

Materials and methods: From August 2013 until January 2014, physicians working in multidisciplinary BC teams (≥ 5 years BC treatment experience) could complete the online survey. Some modules evaluated respondent demographics and clinical tools used for AdjCT decision-making. For analysis, the physicians were categorized into 3 groups: clinical/medical oncologists, surgeons and gynecologists (S&G) who prescribe AdjCT (S&G AdjCT+), and S&G who do not prescribe AdjCT (S&G AdjCT-).

Results: Overall, 911 respondents (52 countries) completed the survey; 829 respondents were included in this analysis.

S&G seemed to use MGA more often than medical/clinical oncologists. Among MGA users in all 3 groups Oncotype DX[®] was used the most, followed by MammaPrint[®] and EndoPredict[®] (mainly German gynecologists). For those who did not use MGA, >85% of respondents in all 3 physician groups would like to incorporate MGA in their practice, and various reasons for non-use of MGA were reported. The heterogeneity of MGA adoption in relation to specialty of the physician may be partly related to the heterogeneity in MGA adoption observed between countries.

Conclusions: The MAGIC survey showed that S&G used MGA more often than medical/clinical oncologists and that there are differences in the MGA they use and their reasons for not using MGA.

Conflict of interest: Advisory board: Roman Rouizer – Genomic Health Inc. (Consultancy), Roche and GSK Matti Aapro – Genomic Health Inc. Eleftherios Mamounas – Genomic Health Inc. and GE Healthcare Christoph Thomssen – Genomic Health Inc. Vincent Smit – Genomic Health Inc.

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	Oncologists (n=491)	S&G AdjCT+ (n=97)	S&G AdjCT- (n=241)
Usage of tools (overall)			
Adjuvant! Online [®]	74%	75%	66%
Nottingham Prognostic Index	17%	15%	32%
Predict	12%	11%	11%
Usage of MGA			
Overall	47%	69%	69%
>20% of their HR+, HER2-, lymph node- BC pts (% of MGA users)	32%	43%	45%
>20% of their HR+, HER2-, lymph node+ BC pts (% of MGA users)	20%	36%	34%
Used assays (% of MGA users)			
Oncotype DX [®]	77%	82%	80%
MammaPrint [®]	38%	9%	39%
EndoPredict [®]	3%	28%	2%
Reasons for not using MGA (% of MGA nonusers)			
Lack of reimbursement	48%	57%	28%
Price	39%	60%	55%
No availability	41%	27%	38%
Not in relevant guidelines	19%	17%	26%
Lack of evidence	16%	30%	16%

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159. Comparison of hormone receptor and HER2 assay results between core needle biopsy and mastectomy specimen from the same patients

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Purpose: In the treatment of breast cancer, hormone receptor (HR) expression and HER2 (human epidermal growth factor receptor 2) gene expression are the most important biomarkers. Therefore, the accuracy of their results is critical.

Subject and methods: We studied the results of HR expression and HER2 gene expression of 153 consecutive patients between March 2009 and February 2014. Estrogen receptor(ER), progesterone receptor (PgR) and HER2 gene immunohistochemical(IHC) assay of tissues from mastectomy specimens were compared with their previous core needle biopsy (CNB) ER, PgR and HER2 gene IHC assay results.

Results: The tumors of 112(73.2%) out of the 153 patients are positive HR(ER and/or PgR) in CNB specimens and 107(69.9%) are positive HR in mastectomy specimens. 33(21.6%) patients are positive HER2 in CNB specimens and 34(22.2%) are positive HER2 in mastectomy specimens. ER positivity decreased from 71.9% in the CNB to 68.0% in mastectomy specimens, while PgR positivity increased from 60.8% in the CNB to 64.7% in mastectomy specimens. The overall agreement between CNB and mastectomy specimens was 92.1% for ER, 86.9% for PgR and 98.0% for HER2.

