Conclusion: The implementation of our TOC model has led to a higher inclusion in trials, an improved data collection and a higher satisfaction of patients and radiation oncologists involved in clinical trials. The TOC model has led to an optimal infrastructure for well-performed, high-quality clinical trials.

PO-0784

Targeting general practitioners: prospective outcomes of a nationwide GP education programme

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Purpose or Objective: To report the learning outcomes of a standardised national multicentre education program aimed at improving General Practitioner (GP) knowledge about radiation therapy (RT) and referral pathways to radiation oncologists (RO).

Material and Methods: In 2014, a GP education session was developed through the 'Targeting Cancer: Radiation Oncology' campaign (an initiative of RANZCR, Faculty of Radiation Oncology). The content and structure was developed by a committee of ROs with skills in training and education. The sessions are designed to be held within an RT department and consist of RO-led interactive teaching around two common patient scenarios, followed by a physical tour of the RT department with demonstrations of set up and treatment. Pre- and immediate post-session custom surveys were administered on consented GPs. Four key domains were assessed:
1. Objective and subjective knowledge about RT.
2. Satisfaction regarding referral pathways to ROs.
3. Self-reported referral behaviours.
4. Feedback on quality of the educational session.
A 6 question follow up survey was sent 6-8 months after the session to assess the usefulness of the knowledge gained in the clinical care of cancer patients and ongoing referral behaviours.

Results: 120 GPs attended a total 10 sessions held in RT departments across Australia between October 2014 and 2015. Pre-session, 96% of GPs reported their knowledge of radiation therapy required signficant or some improvement. Post-session, 91% rated their knowledge as "excellent", "above average" or "competent". In concordance with this, the proportion of GPs correctly answering objective knowledge questions rose from 50% to 82%. Over one third of GPs did not know the location of their nearest RT department and 80% wanted improved referral pathways to ROs. Despite this 92% have had patients in their practice who might benefit from palliative RT. However nearly half the GPs indicated they were not comfortable referring directly to a RO. Following the session this rose to 92%. All 120 respondents felt the session improved their understanding of RT and would recommend the session to colleagues. Early data from the 6 month follow up survey shows 100% of GPs felt the knowledge gained at the education session has improved their ability to care for cancer patients and increased their confidence to refer directly to ROs.

Conclusion: A national standardized GP education program can significantly improve GP knowledge of the core RT concepts and likely influence patient referrals for RT.

PO-0785

Improvement strategies and performance enhancement in Healthcare: the reorganisation of Radiotherapy

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Purpose or Objective: Population ageing, changes in epidemiological trends and the development of new treatments are putting strain on National Health Systems, which need to implement performance measurement systems to minimize the impact of expenditure reduction on service quality and to drive value creation for the whole population. We developed a model of healthcare performance evaluation for oncology care whose main focuses are: - specific types of cancers and value for citizens of a catchment area served.
The model synthesizes into a single index the value of a service - outcome and costs for the population – building upon the Italian NHS principles. We applied the model to a Radiotherapy Service before and after IRST IRCCS took over its management in January 2014

Material and Methods: We measured value produced by Radiotherapy Services for the Ravenna district (393,184 inhabitants) before 2013 and after the technological investment in 2014.We considered three performance dimensions:
-clinical outcomes;
-appropriateness;
-accessibility and geographic proximity of services.
An expert panel selected variables, indicators and weights such as waiting times for treatments, % advanced treatment (IMRT, V-MAT), passive migration cases to other areas, average access to treatment. Per-capita cost was computed as direct costs of radiotherapy minus reimbursement for "active" patient migration, plus costs for "passive" patient migration; total costs were divided by age-adjusted population. A composite indicator was computed, whose nominator synthesizes quality indicators and whose denominator accounts for costs. 2013 IRST performance in Forlì-Cesena district was used as benchmark

Results: Value assessed in Ravenna district was lower than that of Forlì-Cesena in 2013 (0.35 and 0.78, respectively), translating into a higher per-capita cost (12 euro vs. 9 euro) and lower service level (4.2 vs. 7.0 quality points). In 2014, performance of Ravenna Radiotherapy Service significantly improved (0.47; +34%): quality points went up from 4.2 to 5.1 as a result of better clinical outcome, improved accessibility and shorter wait times **Fig1**.
Per-capita costs decreased from 12 Euro to 10.8 Euro thanks to a reduction in "passive" patient migration, efficiency gain (fewer radiotherapy sessions for specific regimens) and economies of scale. A return on investment and financial stability were guaranteed by efficiency gain (lower emerging compared to savings from reduced "passive" patient migration) and by increased attractiveness (increased "active" patient migration) **Fig2**.

