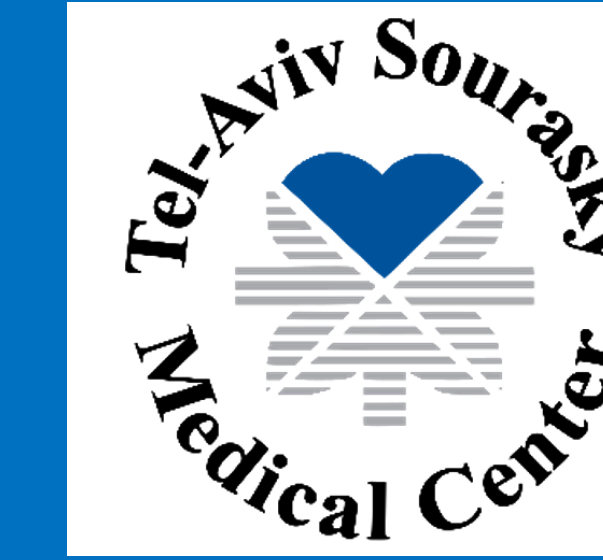


# Impact of an interdisciplinary process to increase utilization of neuraxial anesthesia for cesarean delivery

## A retrospective database analysis

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### Introduction

Cesarean delivery (CD) is safer for mother when performed under neuraxial anesthesia, and the rate of general anesthesia CD in the UK and US is reportedly < 8%. (1,2)

Starting Jan 2018 we implemented educational and management strategies to decrease the rate of general anesthesia CD, that was almost 20% for unplanned cases.

### **References**

- 1 – Bamber J. BJA 2020;125:580-587
- 2 – D'Angelo R. Anesthesiology 2014;120:1505-12

### Methods

In our tertiary medical center, currently 13,000 labors, 19% cesarean delivery, we instituted monthly anesthesia and interdisciplinary (anesthesia and obstetrician) educational meetings and daily bedside teaching for optimum safe anesthesia for CD. Through these meetings, and daily interdisciplinary hand-overs with the obstetricians, we emphasized the importance of proactive anesthesia and early updates regarding impending unplanned CD.

Additionally, from July 2018 we drew up a syringe with lignocaine 18 mL+ bicarbonate 8.4% 2ml + 50 mcg epinephrine syringes, kept for 8 hours as per pharmacy recommendation, to be used for labor epidural analgesia augmentation for cesarean delivery anesthesia.

Following IRB approval we retrieved data from the electronic medical records (mode of anesthesia, conversion of spinal or epidural to general anesthesia, supplementary intravenous medications for planned and unplanned CD) according to year, 2018, 2019, 2020 and 2021, to assess the impact of our educational strategies.



All (planned and unplanned) CD according to year:  
Anesthesia modes, intravenous supplementation medications

|                             | 2018<br>N=2411 | 2019<br>N=2227 | 2020<br>N=2032 | 2021<br>N=2276 |
|-----------------------------|----------------|----------------|----------------|----------------|
| Spinal n(%)                 | 1794 (74.4%)   | 1801 (80.9%)   | 1756 (86.4%)   | 1942 (85.3%)   |
| Epidural n(%)               | 442 (18.3%)    | 334 (15.0%)    | 221 (10.9%)    | 265 (11.6%)    |
| General n(%)                | 228 (9.5%)     | 135 (6.1%)     | 82 (4.0%)      | 70 (3.1%)      |
| Spinal to GA n(%)           | 20 (0.8%)      | 20 (0.9%)      | 17 (0.8%)      | 19 (0.8%)      |
| Epidural to GA n(%)         | 47 (1.9%)      | 27 (1.2%)      | 16 (0.8%)      | 10 (0.4%)      |
| Spinal + IV Suppl n(%)      | 244 (10.1%)    | 204 (9.2%)     | 292 (14.4%)    | 347 (15.2%)    |
| Epidural + IV Suppl n(%)    | 206 (8.5%)     | 120 (5.4%)     | 85 (4.2%)      | 115 (5.1%)     |
| IV Suppl Meds n(%)          |                |                |                |                |
| Ketamine                    | 140 (5.8%)     | 44 (2%)        | 43 (2.1%)      | 59 (2.6%)      |
| Midazolam                   | 336 (13.9%)    | 207 (9.3%)     | 193 (9.5%)     | 181 (8.0%)     |
| Propofol                    | 392 (16.3%)    | 272 (12.2%)    | 283 (13.9%)    | 357 (15.7%)    |
| Max dose Ketamine given mgf | 21.4(15.8)     | 22.5(13.7)     | 19.9(9.0)      | 18.4(8.7)      |
| Max dose MDZ given mgf      | 1.6(0.6)       | 1.7(0.7)       | 1.5(0.6)       | 1.6(0.7)       |
| Max dose Propofol given mgf | 21.6(11.9)     | 24.1(19.5)     | 21.9(10.9)     | 23.8(10.9)     |

