Rapid research communication

Maintaining breast cancer care in the face of COVID-19

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Introduction

Globally, the COVID-19 pandemic has proven to be an unpredictable enemy imposing unprecedented challenges. The multidisciplinary breast cancer team at the National University Hospital, Singapore, a tertiary academic medical centre, manages about 600 patients with breast cancer annually. Resource and manpower diversions for COVID-19 services have resulted in loss of clinic assistants, inpatient beds, operating theatres and specialty-trained staff. Daily operations were adapted to allow continuation of provision of standard of care without an impending backlog.

Implementation of COVID-19 strategies started on 20 February 2020. During March 2020, the team was able to decrease the outpatient load by more than 50 per cent without compromising cancer detection rates. By better screening of referrals, a doubling of the proportion of oncological patients was seen compared with the average month before COVID-19. The use of telecommunication resulted in deferral and discharge of around 200 patients, while all patients continued to be treated with a high standard of care.

Here, this experience is shared, with guidance on functional operations that may be adopted in other healthcare systems worldwide experiencing similar stressors. The recommendations are divided into four phases according to the COVID-19 situation, allowing easy adaptation to the local context.

Recommendations

The operational recommendations of the unit were developed after reviewing available guidelines[1–4] with the following priorities: patient safety and oncological outcomes; staff safety; and rationing of resources, prioritizing timely detection of cancers whose delayed diagnosis could significantly affect patient prognosis and survival.

Caveats

These recommendations should not supersede clinician judgement and individualized care, and should align with institutional guidelines. Multidisciplinary tumour board (MTB) discussions for fair allocation are essential when resources are limited.

Phases

Recommendations are divided into four phases depending on a country's COVID-19 status.

Phase 1: semiurgent setting
Disease is severe and spreads easily between people, but there is no community spread. Hospital resources are ample, institutions have sufficient ICU beds and ventilator capacity, and the COVID-19 trajectory is not escalating rapidly. Operational changes are at the institutional level, and focus on streamlining and preparedness.

Phase 2: urgent setting
Disease is severe, with contained community spread. Large but controlled numbers of patients who are positive for COVID-19 do not overwhelm the system in terms of ICU beds, ventilator capacity and medical supplies, with evidence of control reflected as dwindling case numbers.

Phase 3: lockdown
Disease is severe, with uncontained community spread seen as a spike of cases even with measures in place. Systems are strained though adequate, with significant rerouting of resources to COVID-19 care.

Phase 4: uncontrolled pandemic
Disease is severe with uncontrolled spread. Resources are exhausted despite being fully routed to COVID-19 care.

Outpatient breast services

All services are specialist run (clinics, operations, radiation and chemotherapy administration), allowing redeployment of undifferentiated staff for COVID-19 care. A centralized appointment line was set up to screen referrals from within and outside the hospital. Patients are triaged into three groups based on the likelihood of having cancer: urgent (review within the week), early (1–2 weeks) and non-essential (3–6 months). Non-oncological operations are reviewed by telecommunication and deferred accordingly. Medical tourism is disallowed at an institutional level and second-opinion consultations from other sites discouraged. Prioritization of outpatient breast services is summarized in *Fig. 1*.

Screening

Mammographic screening was discontinued when entering phase 2, with the rationale that the majority of screen-detected disease is oestrogen receptor-positive, with less aggressive tumours and slower progression, so missing early disease is less likely to have a broad impact on subsequent survival. The compromise will, however, always exist, that a small portion of patients will eventually require more treatment, which may have been avoidable with screening.

Telecommunication

All meetings including MTBs are held virtually using teleconferencing tools with an institutional account on a virtual private network. Patient telecommunication methods comprise traditional telephone calls, e-mails or teleconferencing tools. Staff were provided with telecommunication training (verification of patient identity, dissemination of information regarding safety measures for COVID-19, reassurance regarding quality of care) in order to contact patients for counselling, symptom review and, if appropriate, deferral of appointments together with return advice and contact information. Clear documentation is essential to ensure continuity of care.

Surgical oncology

If possible, surgery is deferred to optimize manpower and resource reallocation, with the judicious use of neoadjuvant chemotherapy (NACT) and neoadjuvant endocrine therapy (NAET). Operations are scheduled in the morning to facilitate same-day discharges. Reconstruction should be limited to those requiring a hospital stay not exceeding 48 h or delayed as appropriate. Patients with higher perioperative risks that potentially necessitate high-dependency or intensive care should be deferred to NACT/NAET if possible, as these are the most valuable resources for treatment during the COVID-19 pandemic. Prioritization of breast surgery is summarized in *Fig. 2*.

Postoperative care

Established pathways and trained breast-care nurses allowed postoperative visits to be limited (*Appendix S1*,

Fig. 1 Patient prioritization for breast clinics during COVID-19 pandemic

<table>
<tr><th>Phase 1</th><th>Phase 2</th><th>Phase 3</th><th>Phase 4</th></tr>
<tr><td colspan="3">Postoperative visits continue</td><td>Closure of outpatient breast services</td></tr>
<tr><td colspan="3">Newly diagnosed patients: invasive and non-invasive tumours; encourage telecommunication</td><td rowspan="6"></td></tr>
<tr><td colspan="3">Cancer survivors with new symptoms</td></tr>
<tr><td>Breast screening</td><td colspan="2">Breast screening mammography stopped; reading and assessments for previously screened patients continued</td></tr>
<tr><td colspan="2">New referrals: benign disease deferred; suspicious symptoms seen early</td><td>New referrals: suspicious symptoms seen at next available appointment</td></tr>
<tr><td colspan="3">Treatment of all patients with stable imaging findings and no new symptoms deferred; encourage telecommunication: cancer survivor surveillance, high risk (over 20% lifetime risk of breast cancer) screenin
Benign reviews</td></tr>
</table>

