

A large decorative graphic on the left side of the slide, featuring a blue circle with a white arrow pointing right, and a white arrow pointing left, creating a circular flow effect.

Ambulatory Emergency Care  
Full thematic analysis of AEC  
accelerator data – National Perspective  
(36 sites - December 2019)

Prof Jay Banerjee  
Deborah Thompson  
Susanna Shouls  
Alice Clayton

# Methodology



- Analysis of AEC and ED activity datasets provided to understand current utilisation.
- Analysis of the non-elective admitted dataset provided to understand potential for further appropriate AEC activity.
- Case file review of 50 randomised patient episodes to identify themes in current flow. Deliberate sample of 25 records for patients seen in SDEC/AEC and 25 admitted with a 0-3 day LOS



**Summary of current activity**

# Operational Data

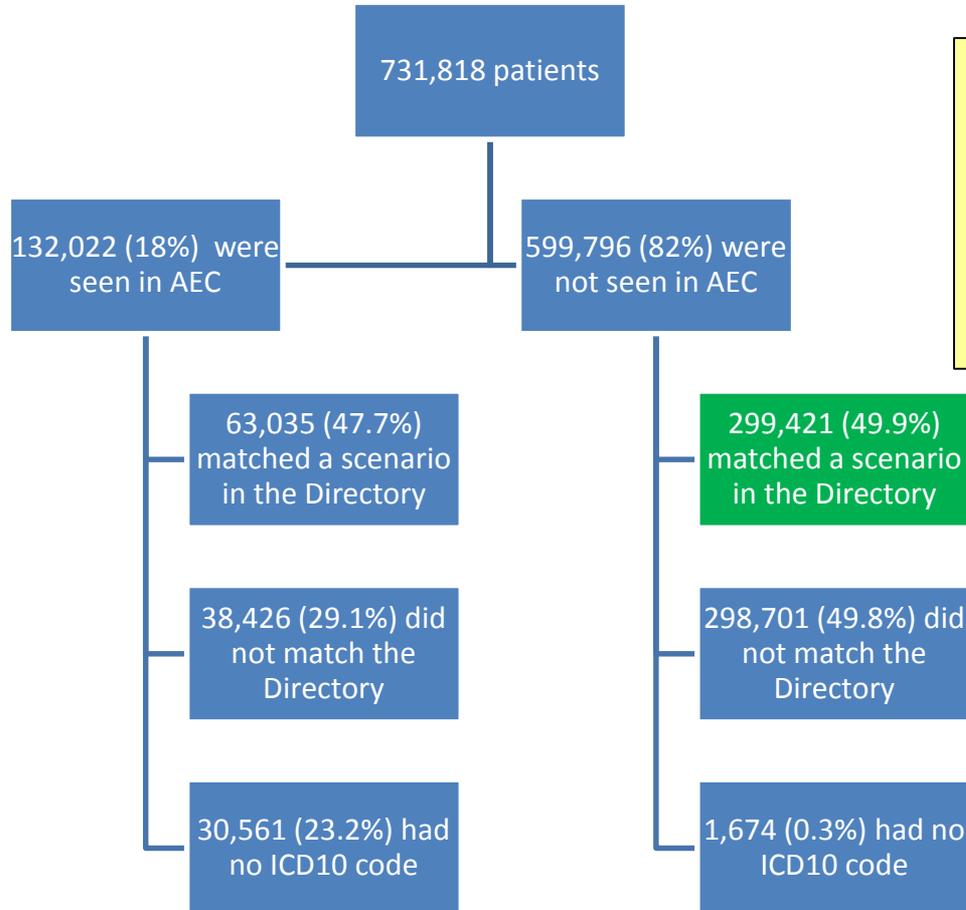


## Data Provided

- Data was provided about 731,818 patient spells.
- This data was submitted by 36 hospitals.
- Case file review of 1545 cases

# Breakdown of all patients

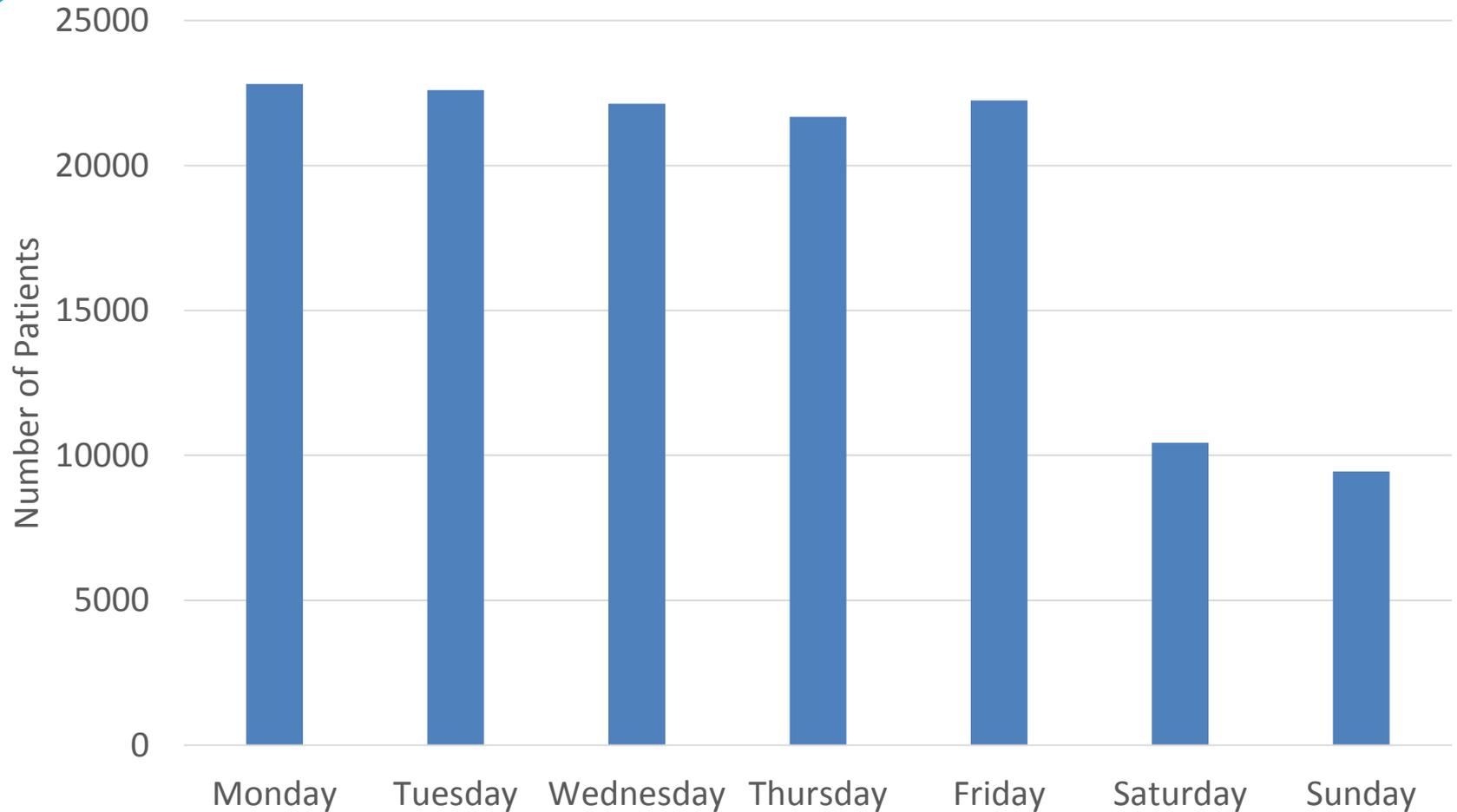
5 sites provided no ICD10 codes for their AEC patients, while one site had missing ICD10 codes for 10% of its patients.



ICD10 and HRG codes were combined and compared to those associated with scenarios in the AEC Directory.