f=mean(SD)  
MDZ=midazolam; GA = general anesthesia

Unplanned CD according to year:  
Anesthesia modes, intravenous supplementation medications

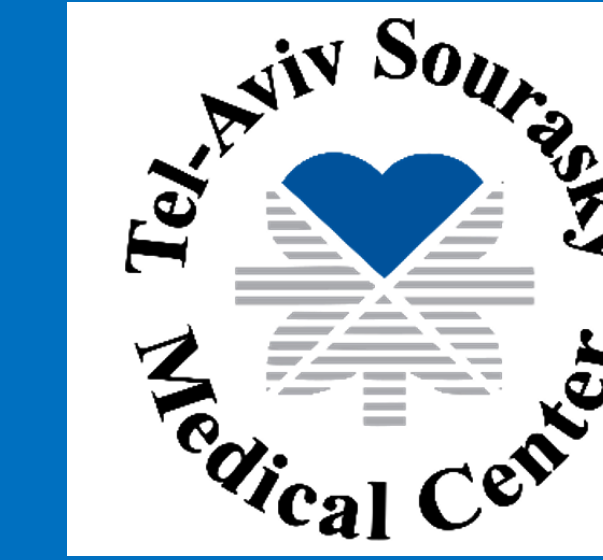
|                          | 2018<br>N=977 | 2019<br>N=743 | 2020<br>N=554 | 2021<br>N=586 |
|--------------------------|---------------|---------------|---------------|---------------|
| Spinal n(%)              | 464 (47.5%)   | 376 (50.6%)   | 331 (59.7%)   | 330 (56.3%)   |
| Epidural n(%)            | 373 (38.2%)   | 288 (38.8%)   | 189 (34.1%)   | 232 (39.6%)   |
| General n(%)             | 192 (19.7%)   | 114 (15.3%)   | 61 (11.0%)    | 40 (8.1%)     |
| Spinal to GA n(%)        | 11 (1.1%)     | 9 (1.2%)      | 5 (0.9%)      | 5 (0.8%)      |
| Epidural to GA n(%)      | 44 (4.5%)     | 25 (3.4%)     | 14 (2.5%)     | 9 (1.5%)      |
| Spinal + IV suppl n(%)   | 92 (9.4%)     | 58 (7.8%)     | 68 (12.3%)    | 70 (11.9%)    |
| Epidural + IV suppl n(%) | 180 (18.4%)   | 104 (14%)     | 113 (20.4%)   | 101 (17.2%)   |

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- ✓ Overall GA rate for CD ↓ from 9.4 to 3.1%
- ✓ Unplanned cases - GA rate ↓ from 19.7 to 8.1%
- ✓ GA rate for women with labor epidural analgesia in place ↓ 4.5% to 1.5%
- ✓ Supplementary IV medications were administered frequently

## CONCLUSIONS

This study demonstrates the utility of educational interventions to decrease general anesthesia rates for CD and thereby advance patient safety.

It highlights the importance of proactive interdisciplinary labor management.

Future investigations will investigate use of supplementary IV medications during CD.