboplatin 52%, oxaliplatin 77%). The analysis of the functional scales found an aggravated score regarding the physical functioning in 56.6% of patients (cisplatin 40%, carboplatin 47%, oxaliplatin 84%, p=0.054), emotional functioning in 43.3% and social functioning in 40.9% of patients. An improvement of the symptoms scales was found regarding pain in 40.9% of patients, dyspnoea in 29.5% (cisplatin 10%, carboplatin 48%, oxaliplatin 15%, p=0.055), insomnia in 29.5% and constipation in 34.1% of patients. A deterioration of the score was observed with fatigue in 52.3% of patients, nausea & vomiting in 50%

of patient (cisplatin 60%, carboplatin 28%, oxaliplatin 76%, p=0.021), appetite loss in 43.2% and diarrhoea in 38% of patients (cisplatin 0%, carboplatin 57%, oxaliplatin 0.38%, p=0.006). No changes were observed regarding role functioning in 40.9% of patients; cognitive functioning in 45.5% and financial difficulties in 52.3% of patients (cisplatin 90%, carboplatin 43%, oxaliplatin 38%, p=0.022). See **Table** below for details.

Conclusion: To offer a good quality of survival, the choice of the therapeutic strategy depends on the effectiveness of the proposed treatment and its tolerance.

Table: Evolution of the QLQ-C30 scores

QLQ-C30 items	Deteriorated %	Unchanged %	Improved %
Global health status	54.5	22.7	22.7
FUNCTIONAL SCALES			
Physical functioning	56.8	11.4	31.8
Role functioning	29.5	40.9	29.5
Emotional functioning	43.2	31.8	25
Cognitive functioning	36.4	45.5	18.2
Social functioning	40.9	50	9.1
SYMPTOM SCALES			
Fatigue	52.3	20.5	27.3
Nausea & vomiting	50	31.8	18.2
Pain	34.1	25	40.9
Dyspnoea	13.6	56.8	29.5
Insomnia	25	45.5	29.5
Appetite loss	43.2	34.1	22.7
Constipation	20.5	45.5	34.1
Diarrhoea	38.6	50	11.4
Financial difficulties	27.3	52.3	20.5

QLQ-C30, Quality of Life Questionnaire

Effectiveness of Multimodal Combination of KIDNET, Hope and Positive Psychotherapy in Children with Cancers: Experiences from a Super-Specialty Centre Pilot Study

Maheswar Satpathy

University College London, London, UK

Introduction: Children detected with cancer frequently experience profound trauma and agony, in addition to their physiological backlash. They also go through several psychological disturbances such as post-traumatic stress disorder (PTSD), depression and intense anxiety, complicating their response to cancer therapies (medical, surgical and radiotherapies) and exacerbating their symptom patterns. An urgent and responsive intervention to deal with the trauma of children is essential. The study attempted to deal with the unspoken illness narratives, lived realities and embodied experiences of association with cancer and tackle trauma, and suffering using a multi-modal psychological intervention. In this regard, the study is especially pertinent from health policy and intervention perspectives.

Methods: A pilot was conducted at an apex defence health set-up (Army Hospital R&R, New Delhi) on 23 children (Boys= 13; Girls =10) in the age range of 09-16 years. A group as well as individualized version of KIDNET (Kid Narrative Exposure Therapy) with focus on creative elements and Hope and Positive Psychotherapy [an adaptation and combination of Peseschkian's (1977) Positive Psychotherapy (PPT) and Seligman's (2009) Positive Psychotherapy] was practiced dealing with trauma, rumination, guilt, silence, loneliness, depression, anxiety, and meaningless among children. A multi-professional team delivered the intervention program, considering its practical implications for children with cancer.

Results: The multi-modal therapeutic combination is found to be highly effective in relieving stress and anxiety, trauma and guilt, and acted as a cathartic avenue for releasing their inner tensions. Children could regain a sense of optimism, and hope, and bring a sense of fruition and meaning to their physical experiences associated with cancer. A worldview with positivity and meaningfulness emerged because of constructive and coherent narrative exposure and engagement.

