Australian Government
Australian Institute of Health and Welfare

Near two-fold rise in ICD-coded sepsis-related hospital admissions in Australia: An AIHW database analysis (2011-16)

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Ashwani Kumar, MD

Research Associate, Critical Care Division, The George Institute for Global Health

Short Bio

Current employment

- Research Associate at the Critical Care Division of the George Institute for Global Health (TGI)
- Pursuing PhD in the area of estimating true sepsis disease burden using ICD-coding
- Digital health consultant/entrepreneur.

Authors' affiliation

Kumar A[1,2], Hammond N[1,2,3], Taylor C[1,2,3], Thompson K[1,2,4], Grattan S[1,2], Saxena M[1,2]

1. The George Institute for Global Health, Australia
2. University of New South Wales, Sydney
3. Royal North Shore Hospital, NSW
4. Sydney Medical School

Background - Sepsis

- A life-threatening organ dysfunction caused by a dysregulated host response to infection.

- Disease burden:
  - Approx. 30 million episodes and six million deaths per year globally
  - In US, cost of treating sepsis in ICU is $24 billion USD

- In the absence of a definitive diagnostic test, clinical diagnosis is the mainstay to identify sepsis cases

- Use of administrative data, International Classification of Disease (ICD) coding remains the only practical means to estimate the sepsis disease burden

Background

- The disease burden of sepsis remains poorly understood globally, including Australia

- In 2017, the WHO recognised sepsis as a global health priority and urged improved use of ICD coding to estimate the national and global burden of sepsis.

- AIHW (Australian Institute of Health and Welfare)
  - A leading health and welfare statistics agency in Australia
  - Maintains various aggregated and episode-level hospital admission datasets fed by each state

- Trained professional medical coders base the discharge codes on a full review of the medical record and specific coding criteria for each diagnosis.

Objective

To estimate the incidence and trends of sepsis-related hospital admissions (hospitalisations) in Australia during 2011-16 using ICD-10 sepsis codes.

Methods

- **Study design:** A retrospective analysis
- **Database:** Publically available aggregated hospital admission data available at AIHW
- **Study population:** All sepsis-related hospitalisations (both public and private) in Australia between 01 July 2011 and 30 June 2016.
- A descriptive analysis of the incidence and trends of sepsis-related hospitalisation was done

Methods – Case identification

- Sepsis-related hospitalisations were identified using following sepsis ICD-10 codes (Explicit criteria):

  - A02.1 Salmonella sepsis
  - A20.7 Sepsis due to plague
  - A21.7 Sepsis due to tularemia
  - A22.7 Sepsis due to anthrax
  - A24.1 Sepsis due to melioidosis
  - A26.7 Sepsis due to erysipelothrix
  - A28.2 Sepsis due to extraintestinal yersiniosis
  - A32.7 Sepsis due to listeria monocytogenes
  - A39.4 Sepsis due to meningococcal infection
  - A40 Streptococcal sepsis
  - A41.0 – 2.0 Sepsis due to staph
  - A41.5 Sepsis due to other and unspecified Gram-negative organisms
  - A41.8 Other specified sepsis
  - A41.9 Sepsis, unspecified
  - A42.7 Sepsis due to actinomyces
  - A54.86 Sepsis due to gonococcal infection
  - B00.7 Sepsis due to herpesvirus
  - B37.7 Sepsis due to candidal infection
  - R65.2 Severe sepsis

