

## SPECIAL ARTICLE

# An observational national study of anaesthetic workload and seniority across the working week and weekend in the UK in 2016: the 6th National Audit Project (NAP6) Activity Survey

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## Abstract

**Background:** UK national anaesthetic activity was studied in 2013 but weekend working was not examined. Understanding changes since 2013 in workload and manpower distribution, including weekends, would be of value in workforce planning.

**Methods:** We performed an observational survey of NHS hospitals' anaesthetic practice in October 2016 as part of the 6th National Audit Project of the Royal College of Anaesthetists (NAP6). All cases cared for by an anaesthetist during the study period were included. Patient characteristics and details of anaesthetic conduct were collected by local anaesthetists.

**Results:** Responses were received from 342/356 (96%) hospitals. In total, 15 942 cases were reported, equating to an annual anaesthetic workload of  $\approx 3.13$  million cases. Approximately 95% (9888/10 452) of elective and 72% (3184/4392) of emergency work was performed on weekdays and 89% (14 145/15 942) of activity was led by senior (consultant or career grade) anaesthetists and 1.1% (180/15942) by those with <2 yr anaesthetic experience. During weekends case urgency increased, the proportion of healthy patients reduced and case mix changed. Cases led by senior anaesthetists fell to 80% (947/1177) on Saturday and 66% (342/791) on Sunday. Senior involvement in obstetric anaesthetic activity was 69% (628/911) during the week and 45% (182/402) at weekends, compared with 93% (791/847) in emergency orthopaedic procedures during the week and 89% (285/321) at weekends. Since 2013, the proportion of obese patients, elective weekend working, and depth of anaesthesia monitoring has increased [12% (1464/12 213) vs 2.8%], but neuromuscular monitoring has not [37% (2032/5532) vs 38% of paralysed cases].

**Conclusions:** Senior clinicians deliver most UK anaesthesia care, including at weekends. Our findings are important for any planned workforce reorganisation to rationalise 7-day working.

**Keywords:** audit; anaesthesia; monitoring; technique; workforce

The 6th National Audit Project of the Royal College of Anaesthetists (NAP6), is a prospective service evaluation across the NHS in the UK, aiming to provide quantitative and qualitative information about life-threatening perioperative anaphylaxis in the UK. A one-year registry collected a report of every suspected case in 2015–16.<sup>1,2</sup>

To interpret the results of the registry created in this period, contemporary information about anaesthetic care provided and the population undergoing anaesthesia care in participating hospitals was required. The first component of the Activity/Allergen Survey, described here, is a cross-sectional observational survey of anaesthetic practice to provide information on patient characteristics, anaesthetic workload and anaesthetic technique. This, with the second part of the survey, which describes drug usage,<sup>3</sup> enables estimation of the incidence of perioperative anaphylaxis in a variety of clinical settings by providing a denominator for the annual number of cases involving anaesthetic care and individual drug use.

In 2013, the NAP5 project reported a similar activity survey<sup>4</sup> providing information on the number of cases involving anaesthetic care in all in-hospital locations. Published Hospital Episode Statistics<sup>5</sup> show an increase in inpatient and day case procedures since 2013, but do not give detailed information on anaesthetists' involvement. NHS Maternity Statistics show a slight decrease in deliveries in NHS hospitals since 2013, of which 60% involved anaesthetic intervention.<sup>6</sup> Such changes over time mean that figures used for NAP5 may not necessarily be applicable for the 2016 data collection period.

The current survey, performed with similar methods to NAP5, enables identification of subsequent changes in anaesthetic practice, including any that might have

occurred as a consequence of the recommendations made in the NAP5 report, such as increased use of depth of anaesthesia (DOA) monitoring and peripheral nerve stimulators.<sup>7,8</sup>

There has been much recent debate about the 'weekend effect', the seniority of physicians administering care outside of routine hours, and any consequent impact on patient care.<sup>9–12</sup> Information related to day of the week was not reported in the NAP5 activity survey. Reports recording NHS work patterns such as the 2003 'Who Operates When II (WOW2)'<sup>13</sup> are now out of date and there is the need for information on anaesthetic-specific workload.

Therefore, the aims of this study were to: (i) describe anaesthetic caseload and working practice to provide a context for the NAP6 registry; (ii) examine anaesthetic activity by day of the week; and (iii) to highlight any changes in the state of UK anaesthesia since the NAP5 survey in 2013.<sup>4</sup>

## Methods

The NAP6 project was defined as a service evaluation by the Health Regulatory Authority, and therefore did not require National Research Ethics Service approval.

This part of the project was a cross-sectional observational study of anaesthetic practice in NHS hospitals. Every NHS Trust performing surgery under the care of an anaesthetist in the UK was identified from the Royal College of Anaesthetists database of hospitals. Each hospital had a NAP6 Local Coordinator who administered the NAP6 project in that hospital, Trust, or Board. Each Local Coordinator was invited, by email from the NAP6 administrator, to organise data collection from every perioperative case involving the care of an anaesthetist.

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