Conclusion: A multi-modal combination of KIDNET and Hope and Positive Psychotherapy are highly effective in treating 'multiple health burden' (physical and psycho-social) and emotional concerns in children suffering from cancer. This study will pave the pathways for similar multi-modal interventions to effectively intervene in helping children deal with their trauma using psychotherapeutic interventions, besides hitherto prevalent physical therapies, and can substantially change quality of care paradigm in Indian setting, and similar LMIC settings which are still grappling with developing their health systems.

Prognostic Factors for Hormone Sensitive Metastatic Prostate Cancer: Impact of Disease Volume

Alhanafy Alshimaa, Fouad Zanaty, Reda Ibrahem, Suzan Omar

Menoufia University, Sheben Elkom, Egypt

Introduction: The optimal management of metastatic hormone-sensitive prostate cancer has been controversial in recent years with introduction of upfront

chemo-hormonal treatment based on results of several Western studies. This changing landscape has renewed interest in the concept "disease volume", the focus of the present study is the Egyptian patients.

Methodology: Patients with hormone sensitive metastatic prostate cancer presenting at Menoufia University Hospital, Egypt, during the period from June 2013 to May 2016, were enrolled. All received hormonal treatment. Radiologic images were evaluated, and patients were stratified according to their disease volume into high or low, other clinical and pathological data that could affect survival also being collected and analysed.

Results: A total of 128 patients were included, with a median age of 70 years (53.9% ≥70). About 46% had co-morbidities, 62% having high volume disease. During the median follow up period of 28 months about half of the patients progressed and one third received chemotherapy. On univariate analysis, disease volume, performance status (PS), prostate specific antigen level (PSA), and presence of pain at presentation were identified as factors influencing overall survival. Multivariate analysis revealed the independent predictor factors for survival to be PS, PSA, and disease volume. The median overall survival with 27 months was high volume versus 49 with low volume disease (hazard ratio 2.1; 95% CI 1.2 - 4.4; P=0.02). Median progression free survival was 19 months in the high volume, as compared with 48 months in the low volume disease patients (hazard ratio, 2.44; 95% CI, 1.42 – 7.4; P=0.009).

Conclusion: Disease volume is a reliable predictor of survival which should be incorporated with other important factors such as patient performance status and comorbidities in treatment decision-making.

Transformation of Enteral Nutritional Supplements into Oral Nutritional Supplements

Khaoula Mazouzi, Amira Mamine

Public Hospital of Souk Ahras, Souk Ahras, Algeria

Introduction: Cancer patients suffer from poor dietary intake due to many factors including anorexia, nausea and vomiting, change in taste, and others. Therefore, it is critical to provide them with palatable food to assure adequate calorie intake. Our project aims at developing acceptable nutritional supplement to minimize the need for hospitalization for parenteral nutrition.

Methodology: In the first step, we asked 30 healthy volunteers to taste the original formulation of the enteral nutritional supplement and rate it from 1 (very bad) to 5 (very good) according to general taste then choose from the suggested ways of improvement those who seem appropriate: "Add a sweetener", "Add a good flavour", "Add colorant". In the second step, we asked the subjects to taste the original formulation of the enteral nutritional supplement and 11 different new preparations derived from it: 6 with different doses of sucrose syrup 10, 20, 30, 40, 50, and 60 g/L, and 5 with different doses of strawberry flavour 1, 2, 3, 4, and 5%, and we asked them to rate the formulations from 1 to 5 according to the flavour and the sweetness. In the third step, we chose 6 elected best preparations, 3 for the flavour and 3 for the sweetener, and we made 9 different combinations. Then, we asked the subjects to rate them from 1 to 5 according to the general taste. After each step, we calculated the final score given to each preparation.