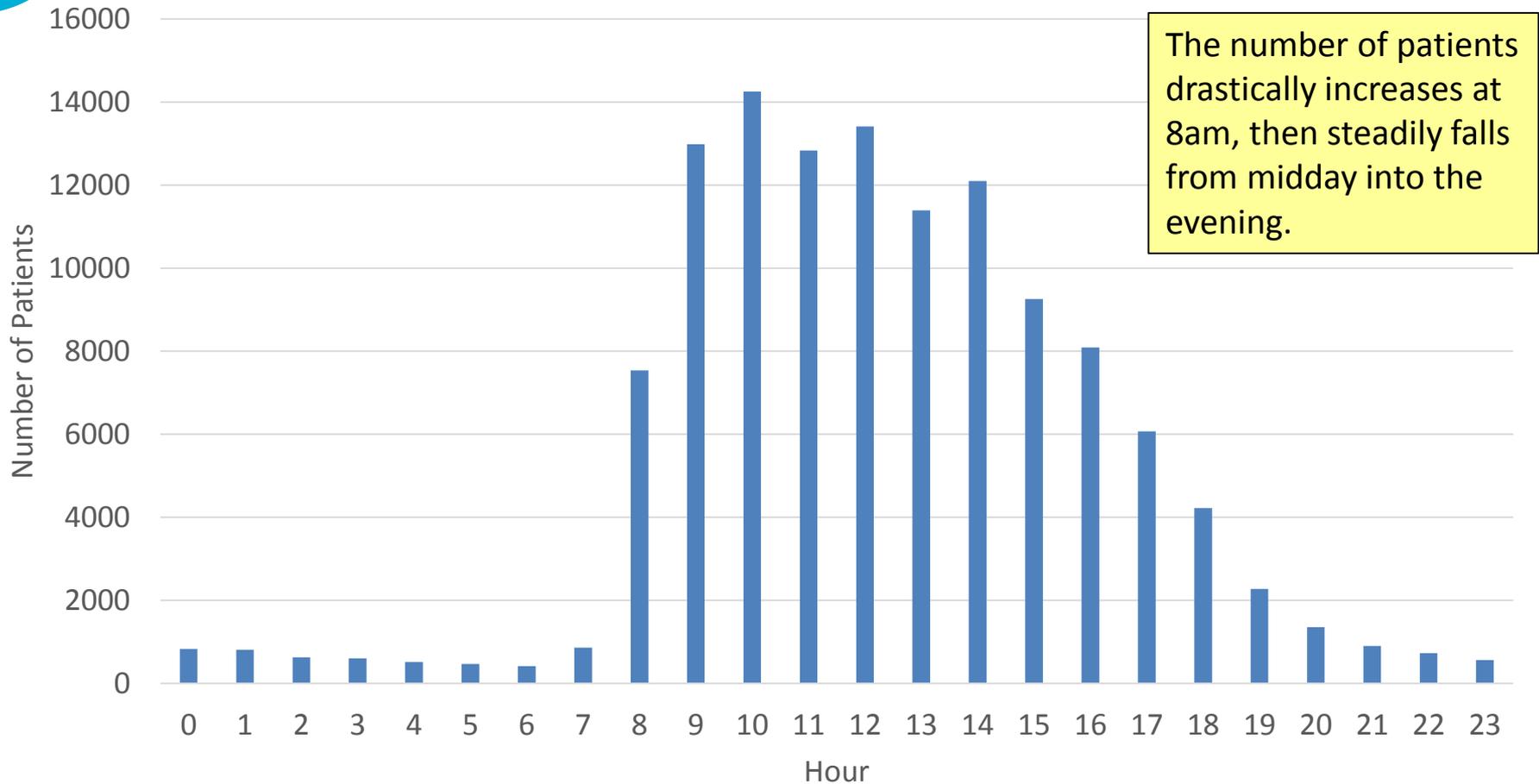


# Which day is busiest in AEC?



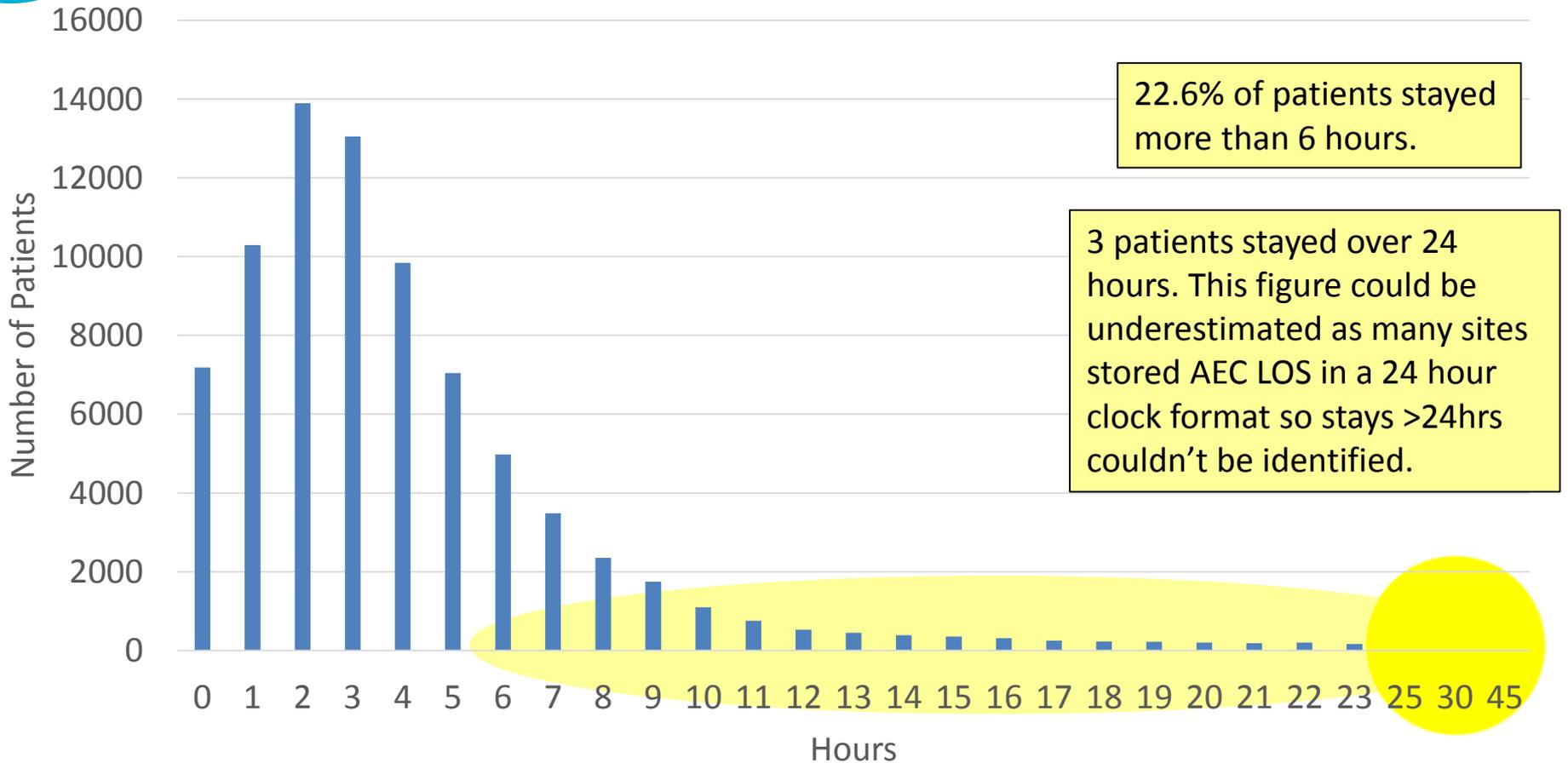


# What time do patients arrive in AEC?



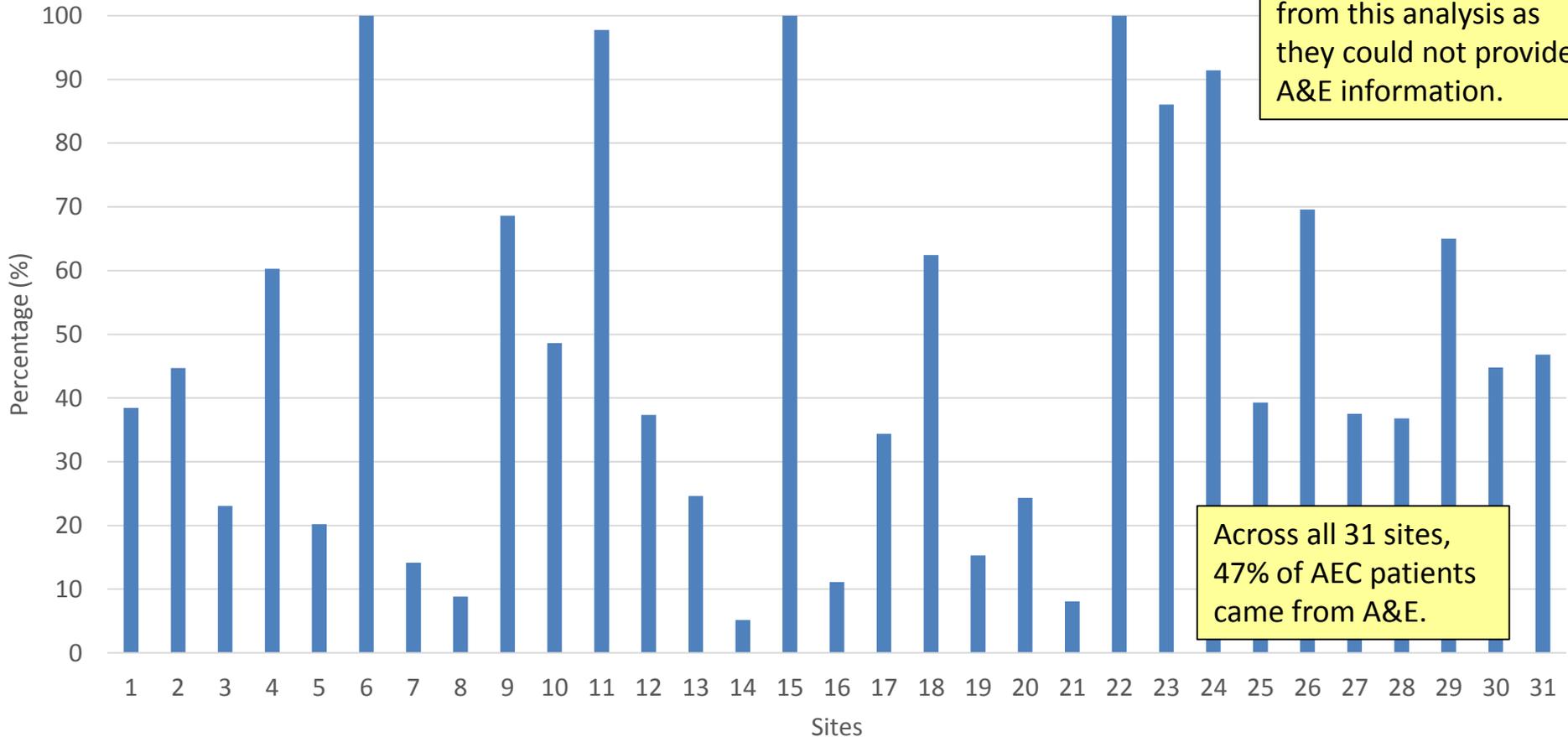


# How long do patients stay in AEC?



# Where do AEC patients come from?

Percentage of AEC patients coming from A&E

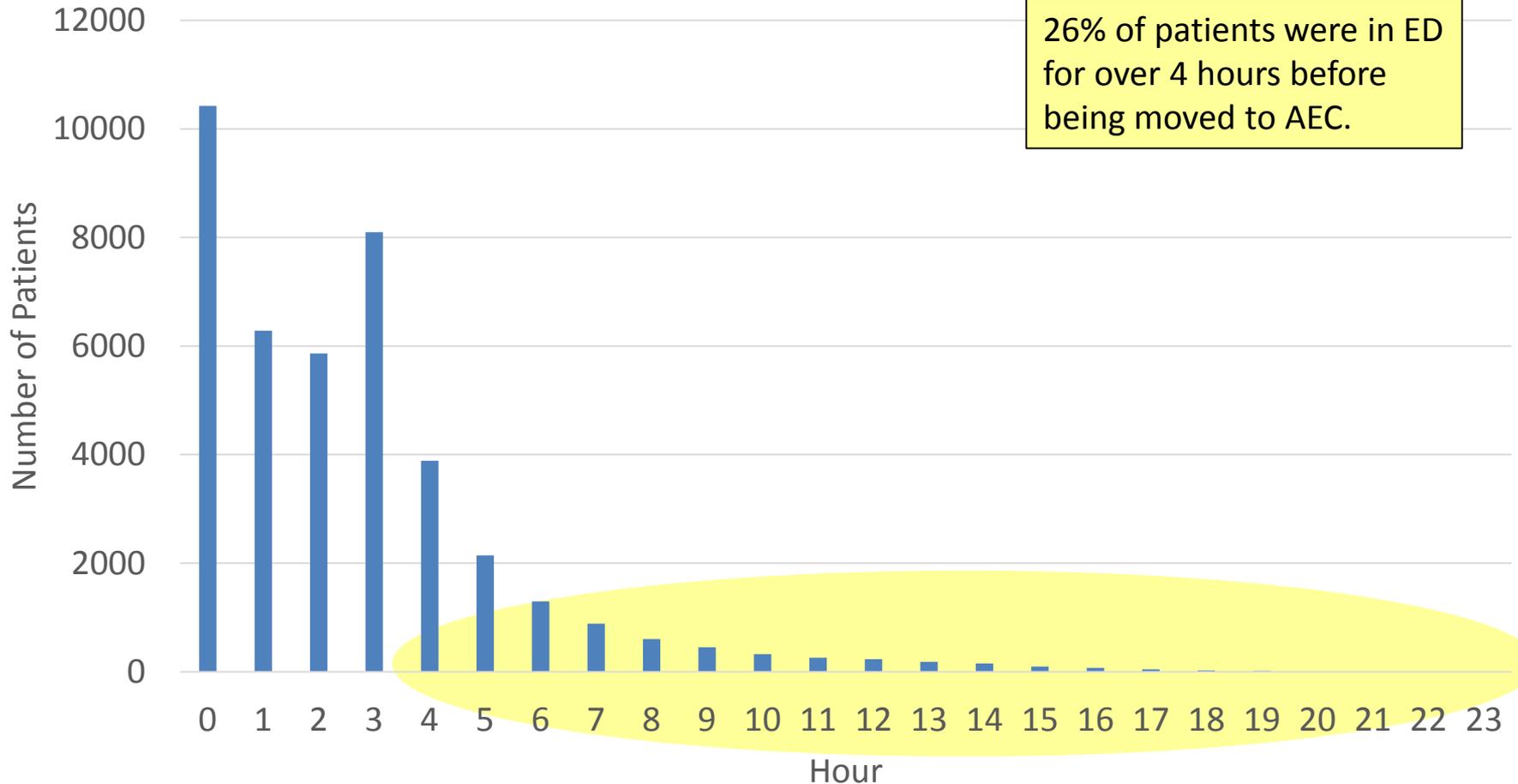


5 sites were removed from this analysis as they could not provide A&E information.

Across all 31 sites, 47% of AEC patients came from A&E.

