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The response of Trauma & Orthopaedic Departments to the first four weeks of lockdown for the COVID-19 pandemic – A trainee-led analysis of the East of England

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ABSTRACT

Through a trainee research collaborative, we have studied the changes in practice of 12 T&O departments across the East of England over the first four weeks of the UK lockdown and COVID-19 pandemic, comparing to activity levels with the corresponding period in 2019.

We focused on changes in T&O practice, training and redeployment of Trainees.

Units differ considerably in several aspects of practice. We found a 97% reduction in elective operating, 64% reduction in elective outpatient activity and 37% reduction in operative trauma. 58% of trainees continued working in T&O clinics, with an average of 6 operative cases over this period.

Our modelling suggests that the impact on training will persist; counter-measures must be incorporated into central recovery planning.

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Introduction

On 30th January 2020, NHS England declared a Level-4 National incident due to the COVID-19 global pandemic. On 11 March 2020, the General Medical Council published a statement providing support for healthcare professionals working outside their usual scope of practice. On 17 March 2020,¹ NHS England asked all NHS hospitals to “wind down” all elective activity, postponing all non-urgent elective procedures by 15th April, for a period of at least three months.² On 23rd March 2020, the UK Government announced a “lockdown” with formal social distancing measures.³ Since then, guidance from the British Orthopaedic Association and the Royal College of Surgeons has been disseminated and updated regularly.^{4–6}

Whilst there have been reports of how individual hospitals have responded to this crisis, as yet there have not been any regional reports.

The Trauma and Orthopaedic (T&O) speciality training programme in the East of England (EoE) Deanery has 12 hospitals of different sizes and varying subspecialties (Fig. 1).

The aim of this study was to determine the changes to T&O practice across the region during the 1st four weeks of the UK lockdown (weeks commencing 23rd March to 13th April), and its impact on service provision and training.

The Orthopaedic Research Collaborative of East Anglia (ORCA) approached all trainees Trauma and Orthopaedic trainees in the region and requested a representative from each hospital to complete weekly surveys. The survey questions were compiled and tested by the committee members of ORCA prior to being sent out to the hospital representatives. Surveys were sent by email using ‘Smart survey’ and ‘Google forms’. The first survey was sent on week commencing 23rd March 2020. Surveys were then conducted weekly during the data collection period, the last questionnaire asked collaborators to input data from the corresponding 4 weeks of 2019 as a comparator to current practice.

¹ The members of the ORCA collaborative group are listed in the [Appendix](#).

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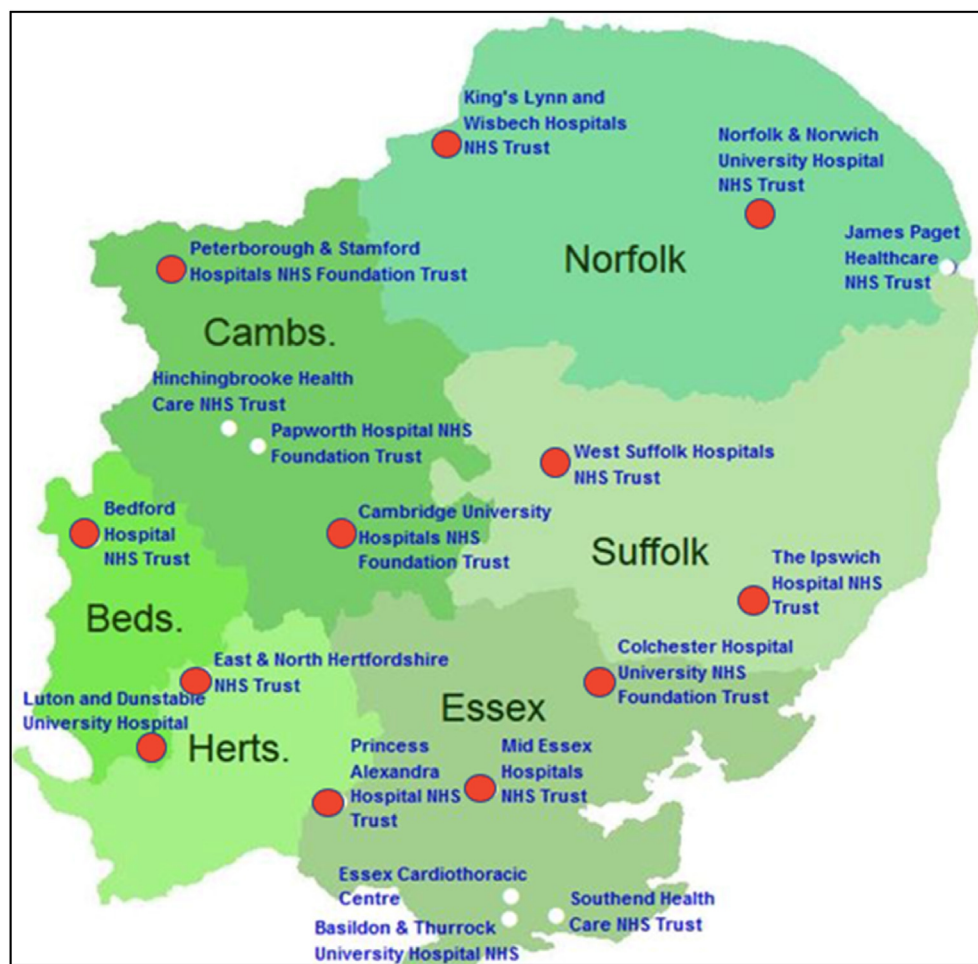