Results: Without any addition, the enteral nutritional supplement was given a final score of 99/150. Ninety two percent of the subjects suggested that the supplement needs a sweetener, 87% think that the supplement needs a flavour and 12% think that the supplement needs colorant. In the second step, the most chosen formulations were 4%, 5%, and 3%, respectively, for the strawberry flavour, and 50, 60, and 40 g/L, respectively, for the sucrose syrup. The best combinations were 4% strawberry flavour + 50 g/L sucrose syrup followed by 4% strawberry flavour + 40 g/L sucrose syrup.

Conclusion: Our proposed oral supplement has acceptable palatable taste and provide adequate nutritional support. Our plan is to provide this to our patients and calculate the bed days saved from implementation of this intervention as well as patient satisfaction with it.

Improvement of Organoleptic Properties of Enteral Nutritional Supplements and their Transformation into Oral Supplements: A Feasibility Study

Khaoula Mazouzi, Amira Mamine

Public Hospital of Souk Ahras, Souk Ahras, Algeria

Introduction: Many of cancer patients suffer from many nutritional challenges resulting from the disease and its treatment. Due to the lack of oral supplement in our hospital, many of our patients end up being hospitalized for enteral nutrition leading to bed shortage in addition to the inconvenience to the patient and risk of inserting and keeping feeding tubes in. Our project aims at developing oral nutritional supplements from available enteral nutritional supplements to help improve the nutrition of our patients in a convenient way and reducing hospitalizations.

Methodology: We performed a series of preclinical studies on the available enteral nutritional supplement and the feasibility

of its transformation into oral nutritional supplement by adding a sweetener, a flavour and a colorant. The studies included: *(1)* physico-chemical studies of the original product: pH, density, colour, odour; *(2)* compatibility studies with different sweeteners: sucrose, glucose and fructose; *(3)* compatibility with different physical forms of the sweetener: crystals, powder and syrup; *(4)* compatibility studies with food flavours: strawberry, banana and vanilla; *(5)* compatibility studies with colorants; *(6)* physico-chemical stability; and *(7)* microbiological studies.

Results: The results for the respective studies are as follows. *(1)*: The enteral nutritional supplement has an enriched formulation of proteins and amino acids, fatty acids and carbohydrates. It has a beige colour, no smell and a pronounced taste of vegetal proteins (chickpea and Soya beans). Its pH is 7.12 at 18.5°C and its density is 1.05. *(2)* Sucrose is the only sweetener that does not react with amino acids or proteins. It is a non-reducing sugar and that is why it did not cause sedimentation (Maillard reaction). *(3)* For a complete dissolution, the sweetener must be a syrup instead of crystals or powder. For an easy manipulation, the accepted density is 1.33 at 20°C of sucrose syrup that can be obtained by melting 165 g of sugar in 100 g at 70°Cc till dissolution. *(4)* All food flavours authorized in pharmaceutical industry are compatible with the formulation. *(5)* All food colorants authorized in pharmaceutical industry are compatible with the formulation. *(6)* After addition of a sweetener, flavour, and colorant, the formulation has a pH variability ranging from 7.12 to 7.07 at 18.5°C. The preparation is stable for 48 hours without chemical conservative. *(7)* After opening the conditioning and adding a sweetener, flavour, and colorant, no bacterial overgrowth is observed after 48 hours if conserved between 2°C to 8°C.

Conclusion: The transformation of enteral nutritional supplements into oral supplements is possible, feasible, easy and affordable. Our plan is to perform palatability test on healthy subjects to find the optimal formula then provide it later to our patients and evaluate their satisfaction with it.

Identifying Gaps in Care by Monitoring Adherence to Guidelines

Ahmed Mohamed Hashim, Ashwaq Al Olayan

King Abdulaziz Medical City, Ministry of National Guard Health Affairs, Riyadh, Saudi Arabia

Introduction: Adherence to clinical management guidelines has positive impact on cancer patient outcomes. We describe the results of our evaluation of adherence to National Comprehensive Cancer Network (NCCN) guidelines at our institution.