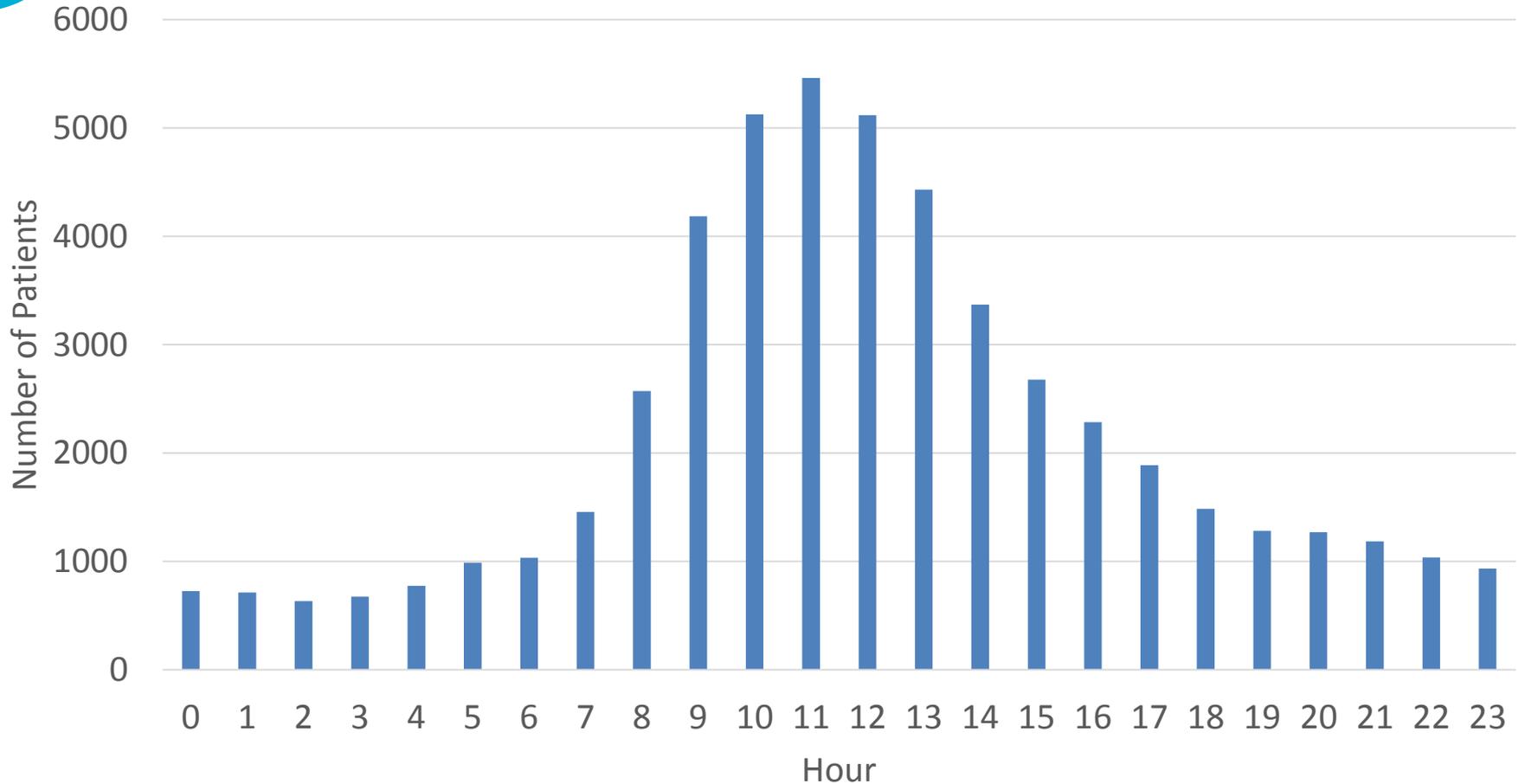


# How long do AEC patients stay in ED?



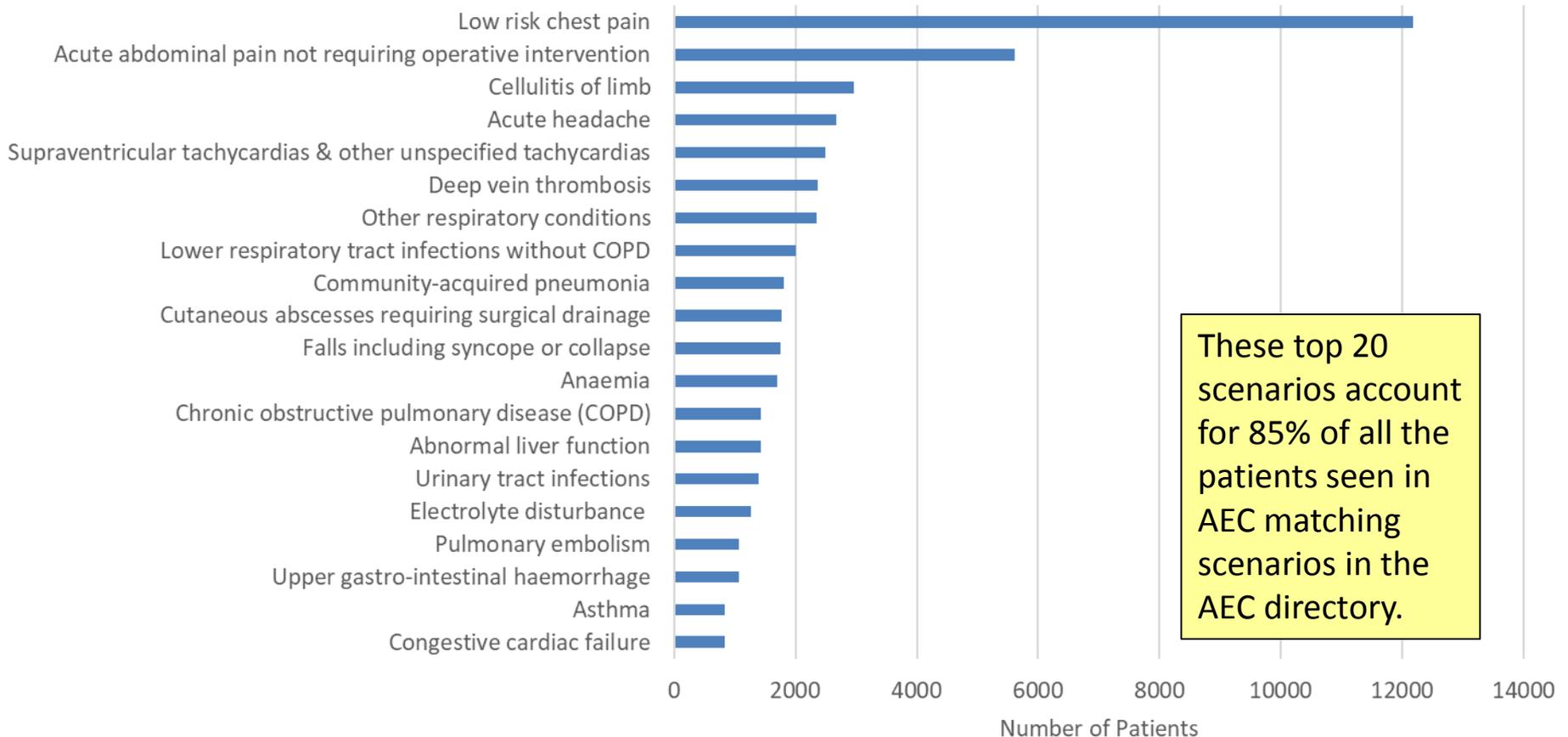


# What time do AEC patients arrive in ED?



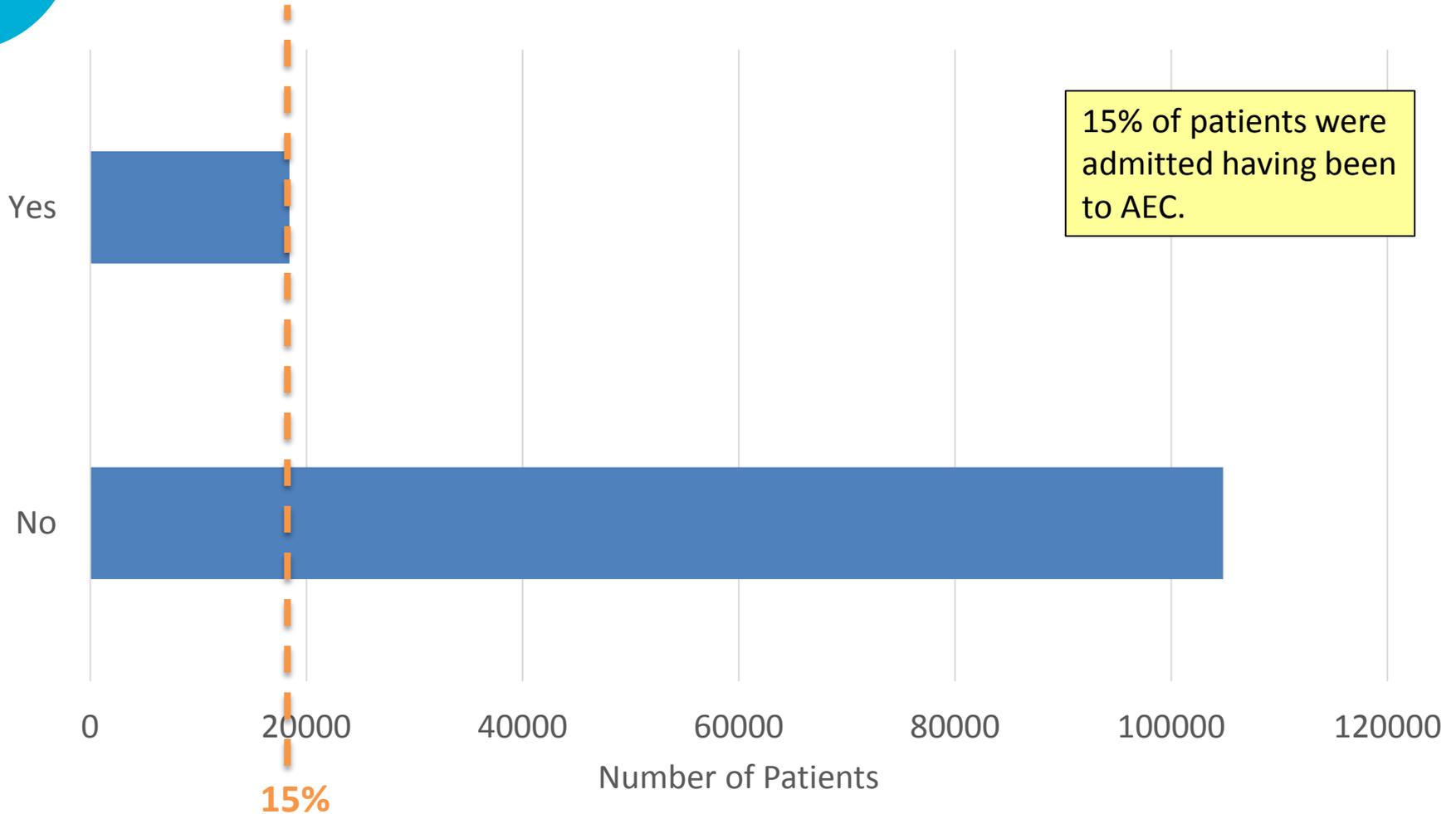
# What activity is undertaken in AEC?