Fig. 1 – Orthopaedics Training Hospitals in EoE Deanery (marked with red dot).

Results

Elective orthopaedics

Within a week of the NHS England directive, elective surgery had stopped in all but one hospital, which followed suit by week 2. 45 elective operations were performed in our region compared to 1605 from the same time period in 2019 (97% reduction) (Fig. 2).

In contrast, by the same date, only two hospitals had cancelled all elective clinics, whilst eight had cancelled new-patient appointments and two had made no changes. By week 4, 5 hospitals ceased elective outpatient activity completely with the remainder seeing less than 25% of their patients face to face (see Fig. 3).

In total, across T&O departments of our region, there were 6323 elective clinic consultations during the study period, compared to 17,346 in 2019 (64% reduction) (Fig. 4).

Emergency T&O

Fracture clinics continued to operate in all hospitals, but by week 4 these were “consultant-only” in 5 hospitals. By week 3, social distancing had been set up in all fracture clinics.

Virtual fracture clinics were in use in 5 hospitals at the start of the social distancing period and continued to run as normal. No department set up new virtual fracture clinics.

By the end of week 2, five T&O departments were providing care directly in the minor injuries unit (MIU) of the Emergency Department. The grade of T&O doctor varied from consultant-only in one hospital, consultant or ST7+ in another, and any grade of registrar in the remaining 3. A mini C-arm was placed within the MIU in three hospitals to facilitate outpatient management.

855 operative trauma procedures were performed compared to 1168 in 2019 (37% reduction) (Fig. 5). This was consistent with trainee reports that more non-operative approaches had been adopted in all units.

The impact on trainees

Orthopaedic staff were redeployed to help in medicine and critical care from week 1 in 3 hospitals. By week 2, 4 in 8 hospitals reported redeployment of Orthopaedic staff. By weeks 3–4, emergency rotas for T&O trainees were put in place in 10 hospitals.

Consequently, only 36 trainees (58%) continued to work in Trauma and Orthopaedic clinics. The average number of operative cases performed over the four weeks was 6, which is