Methodology: A guideline auditing tool was developed. The form included variables about confirming pathological diagnosis, molecular testing, staging, discussion at tumor board, treatment selection and survival, and quality of life. The form was piloted and tested by staff physicians in the oncology department and then completed for randomly selected cancer patients, from Adult Medical Oncology clinics served in 2018.

Results: A total of 40 patients were included (10 patients each with breast cancer, lung cancer, hepatocellular cancer, and colon cancer). Confirmation of the malignancy was in 100% of the cases. Presentation of new cases at tumor board is 75%. Staging was documented in 100% of the cases. Management as first line therapy was given for 90% of the patient and as second line therapy for 50% of them, and 100% of them are according to the guidelines. In 50% of the patients, the cancer therapy was stopped within 2 weeks of death. Also, 50% of stage IV pretreated patients had "Do-Not-Resuscitate" status activated before the need for cardiopulmonary resuscitation (CPR), intubation, and ICU admission.

Conclusions: Monitoring adherence to guidelines and involvement of the multidisciplinary team does help identifying areas that require further improvement. Our study showed that although our initial workup and management of patients is excellent, there is a big room for improvement in the end-of-life management to avoid futile treatment and smoother transition to palliative care, which will be addressed in future projects.

Oncology Nurse Specialists – Can the Value of this Role be Measured, Welcomed and Accepted in Saudi Arabia?

Angela Fitzgerald-Smith, Andrea Doherty, Ashwaq Al Olayan, Mohammed Al Harbi, Ahmed Al Qudimat

King Abdulaziz Medical City, Ministry of National Guard Health Affairs, Riyadh, Saudi Arabia

Introduction: There are few Oncology Nurse Specialists (CNS) within Saudi Arabia, and their role is emerging, leading to a lack of standardized access. There is a plethora of evidence supporting the value of the CNS role and the potential impact that the role can have upon patient, family and organizational issues. Ideally patients should be linked in with an oncology nurse specialist at diagnosis to ensure a seamless service is delivered and continuous support throughout. The project objectives are to standardize referral pathways to the CNS and

simultaneously develop an oncology nursing service. A further objective is to illustrate the value of the CNS, including the difficulties and challenges faced when trying to introduce a service that previously did not exist. Furthermore, we need to convince the wider organization to support the process and cultural challenges involved in caring for cancer patients.

Methodology: An analysis of the number of patients seen in the oncology clinics by three Consultant Oncologist's over four calendar months. The focus was predominantly on colorectal cancer and HCC patients. This was ascertained with the Head Consultant Oncologist and reviewing the medical records of the patients attending clinic. The aim was to quantify the volume of patients. A quality improvement project is in process to demonstrate the value of the CNS, and one mechanism will be the use of patient experience questionnaires. The process for implementation of the project will be via PDSA (Plan, Do, Study, Act) cycles. The scale of the problem is partially identified by the **Table**, which demonstrates the numbers associated with colorectal and Hepatocellular (HCC) carcinomas.

Results: Due to the timeframes of the project, the results are currently in process; however, it is estimated that within 12 months of commencement, there will be clear numbers and referral pathways developed. To date, the project has resulted in a review of the Colorectal and HCC Tumour Board, referral pathways in development, and the ole of the CNS being debated within the organization and resources identified for additional roles to be developed.

Conclusion: Plans are in place to promote the role of the CNS and gain a comprehensive understanding of the role amongst other health care professionals over a 1-year period and to evaluate the long-term benefits for both the patient and the organisation.