Number of patients seen in AEC matching a scenario in the AEC directory





# Do patients get admitted from AEC?





## Operational Data

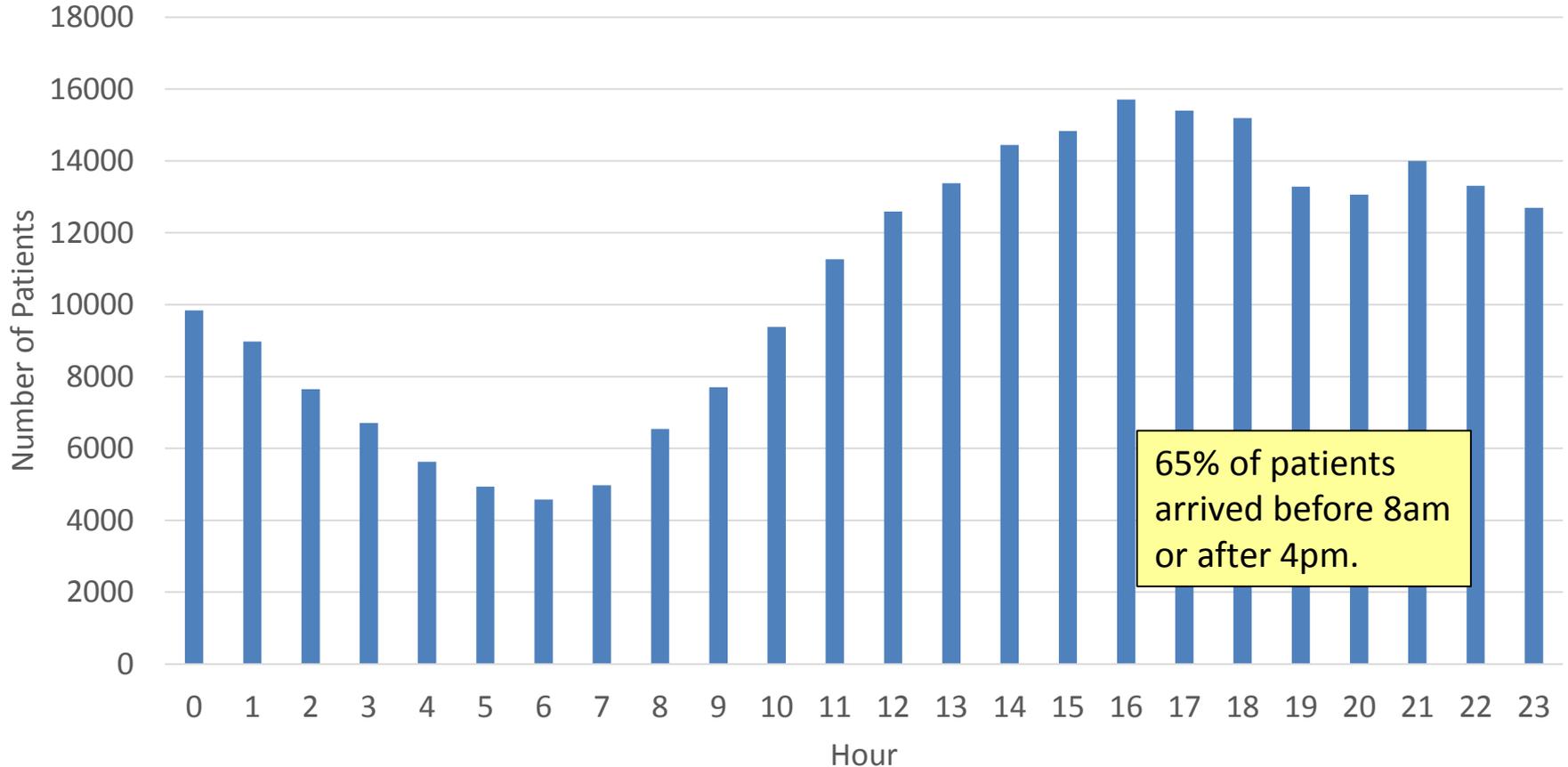
‘Missed’ patients;  
the potential

299,421 (49.9%) matched a  
scenario in the Directory



# What time do 'missed' AEC patients arrive?

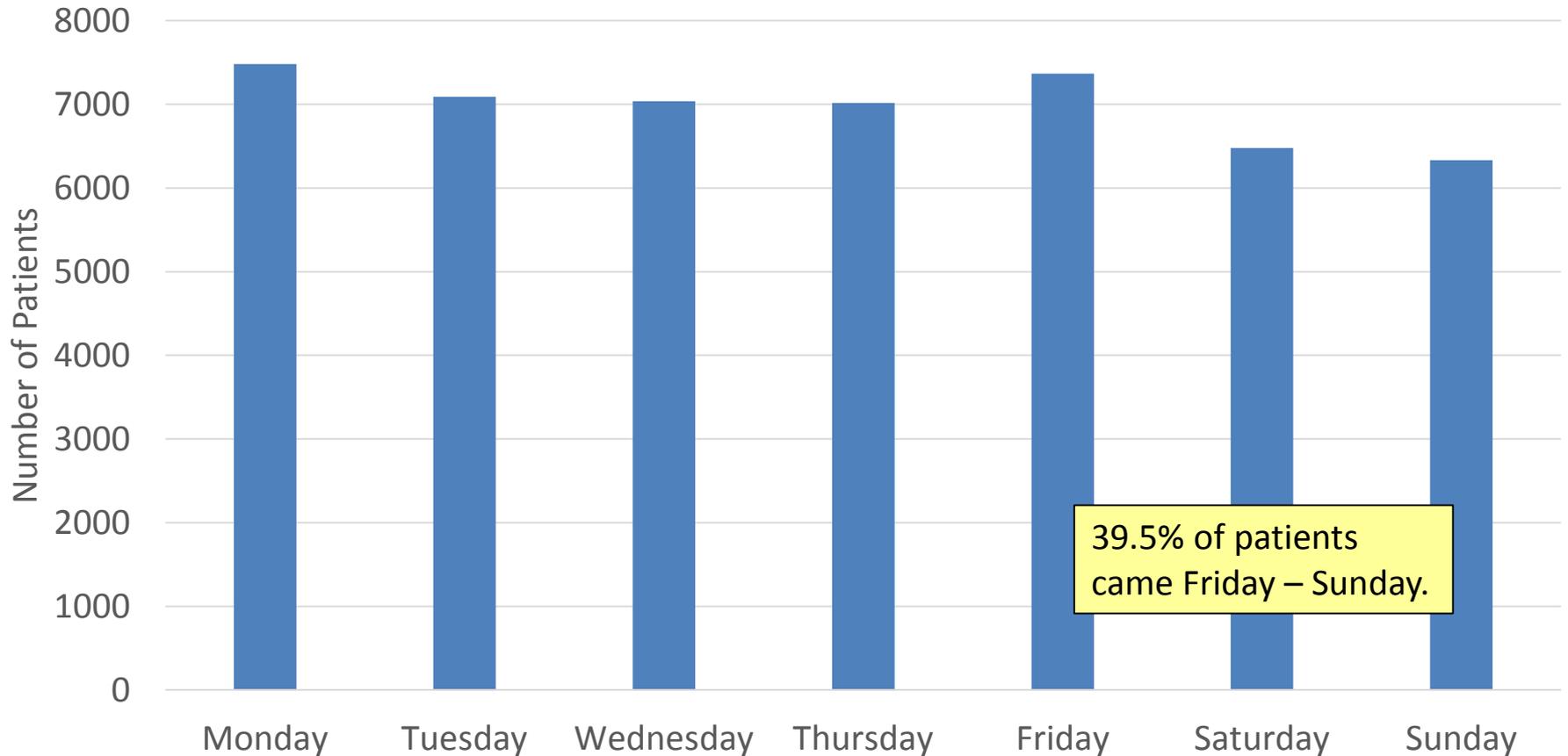
Admission time for patients admitted with AEC scenarios





# What day do 'missed' AEC patients arrive?

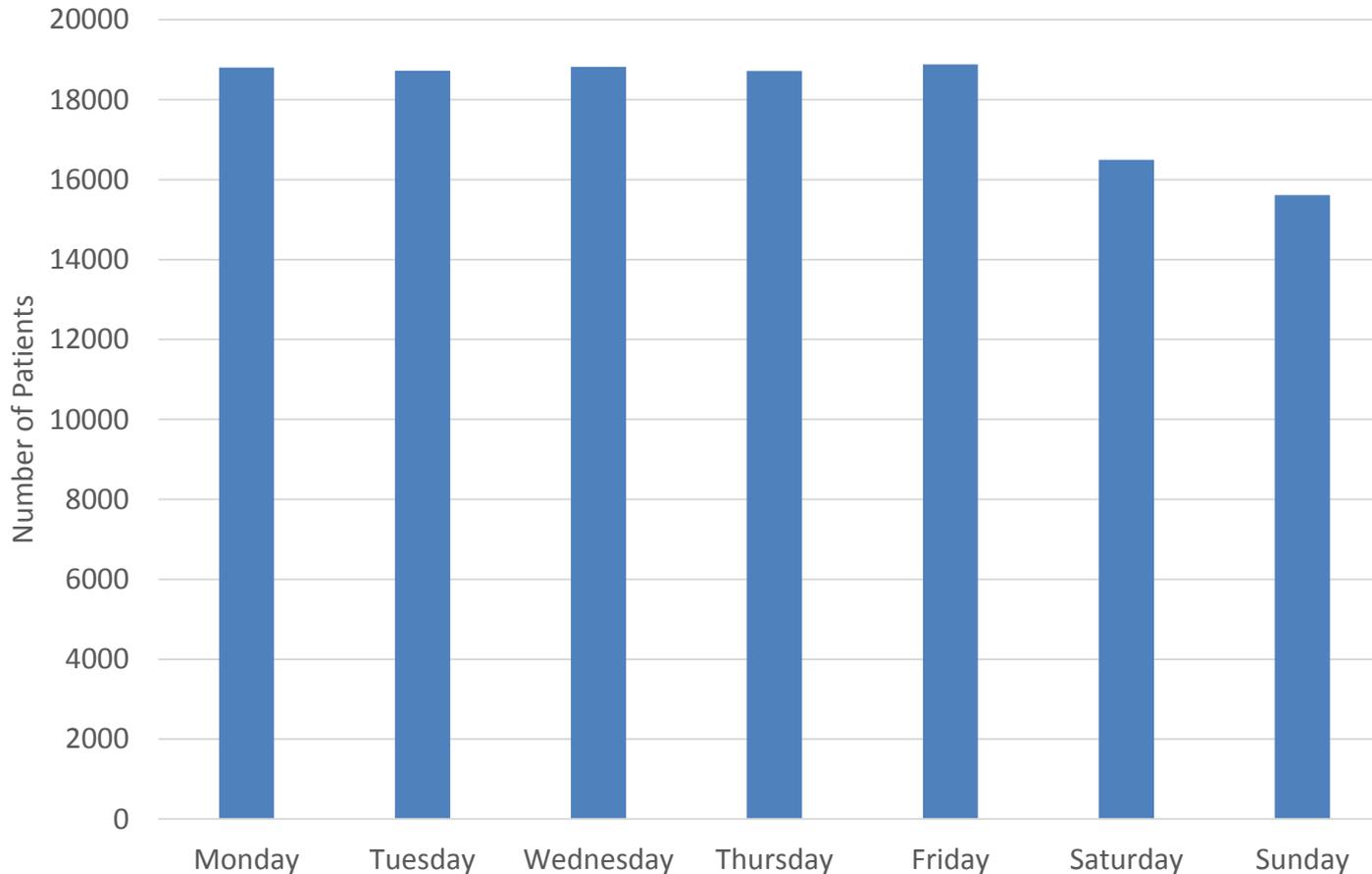
Number of patients admitted with AEC scenarios by weekday



# What if SDEC was open 12 hours 7 days a week?



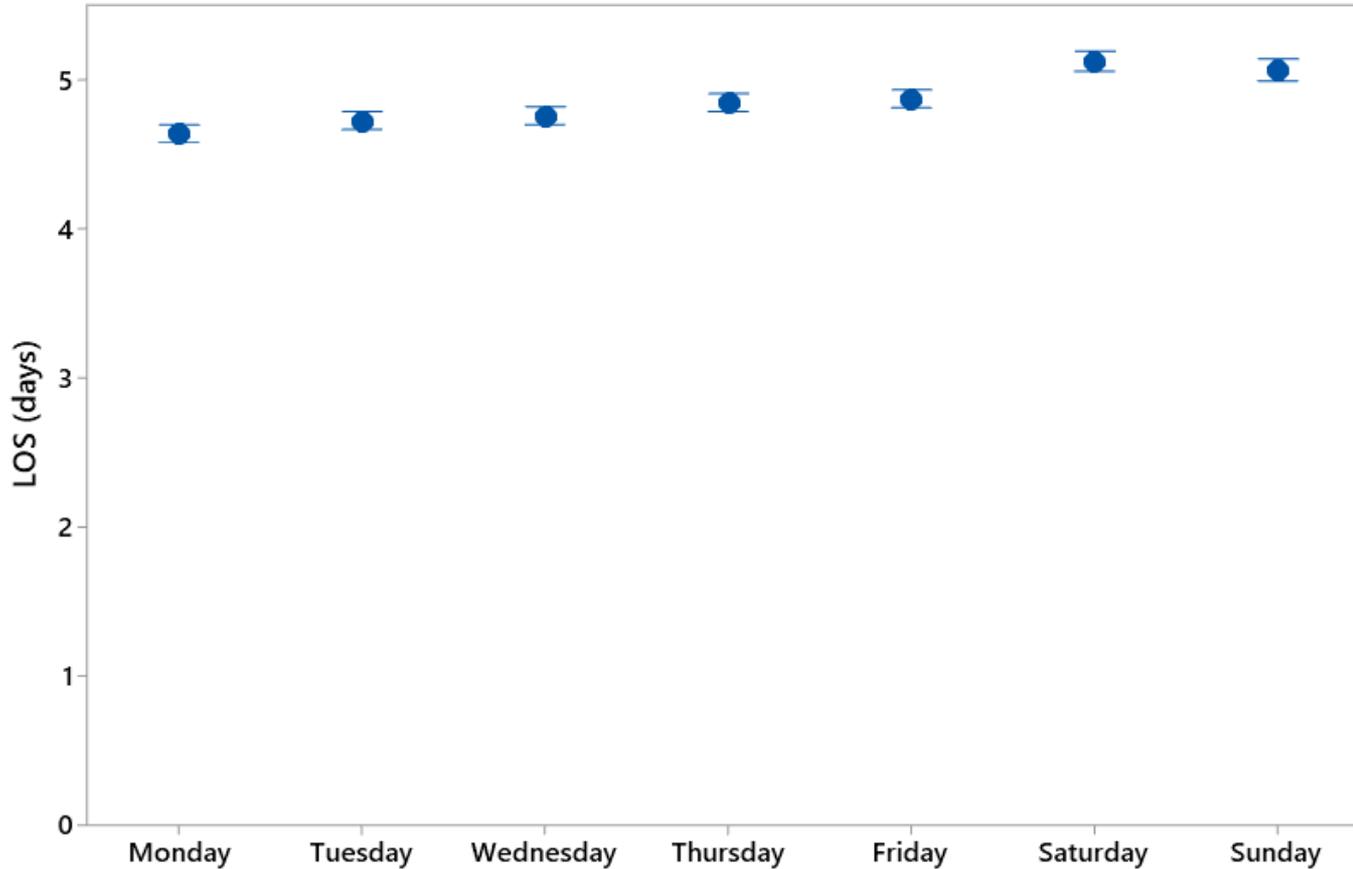
Number of "missed" patients that arrived in A&E between 6am and 6pm



These are all patients arriving in A&E between 6am and 6pm, who matched a scenario in the AEC directory.