Results

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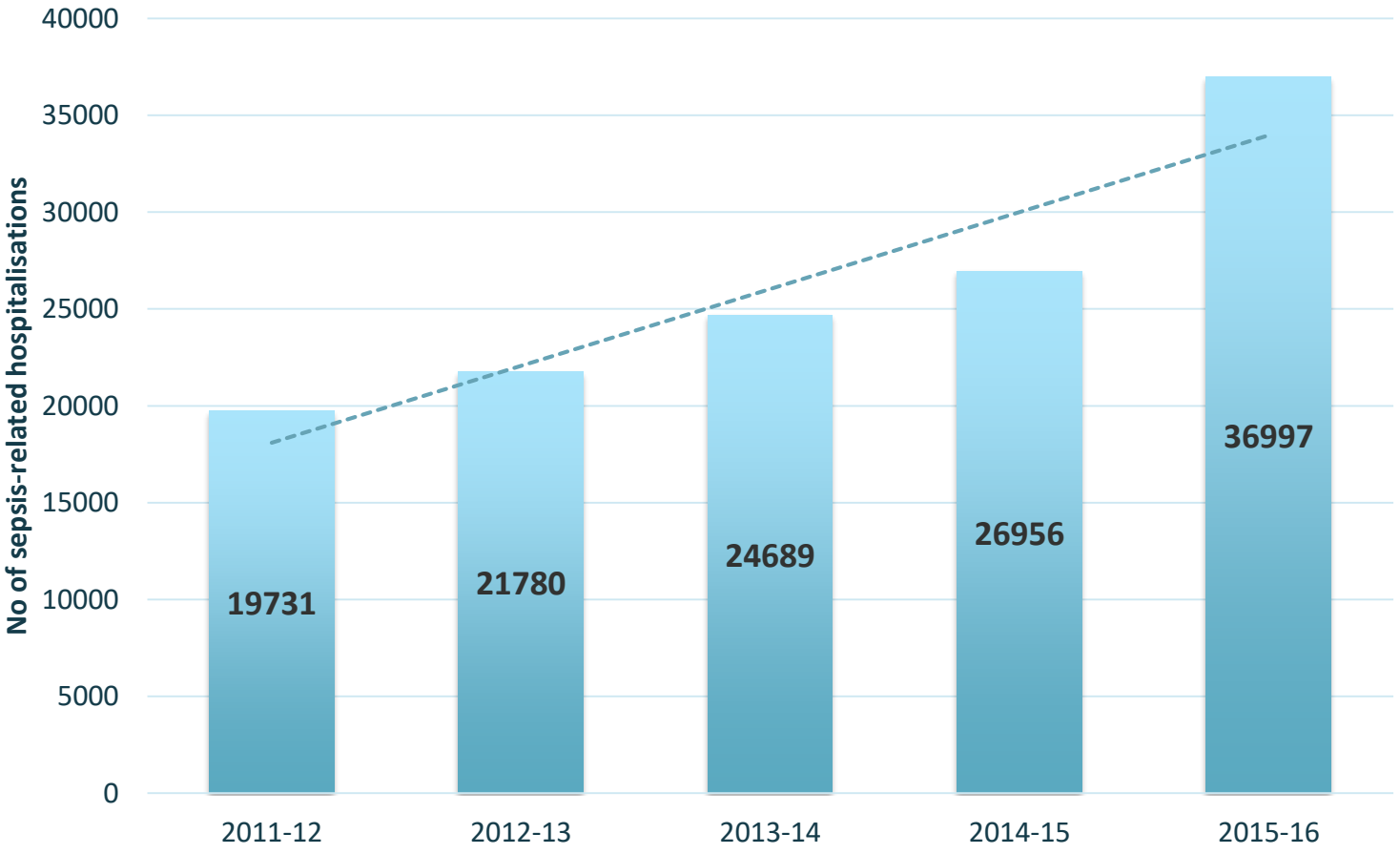
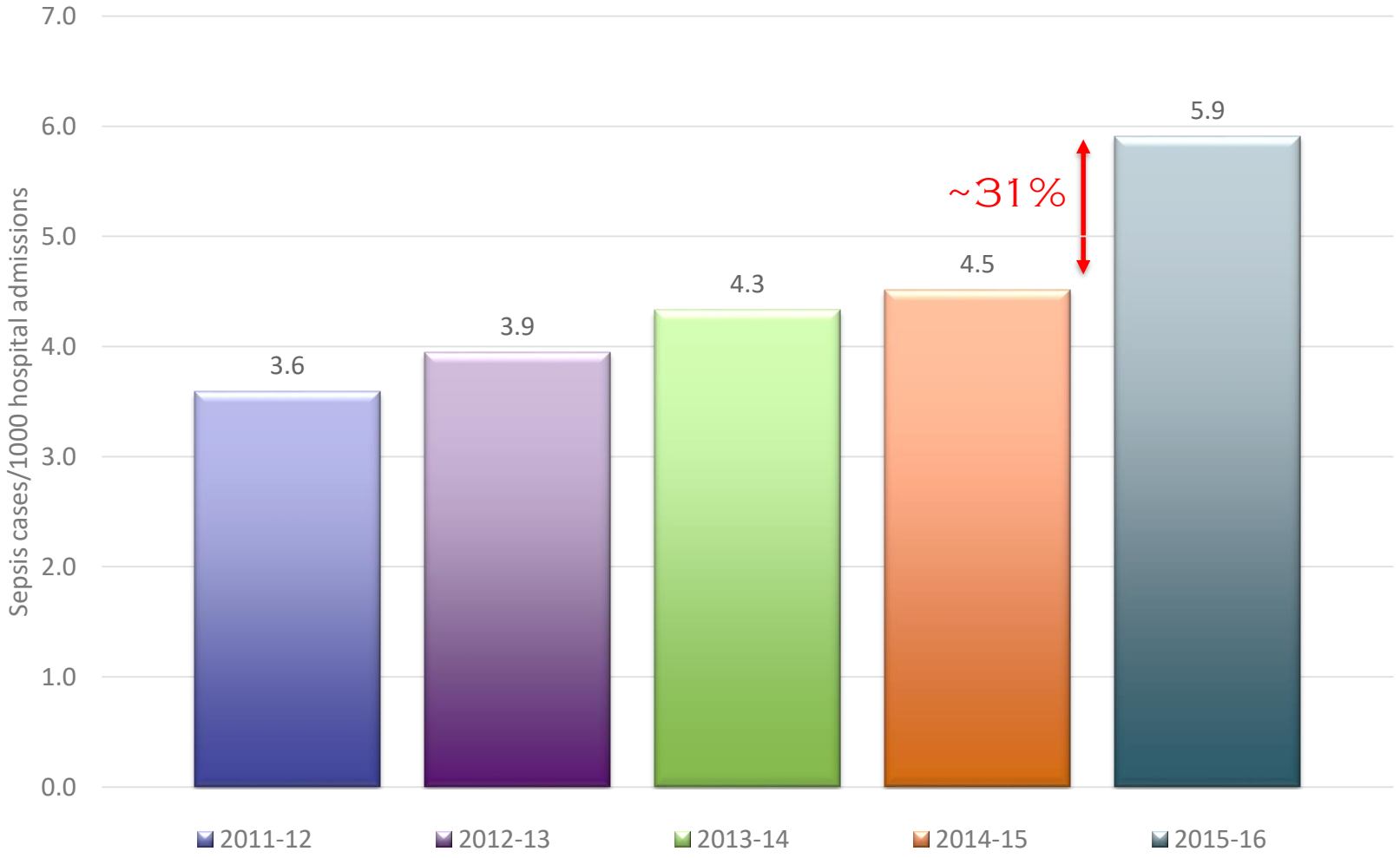
Key Results