Month	N	Colorectal	Metastatic	New	Adj/ surveillance	HCC	Others
March	428	193	112	6	75	34	201
April	515	250	138	13	99	37	228
May	380	178	111	4	63	19	183
June	207	103	60	3	40	20	84

Adj: adjuvant; HCC: hepatocellular carcinoma

Evaluation of the Multidisciplinary Consensus Meeting (MCP) in the Gastrointestinal Oncology

Y. El Ouai, Z. Benbraim, N. Lahmidani, A. Ibrahimi, N. Mellas

Hassan II University Hospital, Fez, Morocco

Introduction: The implementation of multidisciplinary is one of the foundations of the management of cancer patients. It helps to improve oncological practices and opens doors to the implementation of national standards. The weekly digestive multidisciplinary consensus meeting (MCP) was initiated in 2009 at our institution. In this study, we aimed to evaluate the digestive MCP.

Methodology: This is a retrospective evaluation study of digestive MCPs held in the Hassan II University Hospital during a period of 1 year. We included cases listed in the computerized record of the MCP, and excluded cases not treated at the Hassan II University Hospital.

Results: The number of MCPs held during 1 year was 40. The total number of cases discussed was 522. The mean number of cases per meeting was 13 (9–41). The number of colon cancer cases discussed in 2013 was 118; 42.3% of patients were male with a mean age of 54.92 years (range, 27–86). Young patients represented 25.34% of our cases. 41.30% of patients had stage IV. The temporality of the MCP in relation to the therapeutic management was 29% pretreatment, 62% after initial surgery, and 9% after chemotherapy. There have been changes in 14% of therapeutic decisions in the MCPs, thanks to radiological review. After a follow up of 6 months, 66% of MCPs decisions were implemented.

Conclusion: The MCP is the cornerstone in the management of cancer patients particularly in gastrointestinal cancers. Our experience showed that it might modify the therapeutic decision in 14% of patients, reflecting the importance of discussing all cases in the MCPs.

Access to Bone Modulating Agents for Patients with Metastatic Lung Cancer: Experience of the Medical Oncology Department of Hassan II University Hospital, Fez

R. El hazzaz, Z. Benbrahim, L. Hajjane, L. Nouiakh, FZ. El m'rabet, N. Acherfi, S. Arifi, N. Mellas

Hassan II University Hospital, Fez, Morocco

Introduction: Non-small cell lung cancer (NSCLC) accounts for approximately 75–80% of all lung cancers. Approximately up to 40% of patients with lung cancer develop bone metastasis, with 22% to 59% of them

experiencing skeletal-related events. However, the prevention of known bone complications is a real therapeutic challenge especially with bone modulating agents such as bisphosphonates and more recently Denosumab. The goal of this study is to evaluate the access and the therapeutic potential of bone modulating agents beyond prevention of skeletal complications.

Methodology: A retrospective study was conducted in the Department of Medical Oncology at HASSAN II University Hospital of Fez from January 2007 to July 2017, including all patients with bone metastatic non-small cell lung cancer.

Results: One hundred and one patients were enrolled. The median age was 58 years, with a slight male predominance (86% of patients). 75% of patients had only bone metastases while 25% had bone metastases associated to visceral metastases. 74% of patients received platinum-based first line treatment and 26% received best supportive care. 22% of patients only had access to bone-modulating agents. The objective response rate was 44.6% for patients who received bone-modulating agents and 12.9% for those who received chemotherapy alone. After a median follow-up of 8 months, the median progression-free survival was 3 months for patients treated with bone-modulating agents and 2.5 months for patients treated with chemotherapy alone. The overall survival was 12 months for patients treated with bone-modulating agents and 3 months for patients treated with chemotherapy alone, with p-value less than 0.0001.

Conclusion: In addition to their effect on the prevention of skeletal related events, bone-modulating agents enhance both the global survival and the progression-free survival in patients suffering from a pulmonary cancer with bone metastasis. The results of our study emphasize the necessity of easing access to this therapy for this category of patients.