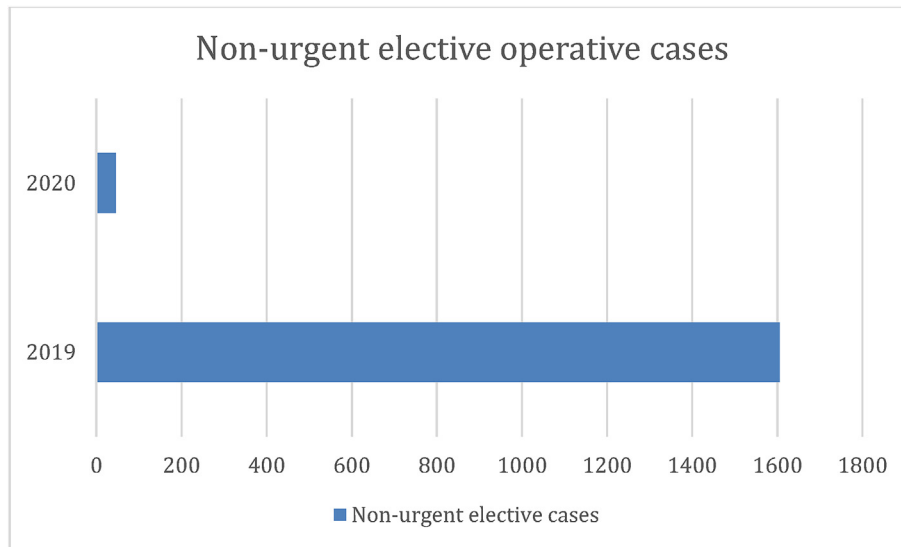


Fig. 2 – Non-urgent elective operating 2019 vs 2020.

less than 20% of the norm. [Figure 6](#) summarises the variations in specific COVID related training provided for T&O trainees at the hospitals.

Operating theatres

[Figures 7 and 8](#) show the measures put in place for the operative management of known/suspected COVID-19 positive patients and patients not suspected to be positive respectively. PPE was used for both patient groups, including FFP3 mask, visor, standard surgical gown and in some hospitals an apron under the gown. Aerosol-generating procedures (AGPs) were avoided where possible in both groups. Most hospitals had allocated a designated theatre for COVID-positive patients. Variations were seen in hospitals over the 4 weeks as to whether laminar flow should be on or off, particularly for the positive group.

Discussion

This has been a time of great uncertainty for the NHS. T&O departments have had to prepare for this unannounced, unprecedented crisis with very little warning given prior to guidance from statutory regulators such as NHS England, and professional bodies such as the BOA, RCS and GMC.

Our survey shows some significant variations in the response of T&O departments across our region. These variations were seen in all aspects (training, protective measures in place and changes in theatres and clinics for both trauma and elective work, redeployment of staff). It is important that clinicians, managers, commissioners and policymakers are aware that working practices vary considerably between centres, even within a single region.

There was commonality in the cessation of elective operating, perhaps as it was clearly mandated by NHS England.

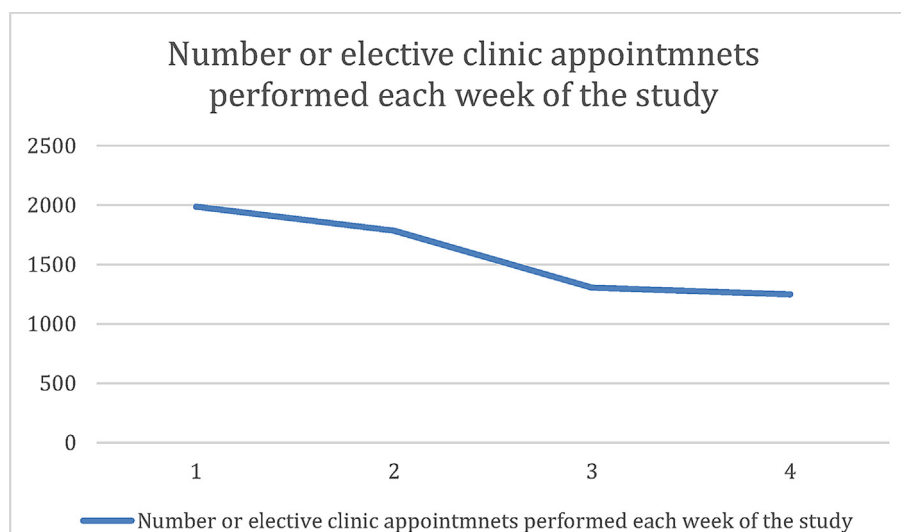


Fig. 3 – Number of elective clinic appointments by week.