- Out of 28,950,371 hospital admissions, 130,157 (4.5/1000 hospitalisations) had one of the sepsis ICD code.
- An upward trend in sepsis-related hospitalisations was observed
- Non-specific sepsis accounted for about half of the sepsis-related hospitalisations

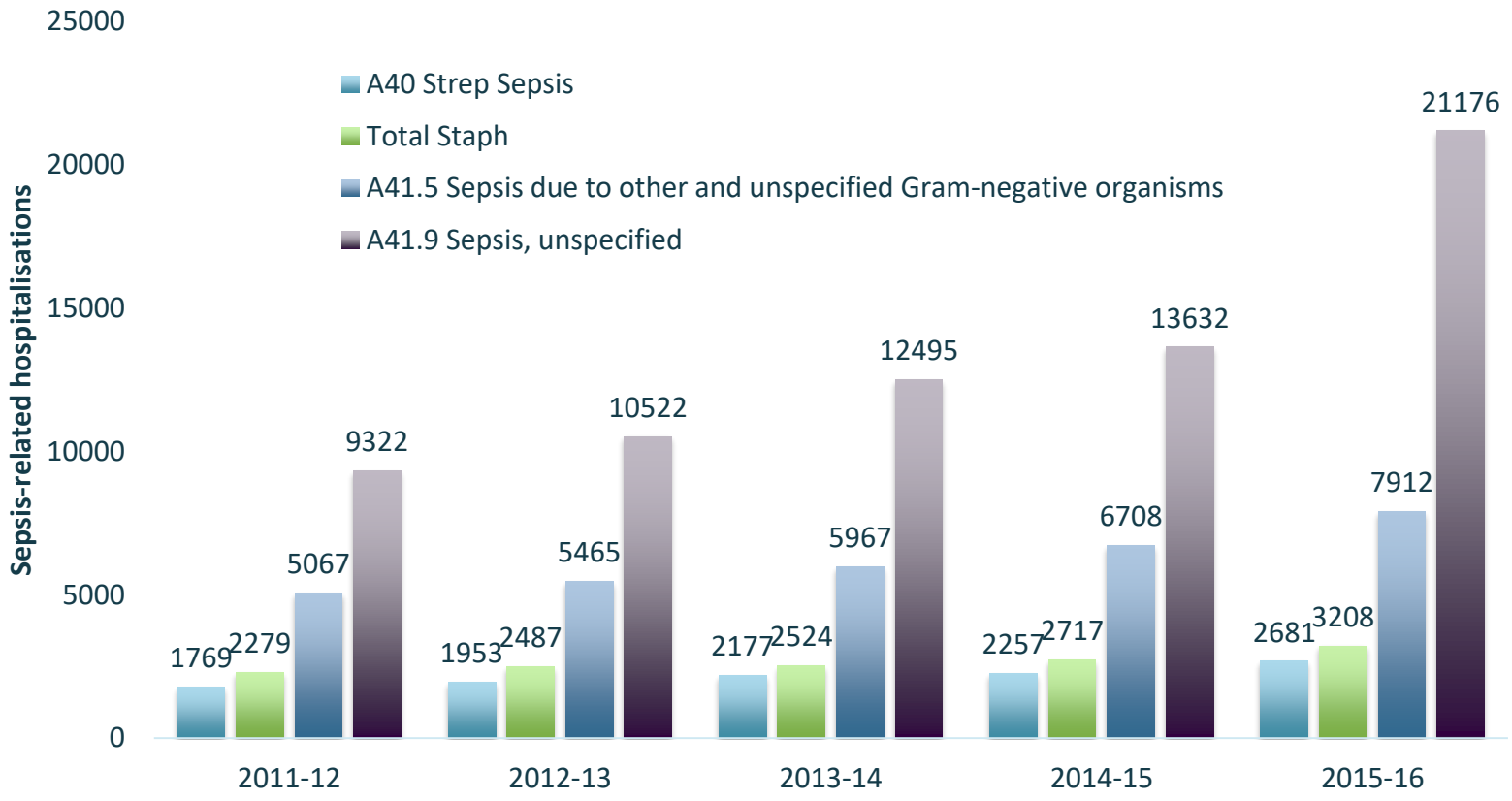
An upward trend in sepsis-related hospitalisations