Well-Being in Cancer Patients' End of Life: A Pilot Study on Impact of Spirituality

Lamyae Nouiakh, Zineb Benbrahim, Karima Oualla, Reda El Hazzaz, Soumia Berrad, Hayat Erraichi, Lamiae Amaadour, Samia Arifi, Mellas Nawfal

Hassan II Hospital, Fez, Morocco

Introduction: Spirituality is a cognitive approach of humans which was characterized by looking for the meaning and the purpose of their existence. This search may be based on either religious or non-religious beliefs. The great majority of scientific studies on the influence of spirituality in health support the idea that spiritual values and the goals of life make an undeniable contribution to physical and mental health in addition the satisfaction of leaving. The main objective is to explore the importance of spirituality at the end of life of cancer patients.

Methodology: We Interviewed 10 cancer patients, in palliative care setting, with a life expectancy less than 3 months. The study included patients treated in the medical oncology department of Hassan II Hospital of Fez, May 15, 2017–July 15, 2017. Two questionnaires were filled for each patient: FACIT-Sp (Functional Assessment Chronic Illness Therapy-Spiritual Well-Being) and the second questionnaire included socio-demographic and cancer diseases data.

Results: The patients were 36–55 years old and 60% female (sex ratio of 2.3). 40% of the patients were married, 30% were divorced, and the 30% were single. 60% of patients had primary school as educational level, while 40% were illiterate. All patients were Muslims, and half were practicing Muslims. 50% of patients had a high score with an average of 33 based on FACIT-Sp. The high score of spiritual well-being was associated with female sex (80%) and religious practice (100%). On the other hand, there was no relation between the level of education and the score obtained.

Conclusion: This study demonstrated that patients with a high spiritual well-being score were female Muslims. Therefore, these people expressed their spirituality through religion, but spirituality is an anthropological dimension that can be expressed within or outside any religious frame-work.

Surviving Bone Marrow Transplantation Program During War Time in Syria

Mhd Nabeel Rajeh[1], Zahera Fahed[2], Maha Manachi[3], Seham Suliman[4], Mohammed Kelta[5]

[1]Saint Louis University, Saint Louis, MO, USA; [2]Private Practice, Damascus, Syria; [3]Albiruni University Hospital, Damascus, Syria; [4]Damascus University, Damascus, Syria; [5]Christ Hospital, Chicago, IL, USA

Introduction: Eight years of Syrian civil war has negative impact on all life aspects in Syria. Medical care declined considerably. Complete destruction of over 50 hospitals and 400 medical centres and the exit of thousands of medical professionals were some of major negative consequences. We were able to establish bone marrow transplantation program in utmost hardship and medical care shortage. We are reporting our unique 5 years' experience, including 82 cases of stem cell transplantation, mostly autologous, in the private sector in Syria between 2012 and 2017.

Methodology: Stem cell transplantation is standard of care for certain hematologic malignancies. This complex treatment has not been developed in Syria for economic and logistic reasons. Our group of six doctors adamantly worked hard over many years to establish local stem cell transplantation unit in private sector. We were able to start everything from scratch including the engineering the unit, training of all human resources, and attaining the correct medical equipment's. By the time we are ready to operate, civil war erupted all over Syria. Some of our trained personals had to leave the country others were unable to reach the bone marrow transplantation (BMT) centre. There was a major shortage of medical supplies and medications due to embargo and flight restrictions to Syria. With great difficulties and assistance of neighbouring medical community, we were able to keep up the work and perform almost one case every month for the last 5 years.

Results: Starting from 6/2015 and for 5 years, we performed 66 cases of autologous stem cell transplantation (median age, 58 years) and 16 cases of allogeneic BMT (median age, 36 years); 50% of patients who received the transplant were from Damascus, Syria. Relapse Hodgkin's and non-Hodgkin's lymphoma and consolidation multiple myeloma were indicated for the majority of autologous stem cell transplant cases. For allogenic stem cell transplantation, 13 cases were matched/related and three were haploidentical. AML/MDS, ALL, and thalassemia major were the main indications for allogeneic BMT. Day 100 survival for autologous BMT was 95.5% and 1-year survival for those patients was 85%. In two cases, mortality before engraftment were due to diffuse pulmonary haemorrhage and multi-organ failure. Most deaths were related to relapse. For allogeneic BMT, day 100 survival was 87.5% and 1-year survival was 62.5%. Most deaths were related to relapse in allogeneic BMT.