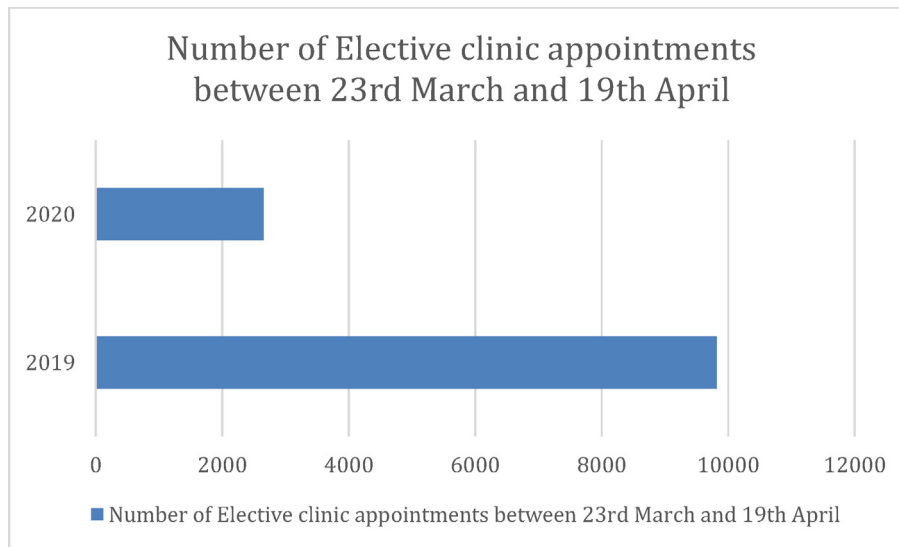


Fig. 4 – Elective outpatient activity in the same 4 week period 2019 vs 2020.

There was variation in the implementation of other guidelines, such as BOA recommendations regarding senior decision makers, or fracture clinics seeing trauma directly from ED triage.⁴

The EoE region overall has been one of the least affected in terms of COVID cases and deaths, but even within the region, there are great differences (2874 cases in Essex, 917 in Cambridgeshire). The variation in practices seen in our survey may be a reflection of this. However, it is therefore likely that when combined, our region's hospitals are therefore probably reflective of the situation across the majority of the hospitals in the UK.

The changes in the use of laminar flow this survey found highlights issues with rapidly changing advice across many forums; early suggestions that positive pressure ventilation may spread the virus from infected patients to staff has since been refuted.

The data from this study show a significant reduction in T&O activity across all hospitals. The reduction in trauma cases could have been for a variety of reasons: national guidance urging non-operative treatment in order to protect resources, social distancing measures reducing trauma related injuries, patients not presenting due to fear of contracting the virus or being a burden to the hospital. The shift towards non operative management could have an adverse outcome on some patients who would have been managed operatively prior to the COVID-19 situation.

These individuals will need to be monitored with reliable patient-reported outcome measures, the results of which should be reflected upon to determine our future practices. We may find that the COVID related alteration in practice results in a necessity for increased amounts of corrective surgery, justifying previous practices. Alternatively, the results may support a permanent shift towards non-operative

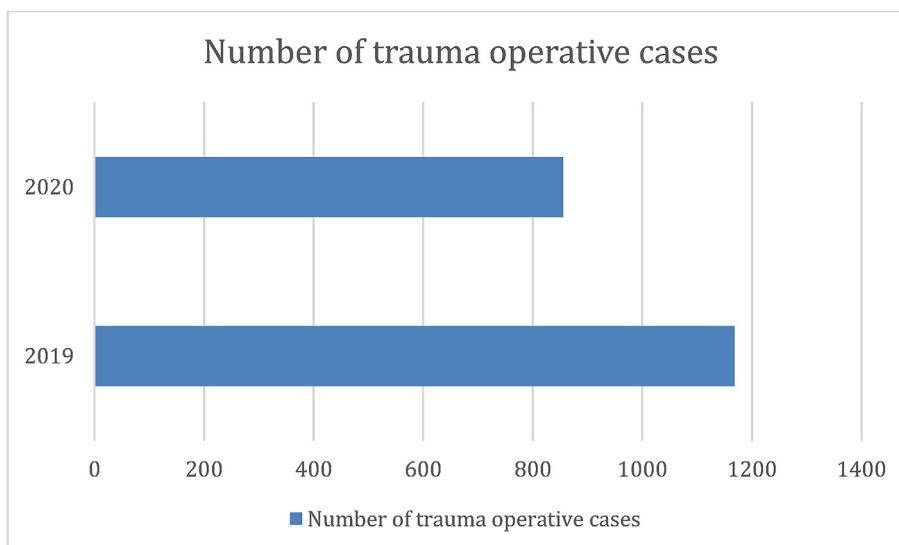


Fig. 5 – The change in trauma operating volume between 2019 and 2020.

