**Table 1S.** Measures taken by the IEO Radiotherapy Division to fight the pandemic during March-April 2020

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| **Measures** | **Patients** | **Personnel** | **Comments** |
| **Personal protective equipment** | ●Facial masks  ●Optional gloves  ●Hand hygiene | ●Surgical facial masks  ●Hand hygiene  ●Gloves  ●N-95 mask, disposable long-sleeve gown, cap and goggle or eye protection if close contact with pts | Gradually implemented starting from the end of February 2020 |
| **Access to RT Division** | ●Pts only  ●Pts allowed in shortly before their scheduled treatment time  ●2-level triage at the RT Division entrance: body temperature + brief investigations on any suspicious symptoms  ●Case-by case management of any symptomatic pts (dedicated pathway) | ●2-level triage at the RT Division entrance (body temperature) | ●Care-giver admitted upon special permission  ● 1-level triage at the entrance of IEO for body temperature only  ●Dedicated nurses available on call for nasopharyngeal swabs. Radiological team for lung CT.  If tested positive, pts were transferred to Covid-19 Hospital |
| **Reorganization** | ●Waiting rooms adapt to sit pts one meter apart  ●Pts scheduled for CT simulation checked on by phone the day before  ● Pts provided with leaflet with instructions in case of symptoms  ●Waiting -and treatment -room sanitization after any suspected Covid-19 carrier | ●Creation of COVID-19 RT team (Task Force) including the Director of RT Division, 3 senior ROs, the Head nurse and Head radiation technologist.  ●Phone line dedicated to any symptomatic pts staffed 12-hour a day  ●Working shifts for non- permanent medical staff | ●Trained RT nurses to check pts’ health status before their admission to RT (any suspicious symptoms or contact with Covid-19 carrier)  ● COVID-19 RT Task Force in charge of contingency plan |
| **Clinical visits and meetings** | ●Follow-up visits made by phone. If needed, pts were relocated (backlog: 25 pts,15%).  ●Pts advised to have RT close to home | ●Follow-up clinics cancelled or postponed (170 phone calls were made)  ●Telephone- based consultation to replace person- to -person interaction (160 phone-based consultations)  ●Multidisciplinary boards moved to digital platform | ●Maintain a bond with pts to avoid feeling of abandonment  ● To fit the position of Hub for cancer care |

*List of abbreviations:* **COVID-19:** corona virus disease 19; **CT:** computed tomography; **GP:** general practitioner; **IEO:** European Institute of Oncology IRCSS; **pts:** patients; **RT:** Radiotherapy.

**Table 2S.** Summary of national and international Guidelines for breast cancer radiotherapy during the COVID-19 pandemic compared to the IEO clinical practice during the pandemic outbreak.