Fig.1 Populational Performance

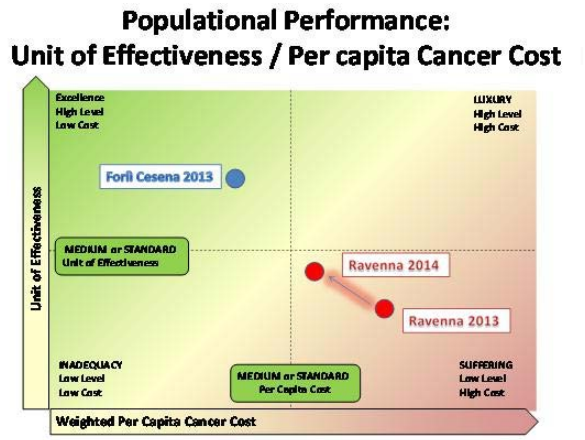

Fig.2 Indicator results

Indicators	2013 Ravenna	2014 Ravenna	2013 Forlì Cesena
Waiting times for treatments (Performance Index to 30 days)	35%	76,9%	31%
% Advanced treatment (V-MAT - IMRT)	23%	48%	53%
Passive migration to other areas	55%	41%	14%
Average access to treatment	19	15	14

Conclusion: Investments in technological upgrades in public services can result in increased efficiency and productivity levels, while improving service quality, decreasing costs and reducing service duplication and overlapping. Our preliminary findings suggest the applicability of our model to the full cancer care pathway

PO-0786

Could a 3-tier teleradiotherapy network provide a cost-effective radiotherapy care in LMICs?

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Purpose or Objective: Information and communication technologies (ICTs) have enabled cost-effective eHealth programmes gain wider acceptance in a range of health disciplines. However, this is yet to be evaluated in radiotherapy (RT), especially in low- and middle income countries (LMICs). We explored the use of ICTs to create a 3-tier network of teleradiotherapy centres (RTC), namely - primary (PRTC) with 1 teletherapy (TRT) unit; secondary (SRTC) with 2 TRT units and brachytherapy (BRT); and tertiary RT centre (TRTC) with state-of-the-art RT facilities. The cost-effectiveness of this network was evaluated for 10 adjoining countries in middle and east Africa.

Material and Methods: Seven of the 10 countries (Gabon, Congo Republic, Congo DR, Central African Republic, South Sudan, Rwanda and Burundi) have no RT facilities for their 123.6 million inhabitants. Remaining 3 countries (Uganda, Kenya and Tanzania) have in total 11 TRT and 6 BRT units. Thus, presently, only 2.3% of 262.2 million people have RT access in these 10 countries. Based on the regional population density and location of current centres, 6 PRTCs, 2 upgraded PRTCs (with BRT), 6 SRTCs and upgradation of an existing centre to SRTC are proposed. These could be networked to share the available resources. With DICOM RT compatible data sets, ICTs could facilitate an easy exchange of patient information between centres. Consequently, patients at PRTC with a standalone TRT unit could deliver RT based on treatment plans derived at SRTC. Similarly patients treated at PRTC could receive brachytherapy at SRTC. TRTC could cater to specialized RT techniques not feasible either at PRTC or SRTC. Thus, patients within the 3-tier network would have access to state-of-the-art technology in a shared step-wise manner.

Results: The total cost of the infrastructure, networking, maintenance and incidentals is estimated around US$ 66.25 million. With a total of 32 TRT and 15 BRT units provided in this network, the RT accessibility would enhance from 2.3% to 30.7% (9.2%-76.9%). The mean cost of this investment for the 262.2 million inhabitants would be around US$ 0.69 per inhabitant (US$ 0.12-2.22) while the average cost in terms of individual patients receiving RT is estimated to be US$ 374 (US$ 71.67-508.33). Capacity building could be undertaken through telementoring by linking to regional or international centres of excellence and professional societies through multisectoral collaborative efforts.

Conclusion: The 3 tier-teletherapy network with ICTs could provide cost-effective comprehensive RT care by overcoming the geographical barriers by optimizing resource sharing, pedagogical telementoring and capacity building. This could lead to scalable, equitable, affordable and improved RT access to patients of the region. The approach could be explored for other underserved LMICs and executed with the help of respective national and international stakeholders.

PO-0787

Abstract withdrawn

PO-0788

Predicted patient demand for MRI Linac

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Purpose or Objective: MRI offers superior soft tissue delineation compared to CT. When incorporated in to a linear accelerator (MRI Linac), it could improve temporal resolution and dynamic visualisation of the target during treatment allowing for motion compensation and real-time adaptive planning. This study investigated the predicted patient demand for radiotherapy delivered via a MRI Linac for prostate and lung cancer at a large comprehensive cancer centre to ensure that any clinical research will be achievable.

Material and Methods: Local stage data was sourced from hospital databases and the UK NHS CASCADE system. Indications for MRI Linac were obtained by consulting with the specialist clinical leads for prostate and lung cancers. Locally advanced patients where soft tissue definition would be clinically advantageous were identified (T3/4 prostate, stage 2/3 non-small cell lung cancer [NSCLC] including superior sulcus tumours and limited stage small cell lung cancer [SCLC] with good performance status). The Malthus programme was used to estimate the demand for MRI Linac. The Malthus programme is an evidence based, predictive mathematical model, based on regional population and incidence data, mapping around 2,000 clinical decisions relating to radiotherapy for 23 different cancer sites.

Results: The catchment area of the comprehensive cancer centre in the study is approximately 3.2 million people. For prostate, the total projected incidence for 2015 was 1,983 cases, of which 436 high risk patients were predicted to be eligible for MRI Linac. For lung, the total projected incidence for 2015 is 2,634 cases. Of these, a total of 360 patients were identified as suitable for MRI Linac (table 1). Approximately 92 of the NSCLC's were considered superior sulcus tumours.