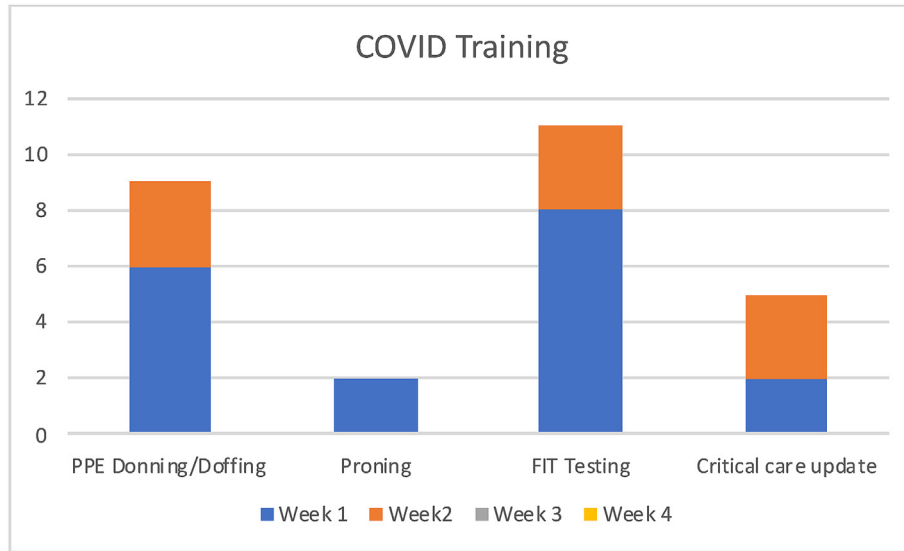


Fig. 6 – COVID related training for T&O STs at hospitals.

management for some injuries, which may provide considerable cost-savings.

There was a sizeable reduction in outpatient and surgical elective activity in all hospitals. Based on the figures from our survey, if the changes in activity continue for a total of three months, the region will have lost 33,069 elective outpatient clinic appointments and 4683 surgical procedures.

There would have been an expected reduction in follow up elective clinic appointments due to cancellation of routine imaging and surgery. These patients will eventually need their imaging or surgery as it is unlikely that their conditions would have resolved/improved whilst waiting, but could potentially make surgery complicated and outcomes poorer. The coronavirus pandemic is likely to have an adverse outcome on many elective patients through delays to initial consultations,

follow up appointments and operations. Such delays are likely to have a detrimental effect on quality of life in the short and potentially longer term.

It is also becoming clear that clinic and theatre efficiency are going to have to decrease in order to ensure compliance with safety standards, such as social distancing and peri-operative processes.

Assuming that theatre efficiency will be 66% of previous output, we would predict that our trainees will see the average number of elective operative cases per week fall from 7 to 4, significantly affecting the trajectory of attainment of competencies within the six-year training programme.

If we aim to recover to where we were prior to the pandemic within a year, then each hospital in our region would have to provide an additional 2.5 whole day operating