6am – 6pm was used as these would be the patients most likely picked up by an 8am – 8pm SDEC service.

# Does admission day effect total LOS?

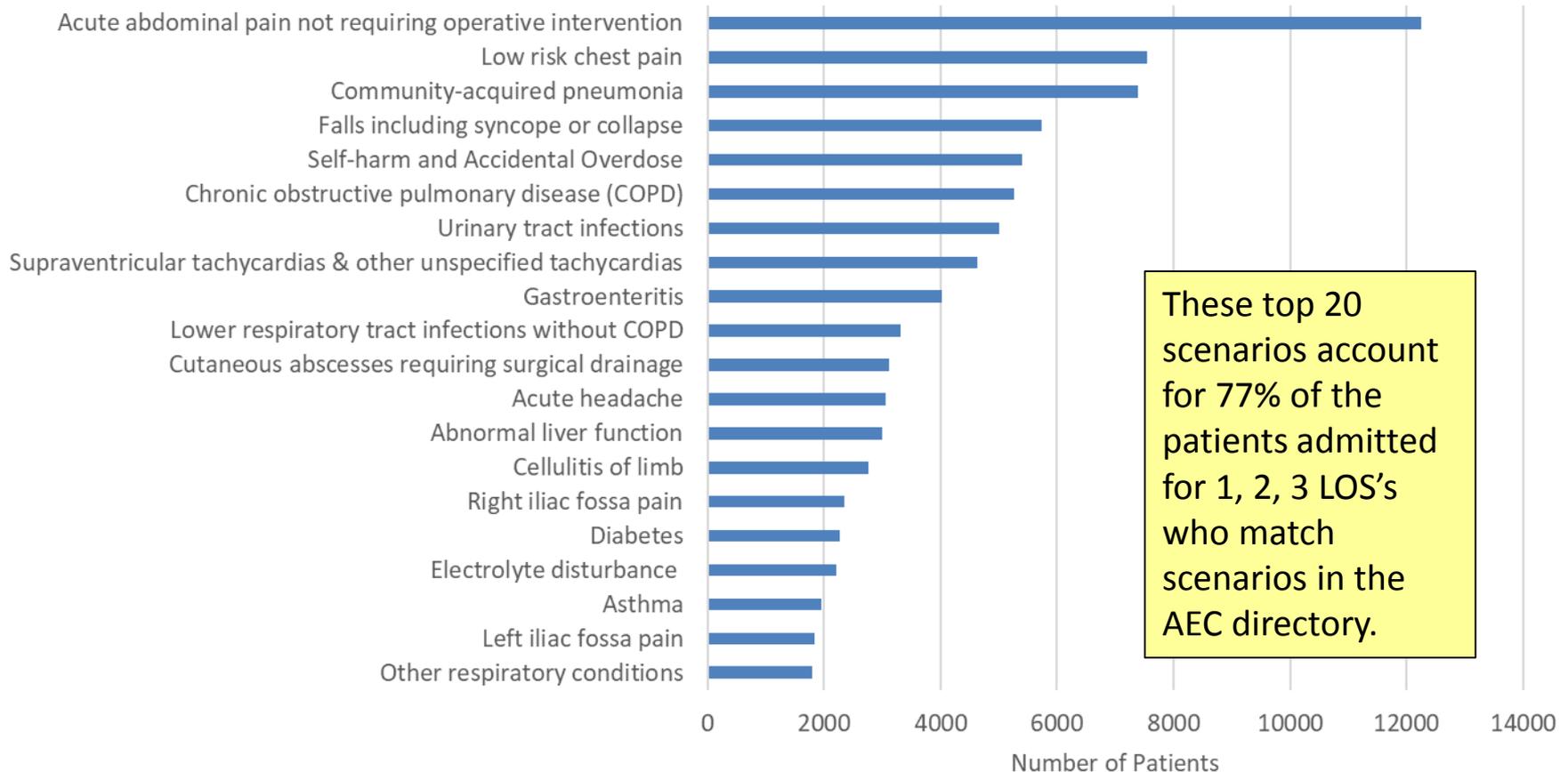


*Individual standard deviations are used to calculate the intervals.*

Each point shows the average length of stay in days, for patients admitted on each day of the week, with one standard deviation above and below.

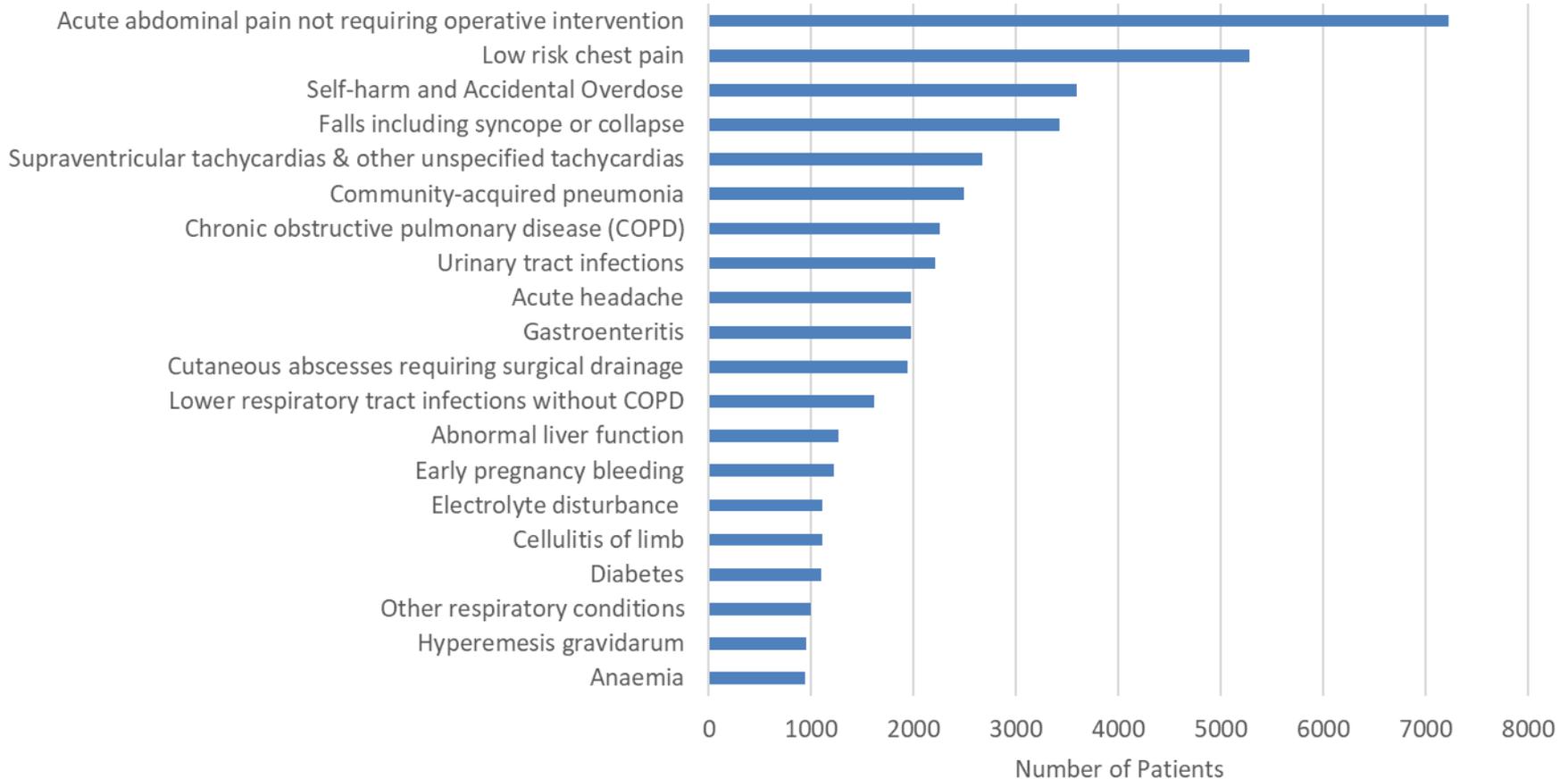
# What potential is there to convert admitted patients to AEC?

Most commonly admitted scenarios with a 1,2,3 day LOS



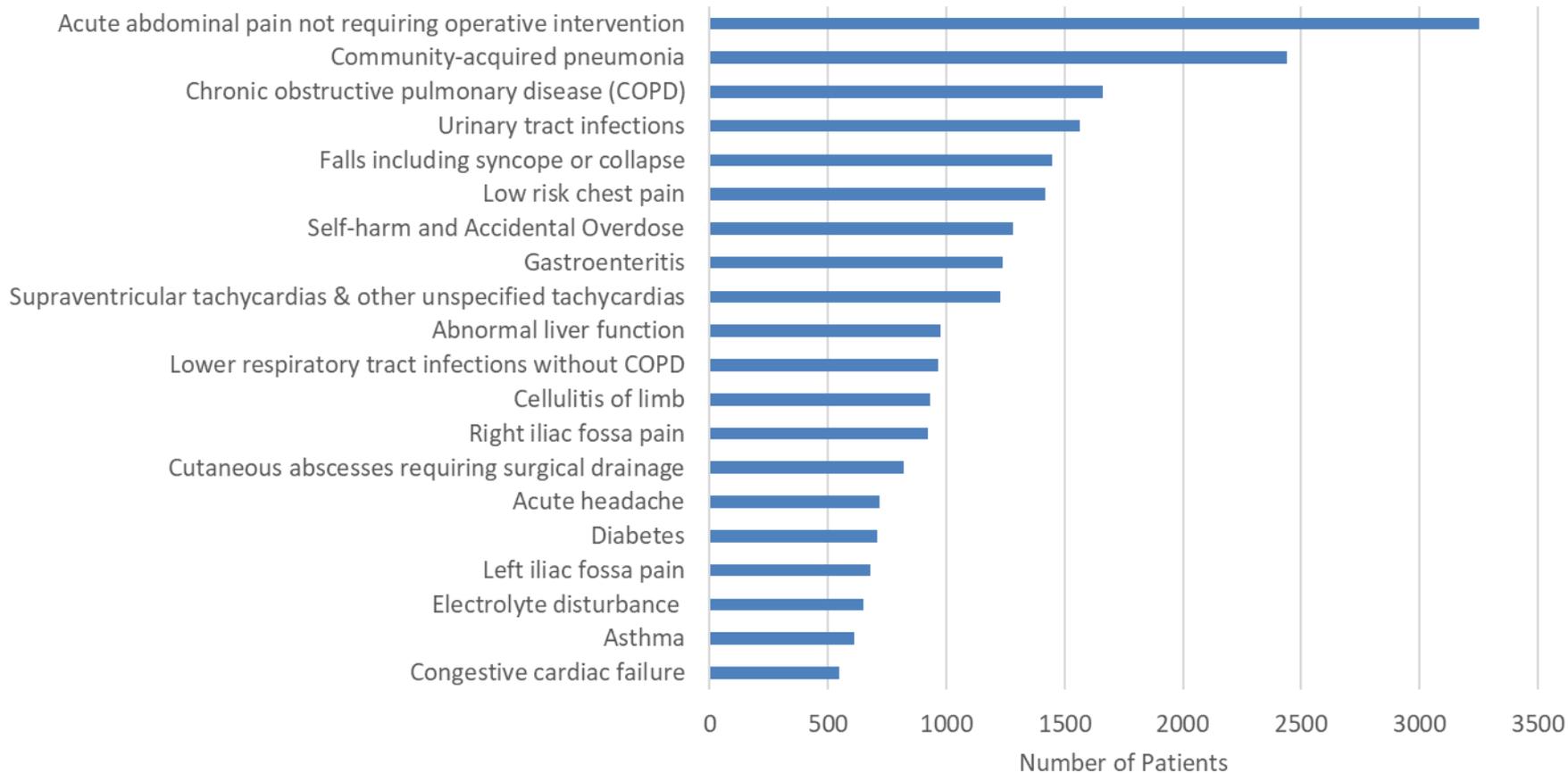
# What potential is there to convert admitted patients to AEC?