Incidence of sepsis-related hospitalisation



Trends of major sepsis-specific ICD codes



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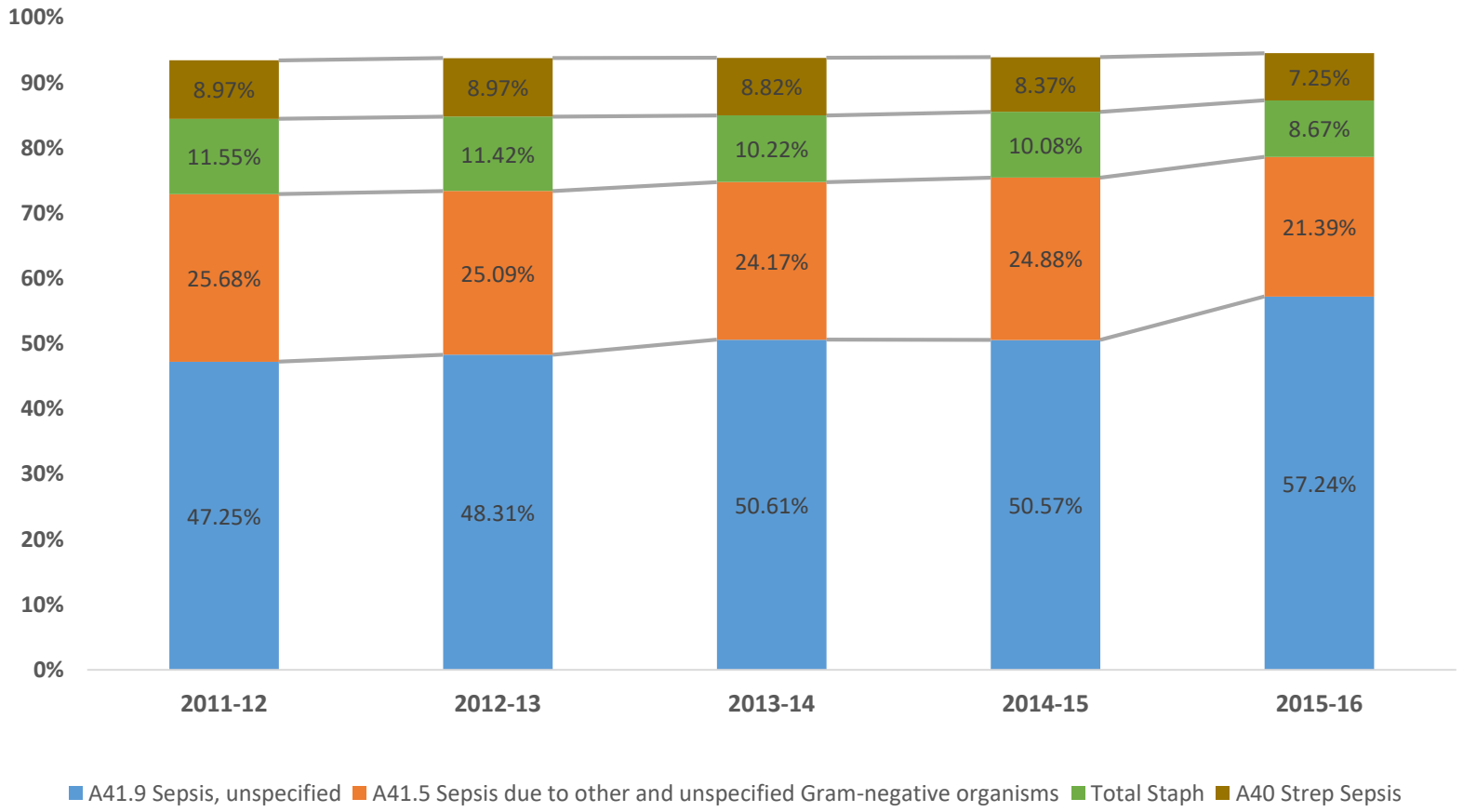
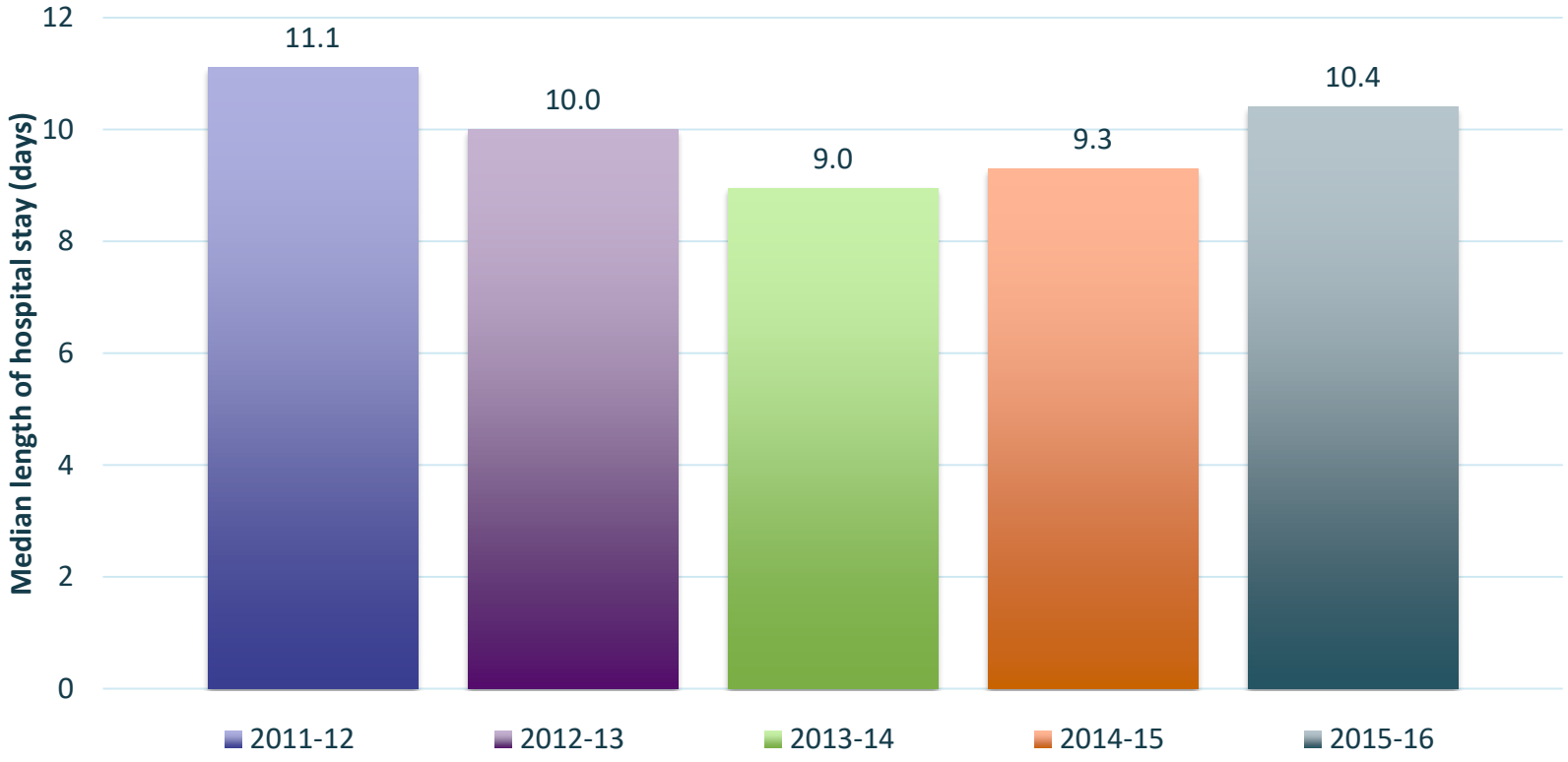
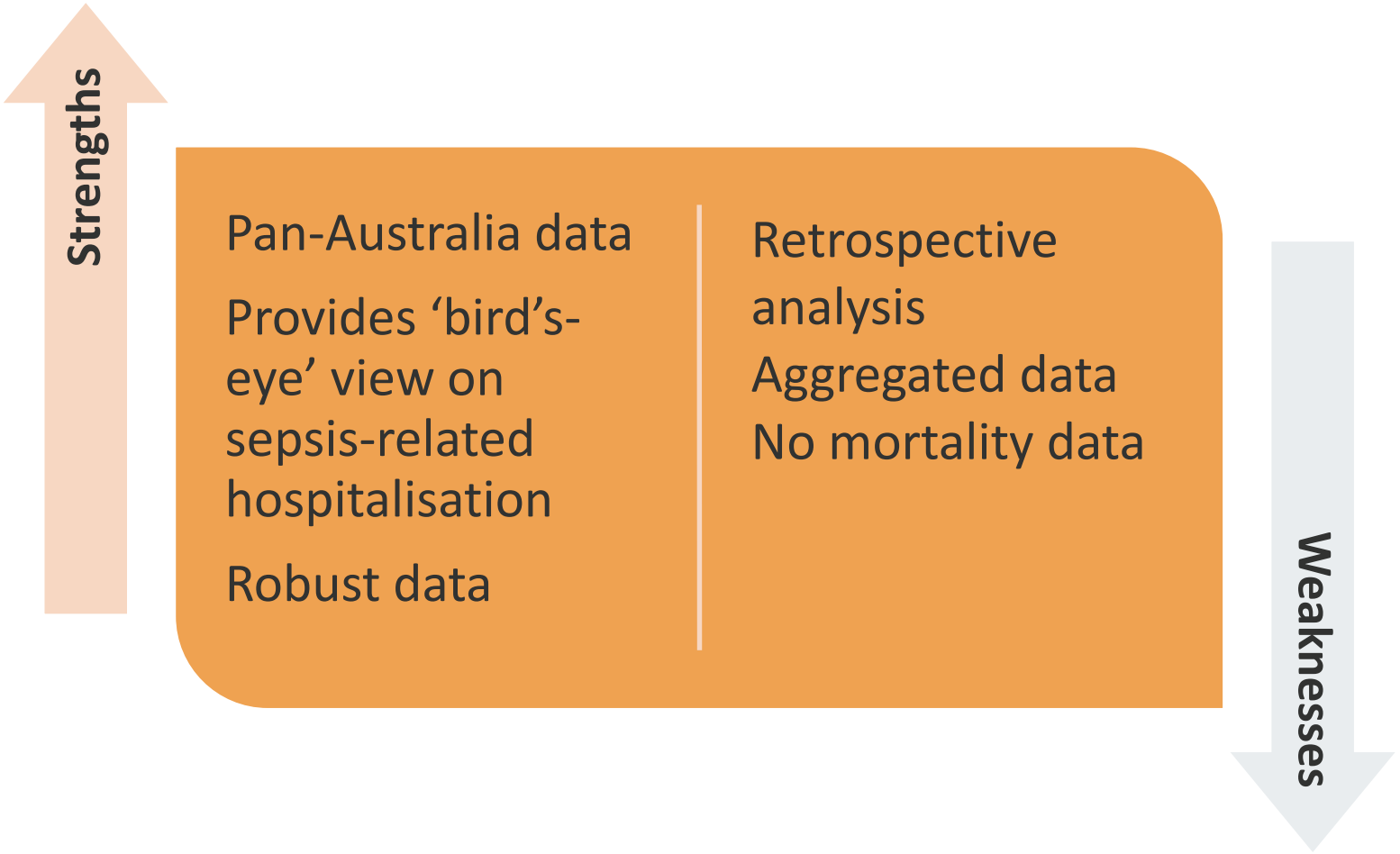


Length of hospital stay



Critical Appraisal



Conclusion

- An upward trend was noticed in sepsis-related hospitalisations during 2011-2016 in Australia
- Driven predominantly by ~20% increase in the proportion of unspecified sepsis-related hospitalisation
- Average length of hospital stay due to sepsis was ~10 days

Future direction

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- A request to access episode-level data will be made to AIHW
- Further analysis as per clinically relevant parameters. e.g. duration of mechanical ventilation, ICU admission, mortality etc. will be done
- Duration will be extended to 10 years duration from 2007-17

Thank you