The Relationship between Poverty and Deaths after Surgery

POMRC
Perioperative Mortality Review Committee

Summary of the Perioperative Mortality Review Committee's Sixth Annual Report findings

Poverty is measured with the 'Deprivation Index':[1]

It is based on:

Employment

Income

Education

Housing

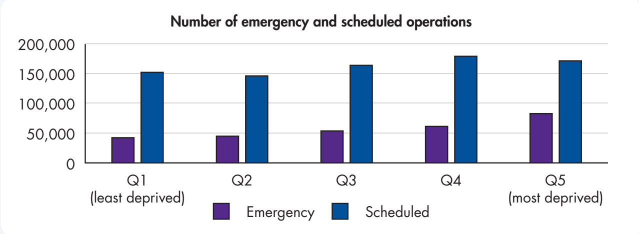
The population is divided into five equal-sized groups (called 'quintiles'), from

least deprived (QUINTILE 1) TO most deprived (QUINTILE 5).

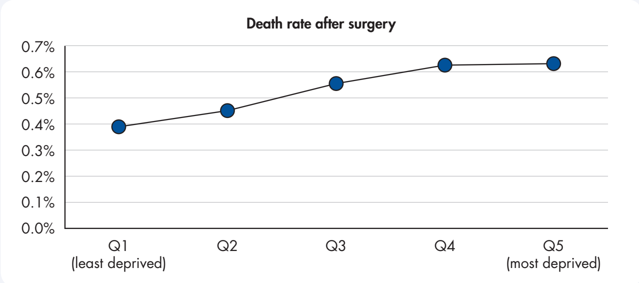
20% of the population live in the most deprived areas, but make up **23%** of all surgery in NZ[2] and **27%** of deaths after surgery.[3]

As deprivation increases:[4]

The number of operations increases, especially emergency surgery



Deaths after surgery increase



For people in the most deprived areas:

The chance of dying after surgery[5] depends on:

AGE: 45+ AT LEAST **1.7X** THOSE < 44

EMERGENCY ADMISSIONS: **6.7x** than scheduled admissions

ETHNICITY: **MĀORI 16%** GREATER RISK than NZ European

ILLNESS: at least 15x GREATER RISK for those who have a life-threatening illness

The higher surgical death rate for people living in poverty may be because they are more likely to:

- have emergency surgery (which has a higher death rate than planned surgery)[6]
- be more sick at the time of surgery[7]
- have less access to hospitals that can do complicated surgery[8]
- have more risk factors, like smoking and obesity.[9]

1 Atkinson J, Salmond C, Crampton P. 2014. *NZDep2013 index of deprivation.* Dunedin: University of Otago. URL: https://assets.documentcloud.org/documents/1158587/research-report.pdf (accessed 12 April 2017).

2 Defined by the POMRC as hospital admissions with general anaesthesia.

3 Defined as deaths within 30 days of general anaesthesia.

4 Data for 2010–2015.

5 Adjusted for other sociodemographic (age, gender, ethnicity, socioeconomic deprivation) and clinical (repair type, admission type, illness severity) factors.

6 Ambur V, Taghavi S, Kadakia S, et al. 2017. Does socioeconomic status predict outcomes after cholecystectomy? *The American Journal of Surgery* 213(1): 100–4. URL: https://doi.org/10.1016/j.amjsurg.2016.04.012 (accessed 12 April 2017).

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Shi WY, Yap C-H, Newcomb AE, et al. 2014. Impact of socioeconomic status and rurality on early outcomes and mid-term survival after CABG: Insights from a multicentre registry. *Heart, Lung and Circulation* 23(8): 726–36. URL: https://doi.org/10.1016/j.hlc.2014.02.008 (accessed 12 April 2017).

7 Ambur V, Taghavi S, Kadakia S, et al. 2017. Does socioeconomic status predict outcomes after cholecystectomy? *The American Journal of Surgery* 213(1): 100–4. URL: https://doi.org/10.1016/j.amjsurg.2016.04.012 (accessed 12 April 2017).

Ancona C, Agabiti N, Forastiere F, et al. 2000. Coronary artery bypass graft surgery: socioeconomic inequalities in access and in 30 day mortality. A population-based study in Rome, Italy. *Journal of Epidemiology and Community Health* 54(12): 930–5.

Clement ND, Muzammil A, MacDonald D, et al. 2011. Socioeconomic status affects the early outcome of total hip replacement. *Journal of Bone & Joint Surgery*, British Volume 93–B(4): 464. URL: https://doi.org/10.1302/0301-620X.93B4.25717 (accessed 12 April 2017).

8 Dueck AD, Kucey DS, Johnston KW, et al. 2004. Survival after ruptured abdominal aortic aneurysm: Effect of patient, surgeon, and hospital factors. *Journal of Vascular Surgery* 39(6): 1253–60. URL: https://doi.org/10.1016/j.jvs.2004.02.006 (accessed 12 April 2017).

Osler M, Iversen LH, Borglykke A, et al. 2011. Hospital variation in 30-day mortality after colorectal cancer surgery in Denmark: The contribution of hospital volume and patient characteristics. *Annals of Surgery* 253(4). URL: http://journals.lww.com/annalsofsurgery/Fulltext/2011/04000/Hospital_Variation_in_30_Day_Mortality_After.14.aspx (accessed 12 April 2017).

9 Shi WY, Yap C-H, Newcomb AE, et al. 2014. Impact of socioeconomic status and rurality on early outcomes and mid-term survival after CABG: Insights from a multicentre registry. *Heart, Lung and Circulation* 23(8): 726–36. URL: https://doi.org/10.1016/j.hlc.2014.02.008 (accessed 12 April 2017).