Conclusion: Our group sustained a stem cell transplant program during an extremely problematic time in Syria. During war, economic deterioration of people is additional obstacle and patients pay out of pocket for health care, as medical insurances are not developed. We were able to continue delivering high quality and cutting-edge treatment during civil war hardship for Syrian people while maintaining an acceptable rate of survival for both day 100 and at 1 year.

Quality Assurance in Conducting a Pilot Mass Screening of Colorectal Cancer in Algeria

Chahira Mazouzi[1], Kamel Bouzid[2], Myriem Belloul[1], Farid Aroun[1], Ahmed Salah[1]

[1]University Abderrahmane Mira CHU Béjaia, Algeria; [2]EHS P & M CURIE Center, Algiers, Algeria

Introduction: In Algeria, colorectal cancer (CRC) represents the second cause of cancer mortality after lung cancer in men and after breast cancer in women in 2015. The increasing CRC incidence and mortality can be reduced by screening and treating adenomas and early cancers. A pilot CRC screening programme using immunochemical fecal occult blood testing (iFOBT) and colonoscopy for test-positives were implemented in Béjaia, a northeast district of Algeria. This study aims to evaluate the acceptability, feasibility, validity of screening tests, and scaling-up of screening in Algeria. This report describes the implementation, coverage and performance indicators of this pilot project.

Methodology: This is a pilot study for colorectal cancer screening with an immunological test of an average risk population aged 50–74 years over a 20-month period. A target population aged 50–74 years was informed about and invited to undergo CRC screening by community clinics. Fecal sample collection kits were provided through local primary care units for home sample collection. iFOBT-positive persons were referred for colonoscopy at the Béjaia Univesity Hospital, and endoscopic polypectomy/biopsies were performed according to the colonoscopies findings. Those with confirmed CRC received appropriate treatment. We thus describe the strategy used to establish a program of implementation of the best practices that we think of quality by indicator measurement. This program will have to rely on clinical leadership, structures, processes and skills that ensure that targeted best practices are disseminated and supported as part of the cancer plan.

Results: Of the target population (n = 10,000), 2562 (26%) were screened using iFOBT between January 2016 and November 2017. The main issue in the program was accessing people living in study areas due to lack of valid registry system. Of those screened, 156 (6.11%) were found positive; positivity was similar between men and women. Polyps were present in 39.4% of colonoscopies, and six cancers are found, corresponding to 3.7% of positive tests and a colorectal cancer detection rate of 2.35%.

Conclusion: The successful implementation of the pilot CRC screening with satisfactory process measures indicate the feasibility of scaling-up organized CRC screening through existing health services in Algeria. More work is needed in assessment of kits to be used in the national program. Also, the process of identification of the population based on their residential access will be evaluated further. An economic evaluation for the program to be conducted before the end of 2018.

Use of Hematopoitic Growth Factors in Medical Oncology

A. Bahouli, S. Messioud, C. Hellal, A. Bensalem

Didouche Mourad Hospital, Constantine, Algeria

Introduction: Hematopoietic growth factors are proteins that stimulate erythropoiesis used in case of chemo-induced anemia to give better chances of treatment for patients with better compliance and therefore, more effective treatment regimens.

Methods: This is a retrospective study based on patient records, monitored in the medical oncology department and treated with hematopoietic growth factors in medical oncology from January 2016 to July 2017. The parameters studied were: age, sex, origin, location, type of protocol, number of injections, and evaluation.