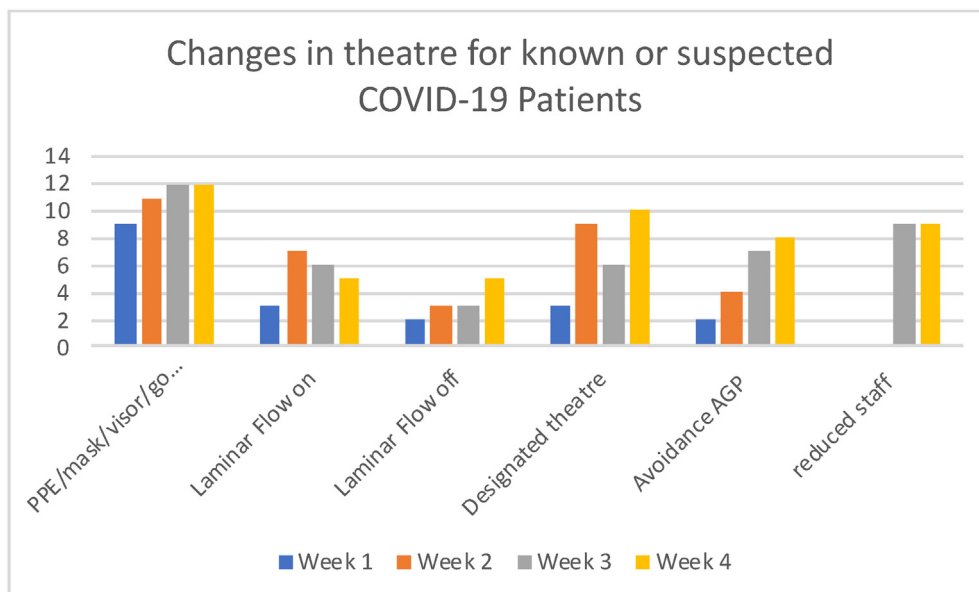


Fig. 7 – Operating theatre adaptations confirmed COVID-19 (AGP = aerosol generating procedure).

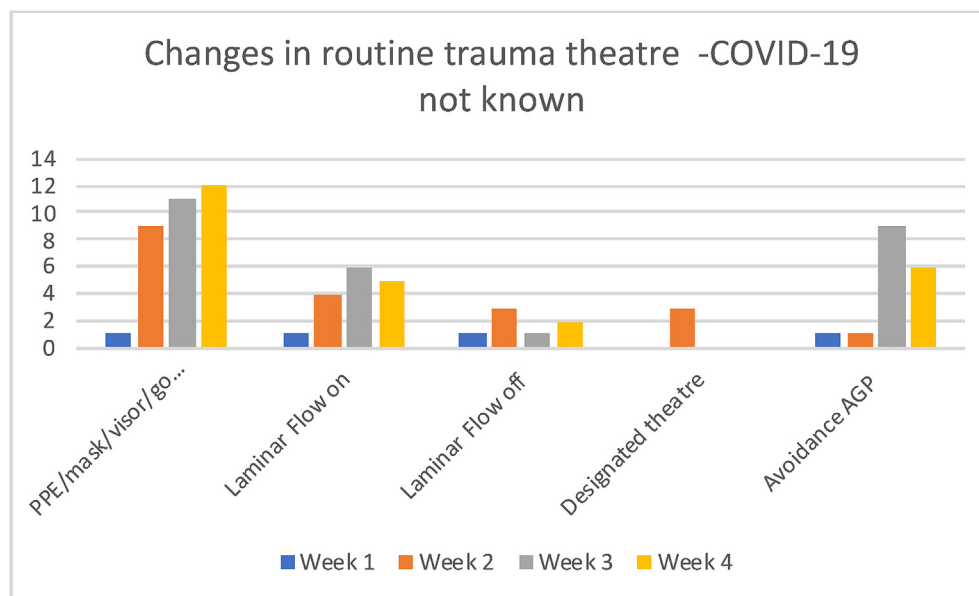


Fig. 8 – Trauma theatre adaptations for patients not suspected to have COVID-19.

lists (at 3 cases per list), and 4.5 outpatient clinics (12 patients each) per week. Finding this capacity will be challenging.

We now have to look at the challenging task of developing a strategy for the recovery of T&O elective services. This needs to be done at national and local levels, accepting that there will have to be differences for the way this is implemented in each unit.

It was evident that across the region, orthopaedics trainees have played an important part in responding to the pandemic, and that training has been necessarily compromised. The effect on trainees in different hospitals has varied considerably. While some trainees remained working solely in Trauma and Orthopaedics, others were running minor injuries units, in some hospitals trainees covered occasional shifts in critical care and in others complete redeployment to work in medicine was experienced. In general, but not all instances it was the more junior trainees who were affected by this. As Trauma and Orthopaedic training in the UK is competency based and trainees are required to achieve target numbers of operations, the coronavirus situation will have likely have an adverse effect on whether trainees are fit to progress in their training. We must not become complacent about this over the following months.

Whilst patient care must be the priority, solutions must protect the needs of trainees for the future of our profession, and the future care of patients. We suggest that this must be guided nationally, empowering clinicians locally to ensure they can engage their hospitals to take the necessary measures.

Appendix

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