Session I: Risks and Benefits of Corneal Transplantation

1.1. EBEI: A NEW 'EYE BANK EFFICIENCY INDEX'

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Purpose This study introduces the Eye Bank Efficiency Index (EBEI), a novel metric designed to assess the operational performance of Eye Banks (EBs). The EBEI is defined as the ratio between the number of corneal tissues distributed over a given timeframe and the net number of usable tissues, calculated by subtracting discarded tissues from those procured.
Methods To evaluate the usefulness of the EBEI compared to conventional indicators, data from the Veneto Eye Bank Foundation (Venice, Italy)—the country's largest EB—were analyzed. Key data points included the total number of corneas retrieved, grafts discarded, and tissues distributed. The analysis was conducted across three distinct time intervals: the full calendar year (January–December), the national lockdown period (March–May), and the post-lockdown period (June–December).
Results The EBEI showed a notable annual increase of 3.4% in 2020 compared to 2019 (rising from 0.986 to 1.020), before declining to 0.993 by 2022. During the 2020 lockdown months, the index dropped sharply by 13.8% relative to the same period in the previous year. In contrast, EBEI fluctuations during the post-lockdown months were relatively modest in 2020 and 2021, though the index hit a low of 0.976 in 2022, representing a 7.8% decrease from 2019.
Conclusion The Eye Bank Efficiency Index offers a straightforward and robust tool for quantifying Eye Bank performance. Its broader implementation may lead to more precise evaluations of EB operations, supporting decisions in academic research, policy-making, and resource management.

1.2. EYE DONATION POTENTIAL AT A UK TERTIARY GENERAL HOSPITAL

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Purpose The United Kingdom faces a significant shortage of ocular tissue for corneal transplantation. About 6,000 patients in the UK are waiting for corneal transplants. Eye donation rates have been decreasing for several years, and there is uncertainty about the potential and barriers to eye donation in NHS hospital settings. It is unclear whether changes to donor opt-in legislation have affected eye donation. The aim of this study was to assess the potential and barriers to eye donations at a UK tertiary general hospital.
Methods A retrospective review was conducted on 100 random adult deaths at the University Hospital of Southampton (UHS) 2023 (~1400 inpatient beds). Two Specialist Nurses in Organ Donation examined each case against current eye donation criteria and the UK donor register to assess their suitability for eye donation.
Results There were 2391 deaths at UHS; a comparison of the random sample (n=100) showed no statistical differences in age, gender, or ethnicity between the sampled cohort and the total death cohort. In the 100 sampled deceased cohort, 22 deceased patients had opted in for eye donations, 15 of whom were eligible, but only one was referred. Overall, 62 cases were suitable for eye donation. Only three were referred for potential eye donation. Two cases involved discussions with the next of kin regarding eye donation, and only two ended up becoming donors. Malignancies and neurodegenerative disorders (17% each) were common contraindications. Highest proportion of eligible donors were in ITUs (11/15=73%), emergency department (4/5=80%), Acute Medical Unit (6/7=86%), and medical wards (21/28=75%). The return of eye donation in 2023 showed that among the 2,391 deceased, 30 (1.25%) were eye donors, 25 of whom were ITU multi-organ donors. Extrapolating our findings to total annual deaths, we estimate that there is a potential of over 359 donors per year, enough to supply 570 corneas, equating to 10% of the annual current demand for corneal transplants in the UK.
Conclusion This study suggests that UK NHS tertiary hospitals are a rich source for eye donations. Many patients' registered donation wishes are not fulfilled due to a lack of timely donor identification and referral. Systemic changes are needed to integrate eye donations into end-of-life clinical practices in hospitals. The study indicates that focusing efforts in these environments offers a sustainable solution to meet the current and future demands for corneal transplant surgery.

1.3. IMPACT OF DONOR CRITERIA MODIFICATION ON CORNEA TISSUE AVAILABILITY FOR TRANSPLANT

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Purpose Corneal blindness is a leading cause of blindness worldwide. Cornea distribution for transplant is uneven with adequate supply in some countries, while large gaps are evident in others. A major challenge to bridging the supply gap includes small donor pools, with a projected worsening over time. Approaches to increasing cornea tissue availability for transplantation include expanding donor pools through advocacy and modifying parameters like age and Death-to-Preservation (DtP) time to ensure the wish of potential donors to give the gift of sight is met. This study aimed to identify the changes in cornea tissue availability with modification of recovery parameters.
Method Donor eligibility parameters for cornea recovery modified were Death-to-Preservation (DtP) time and donor age. DtP was reviewed upwards by 6 hours from ≤18 hours to ≤24 hours to increase tissue availability from existing consented donors, and the upper limit for donor age eligibility was increased by 5 years from 75 years to 80 years for donor pool expansion. Of note, all donors age > 70 years old with history of cataract surgery were excluded at recovery. A 26-month retrospective review of operational data was done to determine cornea tissue outcomes and the changes resulting