Most commonly admitted scenarios with a 1 day LOS



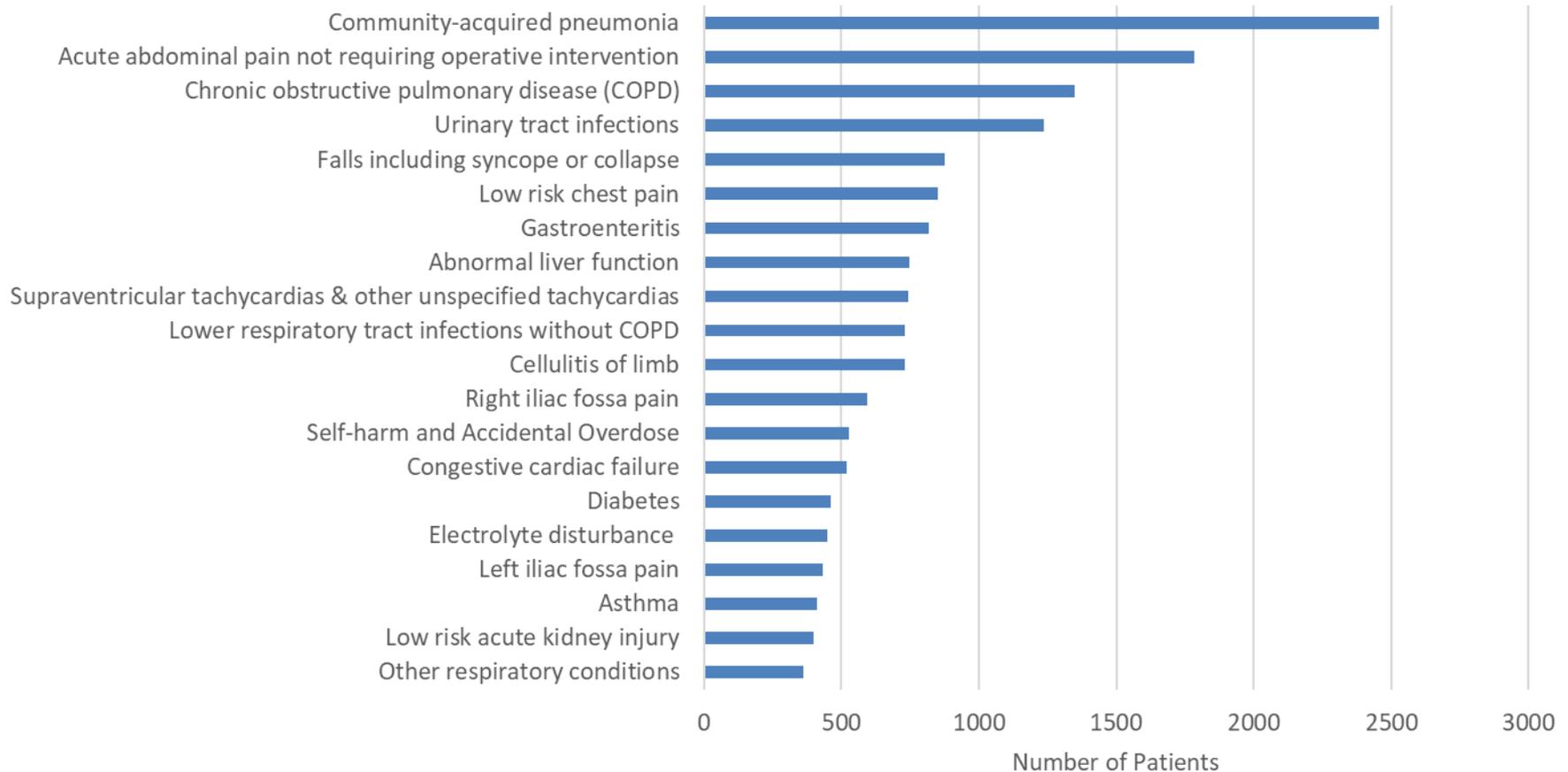
# What potential is there to convert admitted patients to AEC?

Most commonly admitted scenarios with a 2 day LOS



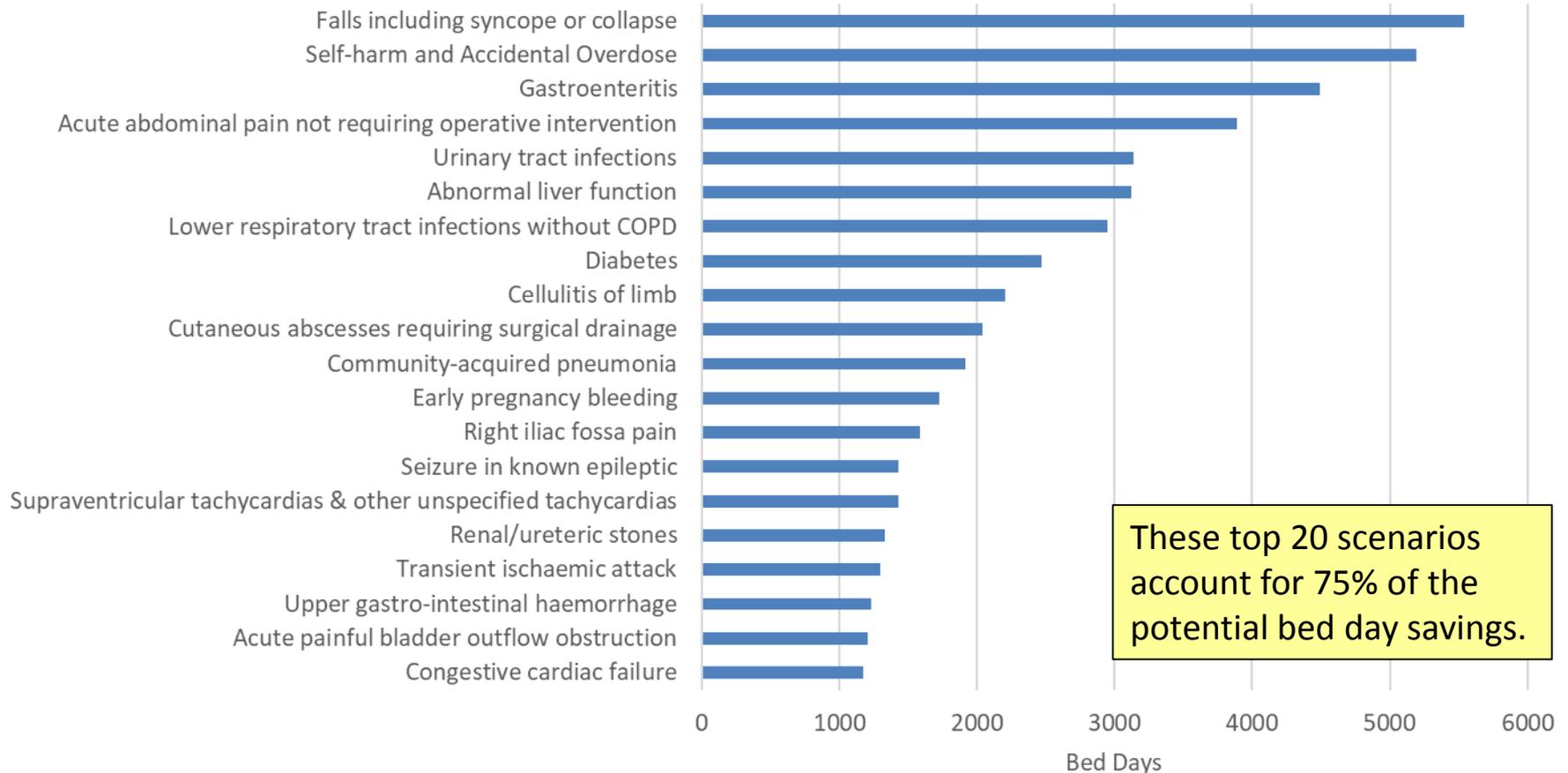
# What potential is there to convert admitted patients to AEC?

Most commonly admitted scenarios with a 3 day LOS



# What is the possible impact on bed days?

Bed day saving if meeting the recommended % seen in AEC





# What does this tell us?

- Low risk chest pain, acute abdominal pain, and cellulitis of limb were the most popular scenarios seen in AEC.
- The most commonly admitted scenarios that could have been seen in AEC were: acute abdominal pain, low risk chest pain, and community acquired pneumonia.
  - A total of 110,729 patients were admitted for 1-3 nights with AEC scenarios using 183,591 bed days. Assuming this activity can be converted to same day emergency care using the mid point % likelihood listed in the AEC Directory an improvement would reduce activity to 117,837 bed days in this period. Using the same assumption and calculating this over a 12 month period the bed day use for this cohort of patients would reduce by approximately 131,509 bed days.
- The greatest potential bed day saving if meeting the rates suggested in the AEC directory came from: falls including syncope or collapse, self harm and accidental overdose, and gastroenteritis.



# Summary of Casefile Review Findings



	Managed in SDEC/AEC	Admitted
Appropriate for SDEC/AEC	Box 1: Success 530	Box 2: Missed opportunity 170
Not appropriate for SDEC/AEC	Box 3a: Wasted capacity 210	Below threshold for AEC 89
	Box 3b: Escalation use 17	Box 4: Appropriate 529
Totals	<b>757</b>	<b>788</b>