Conclusion: CNB specimens are associated with the identification of more frequent and higher levels of hormonal receptor proteins than mastectomy specimens. However, there are CNB negative and mastectomy positive disagreements in HR and HER2 cases. Proper hormonal therapy depends on accurate hormone receptor assay results, as well as target therapy depends on HER2 assay results. Both assays of CNB and mastectomy specimens are very helpful in accurate ER, PgR and HER2 assay results.

No conflict of interest.

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160. Optimising magnetic sentinel lymph node biopsy in an in vivo porcine model

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Background: Magnetic sentinel lymph node biopsy (SLNB) is in its early stages of clinical application. We developed an *in vivo* porcine model to optimise the magnetic technique by evaluating the effect of differing volume of magnetic tracer and time of injection.

Materials and Methods: Magnetic tracer was injected in escalating volumes between 0.06 mL and 2 mL neat. A handheld magnetometer was then used to localize any *in vivo* signal from draining inguinal lymph nodes up to 4 hours after injection when bilateral magnetic SLNB of groin nodes was consequently undertaken, followed by groin node clearance. The iron content of excised sentinel lymph nodes (SLNs) was quantified and univariate analyses performed to assess correlation.

Results: Magnetic SLNB was successful in all 48 procedures. There was a significant correlation between the magnetometer counts and the iron content of excised SLNs ($r=0.82$; $p<0.001$). Total number of SLNs increased with increasing volumes of magnetic tracer ($P<0.001$). Transcutaneous magnetometer counts increased with increasing time from injection of magnetic tracer ($P<0.0001$) and reached a plateau within 60

minutes. A non-statistically significant trend was observed between volume of magnetic tracer injected and iron content of SLNs ($P=0.07$).

Conclusion: Magnetic SLNB is feasible with a range of volumes of magnetic tracer. The manipulation of volumes of magnetic tracer injected can determine the level of echelon nodes excised and increasing the time between injection and SLNB improves transcutaneous 'hotspot' identification. Application of these findings may help to improve clinical outcomes.

Conflict of interest: Board of directors: Professor Quentin Pankhurst is the co-founder and sits as a non-executive director on the Board of Directors of Endomagnetics Ltd (Cambridge, UK).

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161. Validating the '10 per cent Rule' for magnetic sentinel lymph node biopsy in breast cancer

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Background: Magnetic sentinel lymph node biopsy (SLNB) is an emerging technique in the axillary staging of breast cancer. There is no evidence available to determine a suitable threshold of *ex vivo* magnetometer counts for node excision. Consequently, the '10 per cent rule' derived from radioisotopes is applied. We assess the largest study of magnetic SLNB (SentiMAG Multicentre Trial) to determine the validity of the '10 per cent rule'.

Materials and methods: A total of 347 patients across 7 centres underwent SLNB with both magnetic and standard techniques. The *ex vivo* counts and histopathology of all nodes was prospectively collected. The distribution of magnetometer and radioactive counts of all nodes was assessed. The nodes excised for each patient were then classified as a percentage of the node with the highest count (hottest node). The false negative rates (FNR) as a decreasing function of the threshold of magnetometer and radioactive counts was examined.

Results: A total of 855 nodes were excised of which 747 were identified using the magnetic and 794 using the standard technique. The peak distribution of counts for all nodes using both techniques was in the range 0-500. The majority of metastatically involved nodes had the highest magnetic (62 per cent) and radioactive (58 per cent) uptake. The application of the 10 per cent threshold resulted in a false negative rate of 0 per cent versus 2.8 per cent for the magnetic and radioisotope techniques respectively.

Conclusion: The '10 per cent rule' of the hottest *ex vivo* node is an acceptable threshold for the safe performance of magnetic SLNB.

No conflict of interest.

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162. Why should breast surgeons use ultrasound?

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Background: Portable ultrasound is now used in a variety of clinical settings by specialties outside of radiology. Despite increased accessibility to ultrasound the overall performance of ultrasound by breast surgeons is consistently low. We discuss the reasons why this is unacceptable for future patient care and answer the question, 'Why should breast surgeons use ultrasound?'