Fig. 2 Patient prioritization for breast surgery during COVID-19

Phase 1	Phase 2	Phase 3	Phase 4
No change to routine surgical oncological management of patients with breast cancer	In order of importance Potentially unstable (haematoma, uncontrolled sepsis) Revision of ischaemic flaps Metastatic disease in crisis (bleeding wounds, unstable spinal metastases, intractable pain) Malignant phyllodes or local recurrence not amenable to systemic therapy		
	All patients tolerating NACT with responsive disease to complete systemic therapy Can consider surgery if a break from chemotherapy needed for medical and psychological reasons**	Patients receiving neoadjuvant treatment reaching the 16-week window after therapy; outcomes are poorer after this window†	
	EBC: ER+, HER2−*	EBC: ER+ and HER2− with contraindication to endocrine therapy* T1a–b N0; triple-negative*/**	
	Breast cancers that are likely to benefit from NACT: triple-negative, HER2+ or grade 3**		
	DCIS	DCIS with high risk features#	
	Reconstruction allowed	Reconstruction requiring hospital stay not exceeding 48 h++	
	Atypical lesions or discordant biopsies likely to be malignant		

DCIS: ductal-carcinoma-in-situ; EBC: early breast cancer – <T3N0; ER: estrogen receptor; HER2: human epidermal growth factor receptor 2; NACT: neoadjuvant chemotherapy;
*Rationale: wide local excision (WLE)/total mastectomy (TM) in our unit all have LOS < 23 h.
**MTB shared decision making to balance surgical risks with risks of neoadjuvant treatment toxicities and risks of contracting COVID-19;
†MTB discussion for consideration of extending anti-HER2 therapy or use of endocrine therapy if appropriate while waiting for availability of operating facilities;
++Reconstruction with latissimus dorsi (LD) flaps and implants have a length of stay not exceeding 48 h in our institution;
#DCIS at risk of upgrading to cancer (high grade, comedonecrosis, palpable mass, >5cm microcalcifications)

supporting information). Same-day adjuvant therapy appointments were organized to minimize hospital visits.

Adjuvant treatment

The time-sensitive nature of adjuvant therapy and fractionated nature of radiotherapy (RT) pose unique challenges[5]. The goal is to minimize patients' exposure to COVID-19, without compromising oncological outcomes while limiting the burden on strapped resources. Heightened measures of infection control and screening for COVID-19 are undertaken on oncological floors, where teams are given direct access to pandemic teams to test and treat suspect cases. Telecommunication with appropriate triaging is supported by mobile pharmacies. Continued shared decision-making, in terms of survival benefits from treatment balanced against risks of treatment toxicities and susceptibility to COVID-19, is prioritized. Treatment of patients for whom adjuvant therapy did not confer proven survival benefit was deferred.

Medical oncology

Inpatient chemotherapy is limited to exceptional cases for bed conservation. Adapted regimens that are less myelosuppressive or require shorter infusion times are preferred, with use of oral and subcutaneous (instead of intravenous) formulations wherever possible. Granulocyte colony stimulating factor as primary prophylaxis is considered for high-risk regimens to decrease risks of complications.

Radiation oncology

Hypofractionated schedules for adjuvant breast RT are preferred[6]. In phase 3, adjuvant RT can be delayed up to 3 months after surgery[7–9], and boost RT omitted in selected patients[10]. Omission of adjuvant RT in low-risk patients with negligible survival benefits should be discussed[11]. Palliative RT is reserved for crises such as spinal cord compression, uncontrolled bleeding from fungating tumours and intractable pain.

Table 1 Changes in outpatient setting during COVID-19 epidemic

	Average month in 2019	March 2020
Outpatient load		
First visits	278	128
Review visits	405	199
No. of cancers diagnosed	35 (12·6)	31 (24·2)
No. of telecommunications leading to discharge	–	10
No. of telecommunications leading to deferral of appointment	–	198
COVID-19-related (breast outpatient)		
No. of COVID-19 swabs	–	1
No. of confirmed COVID-19 cases	–	0

Values in parentheses are percentages. Numbers exclude all metastatic disease.

Impact of interventions owing to COVID-19 on breast cancer services

Table 1 shows the improvement in proportion of patients with breast cancer and efficiency of telemedicine and triaging. Strategies were implemented on 20 February 2020. In March 2020, the outpatient load decreased by more than 50 per cent without compromising cancer detection rates. A doubling of the proportion of oncological cases with a mean waiting time from referral to specialist visit of 5 days was seen. Telecommunication resulted in deferral and discharge of around 200 patients. All patients continued to be treated according to standard of care.

Looking past COVID-19

Streamlining of the service has made the authors' unit more efficient without compromising standards of care. Looking past COVID-19, they will continue to adopt telecommunication, provide better training for primary healthcare partners, and streamline patient flows in the hospital.

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Supporting information

Additional supporting information can be found online in the Supporting Information section at the end of the article.

Snapshot of space

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The Andromeda Galaxy is the nearest major galaxy to our own Milky Way galaxy, located 2·5 million light years from Earth, in the constellation of Andromeda. It is estimated to contain about one trillion stars, and is one of the most distant objects visible to the naked eye. Only the bright galactic core is visible to the naked eye, whereas a telescope reveals its spiral arms and an orbiting dwarf galaxy to the lower right of the image. Its apparent size in the sky is about six times the width of the full moon.

Answer: This is the third in a short series of images of space taken with a digital camera by Bristol surgical trainee, Darren Scroggie. If you like the images as much as we do, please let us know, and send other examples that we can use to fill journal white space.

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