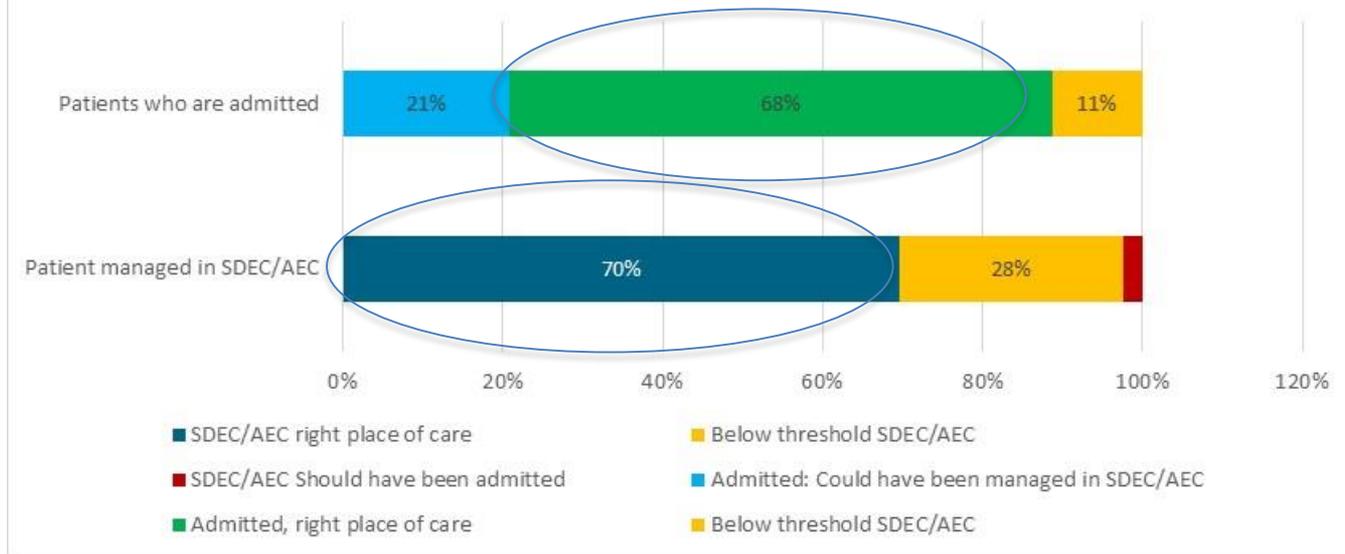
%right place

70%

67%

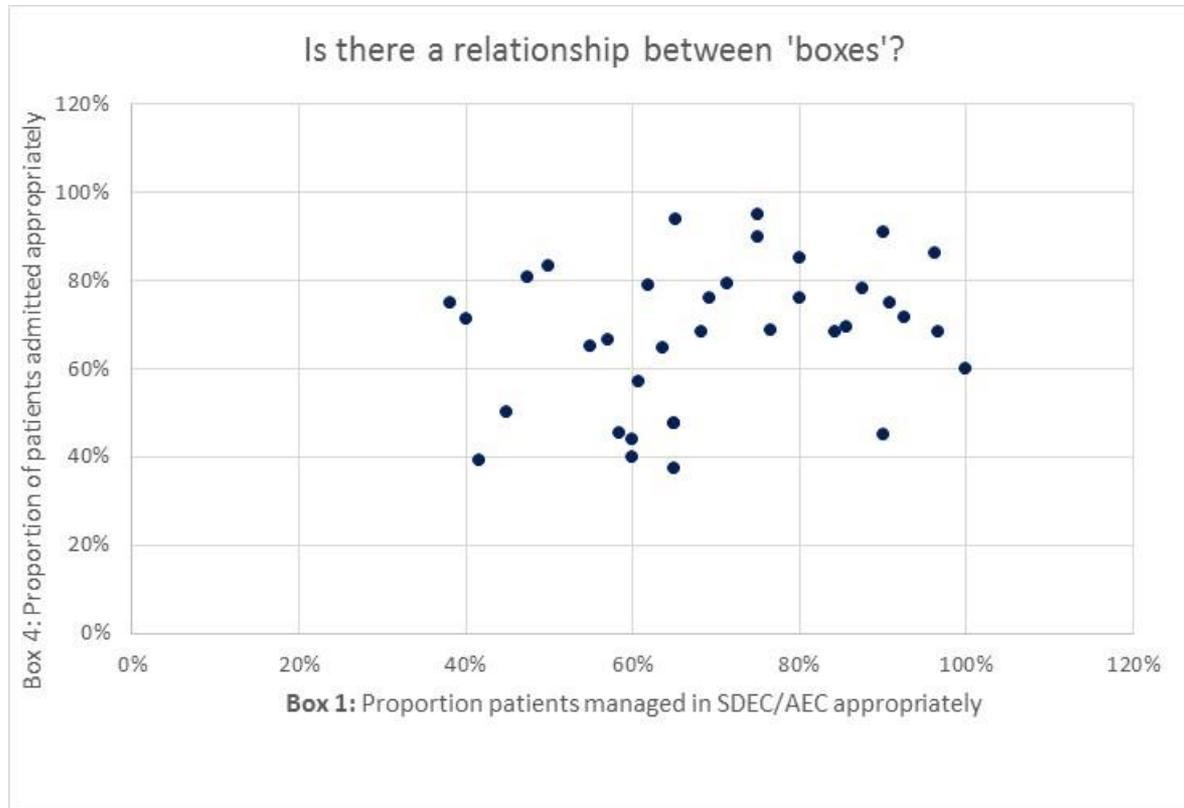


### Casefile review: are patients receiving care in the best place?



As the sample bases are different, the similarities in proportion of patients in the right place does not mean that there is necessarily sufficient capacity in SDEC/AEC to manage all potential SDEC patients who are currently admitted.

# Is there a relationship between patients seen in the right place of care?



Analysis suggests that different clinical processes need to be optimised to maximise patients being managed in the most appropriate place of care.

(There is no statistical relationship  $R^2=0.07$ ).



# NEWs score and SDEC/AEC

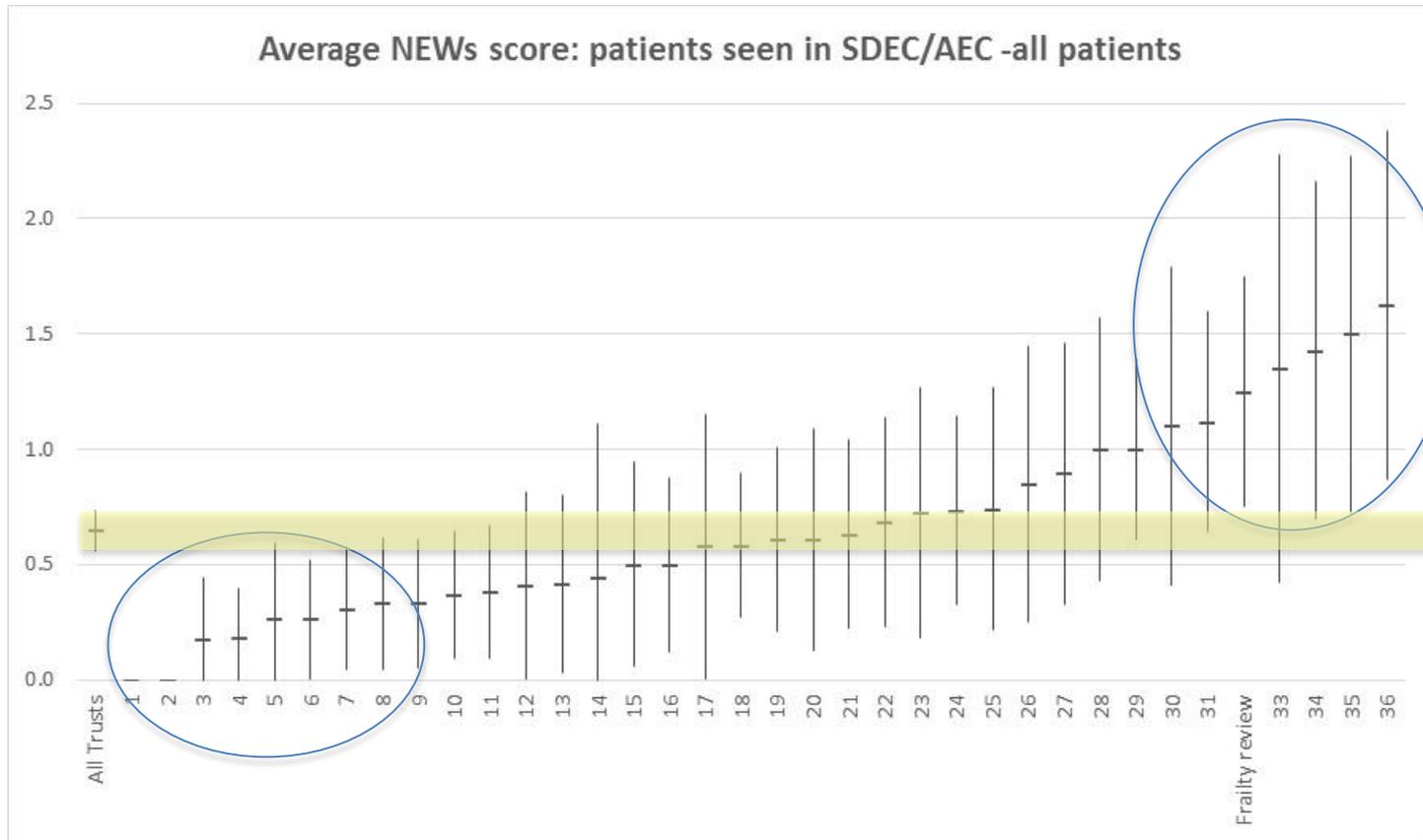
NEWs score	Managed in SDEC/AEC	Admitted
Appropriate for SDEC/AEC	Box 1: Success 0.74 (0.63-0.85)	Box 2: Missed opportunity 1.04 (0.82-1.27)
Not appropriate for SDEC/AEC	Box 3a: Wasted capacity 0.34 (0.23-0.45)	Below threshold for AEC 0.86 (0.53-1.19)
	Box 3b: Escalation use 1.53 (0.79-2.28)	Box 4: Appropriate 2.44 (2.22-2.67)
All patients	0.6 (0.56-0.73)	2.0 (1.79-2.13)

A low average NEWs score in SDEC/AEC may indicate a site isn't managing more complex/frail patients.

This could be due to too many "below SDEC threshold" patients and/or more "missed opportunity" patients.



# Variation in NEWs score by site, in order of NEWs scores

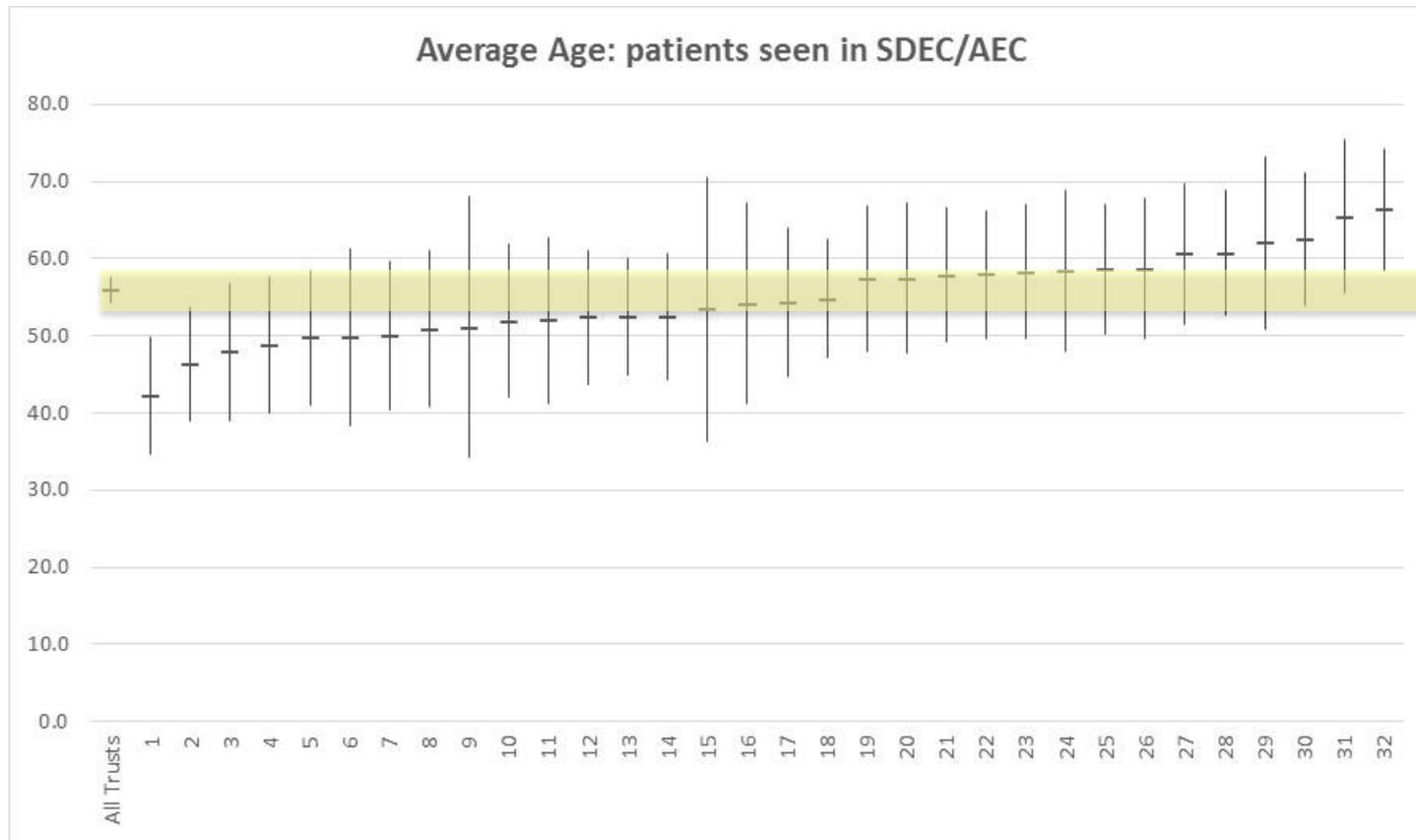


Sites with a higher than average NEWs score may still be able to optimise services further.