Methods: We reviewed the literature for evidence assessing the outcomes of breast surgeon-performed ultrasound both intra-operatively and in the outpatient department.

Results: Intra-operative ultrasound (IOUS) performed by surgeons reduces re-excision rates in breast conserving surgery. Outpatient-based ultrasound performed by surgeons frees up the resources of radiology departments, allowing them to focus upon patients requiring more complex diagnostic and interventional procedures. For surgeons to competently perform intra-operative and outpatient-based ultrasound a period of formal ultrasound training is necessary to acquire knowledge of ultrasound skills and techniques. This should be followed by a period of mentorship and supervised training with an experienced breast radiologist.

Conclusions: Breast surgeon-performed ultrasound is beneficial to the multi-disciplinary care of breast cancer patients. To further improve multi-disciplinary care, breast surgeons and radiologists should work more collaboratively to optimise imaging applications both in the operating theatre and outpatient department. Current advances in therapeutic percutaneous techniques are of interest to both surgeons and radiologists. In future a hybrid specialization should be considered to incorporate accreditation in both specialties for breast interventional procedures.

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163. Male breast cancer – the same disease as female breast cancer?

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Introduction: Breast cancers (BC) in males are rarely diagnosed and comprise about 1% of all BC pts.

Patients and methods: We analyzed a group of male BC pts who were treated at the Institute of Oncology and Radiology of Serbia from 1994 to 2010. The majority of them were operated on depending on disease stage at diagnosis and (neo)adjuvant chemotherapy [(N)ACT] with CMF and FAC and Tamoxifen were given where indicated. Postoperative radiotherapy was performed in all N+ and T4 BC pts. Hormone receptors (HR) were determined prospectively either by biochemical DCC method, or by immunohistochemistry (IHC), while HER2 status was determined by IHC. Study endpoints were PFS, DFS and OS. Statistics includes Hi square and Log rank tests.

Results: In total 110 male pts median ages of 65 (range 29-84) years were analyzed. After median follow-up period of 56.6 mos (range 5-199 mos) disease relapse were confirmed in 42/110 (38%) pts, while 55/110 (50%) died. Sixty three pts (57%) were diagnosed in stage I/II, 86/110 (78%) had ductal invasive and 81/110 (74%) grade 2 BC. HRs were determined in 68/110 (62%) pts and among them 63/68 (93%) were ER+ and/or PR+, while HER2 status was negative in 21/21 pts in whom it was measured (only 2/21 were triple neg BC). Radical surgery was performed in 87/110 (79%) of pts, radiotherapy in 77/110 (70%) of pts, (N)ACT received 45/110 (42%) and Tamoxifen 71/110 (66%) of pts. The following factors significantly influenced the disease outcome: a) stage 1/2 vs. stage 3 at diagnosis: longer DFS (Log-Rank test, $p=0.0$), PFS ($p=0.0$) and OS ($p=0.0$); b) T 1/2 vs. T3/4: longer DFS ($p=0.005$), PFS ($p=0.0$) and OS ($p=0.0$); c) number of involved regional lymph nodes in radically operated pts: N0 vs. N³4 longer DFS ($p<0.0001$), PFS ($p<0.0001$) and OS ($p=0.0001$) and N1-3 vs. N³4: longer DFS ($p=0.007$) and PFS ($p=0.01$). Patients who were radically operated had better disease outcome compared to pts w/o radical surgery: longer PFS ($p=0.011$) and OS ($p=0.002$). Type of systemic therapy and radiotherapy did not influence disease outcome. Similarly, PR status did not influence disease outcome in ER+ BC pts.

Conclusion: Endocrine responsiveness was shown in a majority of pts with known HRs and luminal A/B subtypes were detected in almost all pts with known HER2 status. Our results confirmed that stage of disease at diagnosis, radical surgery and nodal status in operated pts are the most important factors influencing disease outcome.