Results: Of 52 patients studied, the mean age was 61.22 years (range, 23–86 y), with female predominance found in 53.84% of cases (n = 28). 50% of patients were from Constantine (n = 26). The most common tumor location was breast cancer: 28.85% of cases (n = 15). The adjuvant situation was noted in 15 patients (28.85%), while 37 patients (71.15%) had metastases. The most prescribed protocol was FAC in six patients (15.79%). On average, 2 injections were administered (range, 1–4 injections). Six patients (15.79%) could not be assessed. A decrease in hemoglobin (HB) was noted in 25% of patients (n = 12), a rate stability was noted in eight patients (19.05%), and 26 patients (61.90%) had HB increases. Transfusion records were noted in 13 patients (27.08%).

Conclusion: Thanks to the boom in biotechnology, clinicians now have at their disposal a number of hematopoietic growth factors, constituting powerful weapons against chemically induced hematological toxicity, allowing a better quality of life for the patients.

Improving Access to Cancer Care at Scale

Dinesh Pendharkar

Sarvodaya Hospital, Delhi, India

Introduction: Access to care remains a major challenge in cancer. The access involves physical distances, financial issues, non-availability of professional services and more. In an attempt to resolve these issues, an innovative cancer care model was initiated and has been introduced in 125 districts of India.

Methodology: District being the most accessible point of medical care district hospitals were chosen as nodal cancer units. An existing medical officer was trained very short time, but with continued 24 x 7 backup and regular training, was given the task of looking after cancer patients. His work includes counselling, appropriately referring, assisting in investigations, doing chemotherapy and palliative care. The government had pitched in with accessible investigations and free anticancer drugs. Over last 4 years 4 states of India with 125 districts have initiated the program.

Results: The project resulted in creating 125 district Nodal cancer units offering cancer related services at peripheral level. The project was initiated with 5 districts and scaled to 125 districts over 4 years. Through this project thousands of patients have been benefited. Procedures like chemotherapy is being done in district level general hospitals. A few thousand chemotherapy cycles have been performed.

Conclusion: This innovative model appears to serve the need of access to cancer care. The care is being offered close to residence, in a socially acceptable to patient environment, using existing human resource by empowerment of alternate oncology workforce. This model could be taken to all areas of need.

An Examination of Quality of Life and Unmet Supportive Care Needs in Survivors of Adult Hematological Malignancies

A. Immanuel[1], J. Hunt[1], E. van Teijlingen[1], H. McCarthy[2]

[1]Bournemouth University, Dorset, UK, [2]Royal Bournemouth Hospital, Dorset, UK

Introduction: The treatment for hematologic malignancies is lengthy, complex and intense, leading to potentially debilitating symptoms and reduced health-related quality of life. Survivors can suffer long-term effects of both treatment and disease. The presentation is part of a mixed methods study and aims to deepen our understanding of the quality of lives of survivors of adult haematological malignancy and identify unmet supportive care needs. The study will contribute to the under-researched topic related to adult survivors of a haematological malignancy.

Objectives: The qualitative phase aims to explore in depth and improve understanding of the quantitative

findings related to the quality of life among adults who have survived a hematologic malignancy, identifying and addressing any unmet supportive care needs.

Methods: The participants (n = 11) were adults who had completed treatment for a haematological malignancy and were between 1 and 5 years post-treatment. A qualitative research process of inquiry was used to explore the quality of lives of survivors of haematological malignancy and identify unmet supportive care needs. In-depth face-to-face semi-structured interviews were conducted, based on the content and structure of the interviews designed to be grounded in the findings of the quantitative phase of the study.

Results: The unmet supportive care needs identified in this cohort included: the fear of recurrence, loss of continued connection with health care providers, and uncertainty about the future.

Conclusion: Survivors of hematologic malignancies have unmet supportive care needs. Enhancing their physical and psychological wellbeing and addressing supportive care needs optimises their quality of life. Knowledge and understanding of these factors and addressing these needs may provide an insight into implementation measures to enhance the same.