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| **Topic** | **National COVID-19 Guidelines** [2,9] | **International COVID-19 Guidelines** [3,4] | **IEO RT workflow** |
| **Nodal RT** | Nodal RT can be omitted in post-menopausal women requiring WBRT following SLNB and BCS for T1, ER+, HER2-, and Grade 1-2 with 1-2 macrometastases (high priority). | *UK*: Nodal RT can be omitted in post-menopausal women requiring WBRT following SLNB and BCS for T1, ER+, HER2-, Grade 1-2, with 1-2 macrometastases . | *As per internal policy, Luminal A tumors do not receive nodal RT if extra nodal extension ≤ 2 mm and no LVI* [26]. |
| **PORT** | Continue and complete the ongoing RT (high priority). |  | *None of the asymptomatic pts discontinued BC RT*  *Case-by-case management of symptomatic pts* |
| Postoperative RT in high-risk pts (inflammatory cancer, nodal positive, Triple negative, HER2+, residual disease after neoadjuvant CHT, age< 40 (high priority). |  | *No change in clinical routine* |
| Postoperative RT within maximum 5 months of surgery and 2 months of the end of CHT in low- and intermediate-risk pts (i.e. age< 65, luminal tumors, stage I/II) (medium priority). | *USA:* RT safely delayed up to 12 wks following BCS for DCIS.  Early-stage BC, N0, ER+ can safely begin RT 8-12 wks after BCS, and up to 20 wks in appropriate subset . | *RT delay was handled with caution. The recommended timing was always respected.* |
| **Hypofractionation**  **Hypofractionation** | Hypofractionation, if adequate, to reduce the attendance (medium priority). | *UK*: Moderate hypofractionation should be used for all breast/chest wall and nodal RT, e.g. 40 Gy in 15 fr/3 wks .  *USA*: for WBRT without nodal RT, hypofractionation is the national preferred standard of care . | *Moderate hypofractionation is our clinical routine: 3-wk scheme used for both PMRT and WBRT (± SIB)* [27,28]. |
|  | *UK*: Deliver RT in 5 fr only for pts requiring RT with N0 tumors without need of boost. Options include 28-30 Gy in once weekly fr/5 wks or 26 Gy in 5 daily fr/1 wk, as per the FAST and FAST Forward trials respectively. | *According to FAST trial, 28.5 Gy in once weekly fr/5wks is part of clinical routine in selected pts (over 65, with comorbidities, commuting difficulties, etc.).* |
| **RT omission** | For low–risk pts over 70 (i.e. stage I, Grade 1-2 , no tumor on ink, ER+ and HER2-), consider omission of RT if receiving endocrine therapy, after benefit/risk assessment and informed consent (low priority). | *UK*: RT omission for pts aged ≥65 (or younger with co-morbidities) with invasive BC ≤ 3 cm, N0, clear margins, Grade 1-2, ER+, HER2-, eligible for endocrine therapy *.*  *USA*: RT omission preferred for pts ≥ 70 with invasive BC ≤ 3 cm, clear margins, N0, ER+, eligible for endocrine therapy. | *For this group, RT omission of is one of the options routinely discussed during RT visit, outside the pandemics*  *During the pandemic peak, only one pt candidate for partial breast irradiation chose to forgo RT* |
| Consider omission of RT for unicentric DCIS, especially if low-grade, after radiologic correlation (low priority). | *USA*: Advisable to forego RT for screen-detected DCIS, ≤2.5cm, Grade 1-2, with ≥ 2mm resection margins. Caution for pts under 40 . | *As per internal policy, RT is omitted in Grade 1 and discussed as option in selected Grade 2* [29]*.* |
| **BOOST** |  | *UK*: Boost RT should be omitted to reduce fractions/complexity for most pts, unless aged ≤ 40, or >40 with high-risk factors .  *USA*: Boost for DCIS can be omitted (caution for under 40); for invasive BC consider boost only in presence of high-risk factors: age ≤60, Grade 3, or inadequate margins. | *Although SIB does not prolong treatment duration, it was less frequently delivered in selected pts (i.e, age> 60) over the pandemic peak.* |
| **APBI** |  | *USA*: APBI for pts aged ≥50 with screen-detected BC, ≤2cm, N0, ER+, or selected DCIS (Grade 1-2, ≤2.5cm). BRT is discouraged (strain on hospital resources, risk for exposure and infection). Evidence supported external APBI using 3D-CRT | *APBI: IOERT was not available, BRT was kept on hold to avoid hospitalization, external RT was used with 8-fr scheme, which was later reduced to 5 daily fr* |

*List of abbreviations:* **3D-CRT:** 3D-conformal RT **APBI:** accelerated partial breast irradiation; **ASTRO:** American Society of Radiation Oncology; **BC:** breast cancer; **BCS:** breast conserving surgery; **BRT:** brachytherapy; **CHT:** chemotherapy; **COVID-19:** corona virus disease-19; **DCIS:** ductal carcinoma in situ; **ER:** estrogen receptors; **fr:** fractions; **HER2:** Human epidermal growth factor receptor 2; **IOERT:** intraoperative radiotherapy with electrons; **LVI:** lymphovascular invasion; **N:** node; **PMRT:** post-mastectomy RT; **PORT:** postoperative RT; **pts:** patients; **RT:** radiotherapy; **SLNB:** sentinel node biopsy; **IEO:** European Institute of Oncology; **UK:** United Kingdom; **USA:** United States of America; **WBRT:** whole breast radiotherapy; **wk:** week; **3D-CRT:** three-dimensional conformal radiotherapy.

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