A very low average is potentially a good prompt to review services.

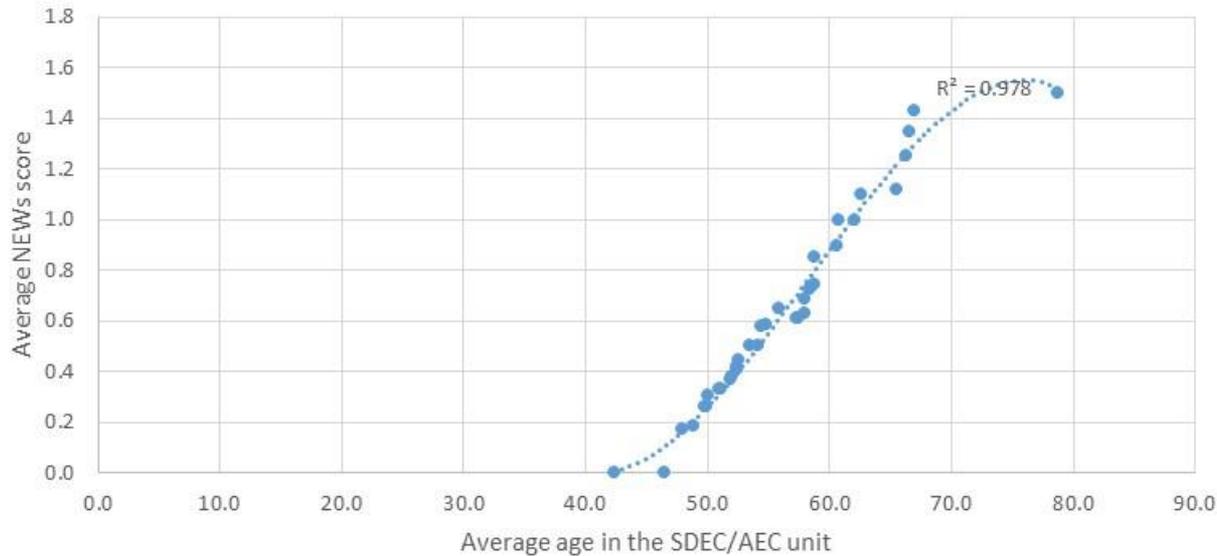
95% confidence intervals

# Variation in average age by site, in order of average age





Is there a correlaton between NEWs and patients average age:  
patients seen in SDEC/AEC where SDEC/AEC was appropriate



There is a correlation  
between average NEWs  
score and average age.

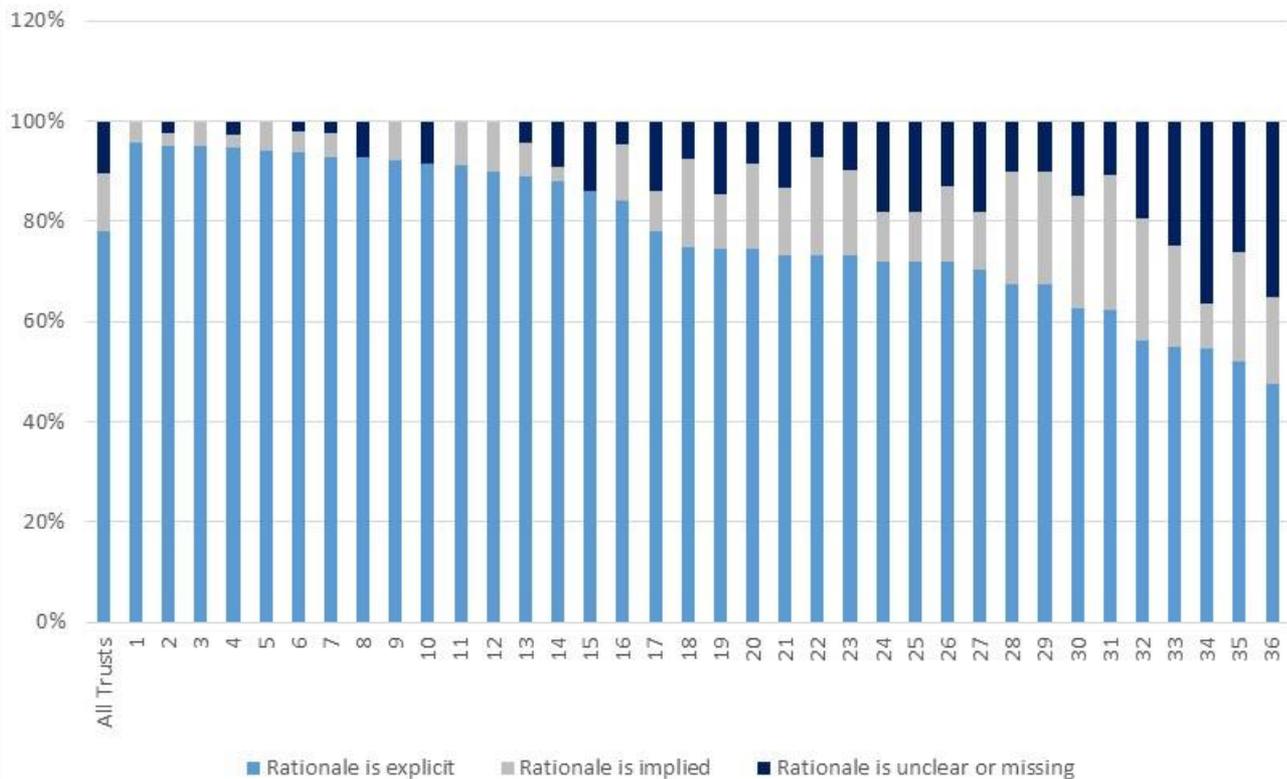
$R^2$  is 0.978

This may reflect  
older/frail patients  
having a higher baseline  
NEWs score on average.

The relationship is  
unlikely to be linear.



### Streaming decision making to SDEC/AEC or admission: how clear is the decision making?





# Summary of Recommendations



# Overview

- AEC requires
  - Clear system wide and organisation shared aim
  - Strong clinical leadership
  - Rapid and effective streaming and referral to the service – strong process model supported by high volume pathways and pull
  - Operational capacity and effectiveness within the service
  - Oversight, curiosity and learning to support continuous development



# High level recommendations

- System wide aim for service (6/36)
  - *“Work with all stakeholders to ensure the aim of AEC as emergency admission avoidance is clearly understood in the system to improve appropriateness of referrals. [site 29]”*
- Organisation wide aim for service – includes clarity of purpose when AEC used for for “bedding” (13/36)
  - *“Develop a clear aim for your [AEC] area. Ensure that a ‘supply side driver’ is not being created”*
  - *“Clearly defining role of triage, RAT, ED and AEC may help with streaming of patients to AEC sooner”*
  - *“Review escalation plan and understand how AEC areas can be included in a more productive way”*
- Generally all sites are supported to develop dashboards, curiosity and overview of performance. 10/36 had specific data collection or measure recommendations to improve their capability to monitor and/or be curious about evident trends. For example:
  - *“Expand the data set for AEC to capture data on source of referral, LoS in ED, disposal from AEC and LoS in AEC”*
  - *“Due to the high volume of missing data; review data collection systems and processes.”*
  - *Understand why numbers streamed from ED reduced in July ’19*



# Converting emergency admissions

- Convert more emergency admissions to SDEC
  - High volume clinical scenarios together with specialities (35/36).
  - Focus on more complex patients (GAP score, frailty) (23/36)
  - Focus on developing surgical SDEC/AEC (21/36); other named specialities include (urology, gynaecology,)
  - Understand and learn from “missed” patients e.g. at post take ward round, ICD-10 analysis of 1-2 day LOS, curiosity around themes and learning (31/36)

Focus on earlier identification and streaming from ED. The service seems risk-averse and could capture more acute patients in AEC – how can these patients be identified beyond NEWS score? (look at GAPS

Develop a process to follow up unnecessary admissions by asking the question “why was this patient not managed in AEC?” on post take ward rounds and acting on any themes.

*“Share analysis with surgical colleagues to review the abscess and acute abdo pain pathways .*

Work with the frailty team to move more frail older people to SDEC and ensure that there is access to therapies and community teams from AEC.



# Streaming to SDEC

- At least 29/36 sites could improve A&E streaming. Recommendations included testing GAP score, providing prompts, process mapping to understand delays and role modelling using a “pull model”.
- Exploring opportunities to develop ambulance streaming direct to AEC (7/36)
- Increasing GP referrals direct to SDEC was highlighted for 8 sites and a focus on strong effective clinical conversations in 9 sites.

*.. modifying your ED and admitting documentation to include a prompt for AEC and giving a rationale.*

*Process map your flow from ED to AEC to EAU understand where the biggest delays are happening.*

*Implement regular ED pull to role model the type of patients you are looking for*

*Reduce variation in the number of ED referrals to SDEC. Focus on simplifying flows and having clarity about SDEC intention – ... (look at GAPS).*

*Work towards developing a direct ambulance stream – this is likely to become a pan London approach.*

*“Examine what could be done to increase the proportion of patients that come from a GP stream.”*

*Review the structure of referral conversations so that appropriate challenge can be given in a constructive way and realistic alternatives offered.*



# Operational efficiency of SDEC service 1

- Reduce within SDEC service variation (6/36) *“Develop clinical professional standards and SOP’s for AEC to reduce variation”*
- Release capacity within AEC to allow more patients to be managed as AEC (who would otherwise be admitted) (21/36). Themes included :
  - Interrelationship between outpatients and SDEC, in one case the focus was the urgent care centre.
  - Specific focus on DVT (9/36), IVAB, headache pathways and chemo patients.
  - Examples of overuse of diagnostic tests in two sites
  - Providing realistic alternatives for inappropriate referrals and/or feedback to referrers

*Clarify the system directory of service so that realistic alternatives to AEC can be offered at the point of referral for below threshold patients.*

*Review diagnostic usage for wasted capacity patients to reduce reliance on tests and better manage expectations.*

*Undertake a review of the interdependencies between AEC and urgent OPD and whether this supports efficient flow. Review OPD disposal usage to ensure this is the most effective pathway.*

*How can long term IVABs and DVT be managed differently within the system to allow you to focus on more complex and acute patient types.*



# Operational efficiency of SDEC service 2

- Focus on LOS in SDEC/AEC was highlighted in 30/36 sites
- A high proportion of patients with a very long or a short length of stay could indicate suboptimal process. Not all sites are able to monitor LOS real time.
- Focus on too high or too low a proportion of patients admitted from SDEC/AEC (10/36)
  - The expected range is 10-15% High rates could indicate delays in SDEC and/or inappropriate referrals to AEC i.e. patients should have been directly admitted
- Need to ensure operational efficiency at evenings and /or weekends (31/36 sites)
  - Increase numbers in evenings/weekends to maximise the available service and maintain AEC flow
- Facilities and environment, access to diagnostics and/ staff highlighted in 14/36 sites. Generally they are specific to the site but 6 highlighted diagnostic access/turnaround times being an issue – either generally or for a specific test.

*Focus on patients with LoS <2hr – do these represent admission avoidance?*

*Focus on patients with LoS [in SDEC] >8hr – is this due to clinical complexity or process delays?*

*Improve OOH to refer patients to AEC (particularly weekend attenders)*

*Review your admissions from AEC to understand whether these are clinical or process based and avoid breach avoidance usage of AEC capacity.*

*Review and improve facilities for patients being treated in AEC (e.g. access to refreshments and entertainment).*

*Consider redesigning current AEC unit to utilise the space more effectively. Large waiting room and standing room only suggest flow not as efficient as it could be.*



## Next steps

- Identify and share best practice processes noted
- Undertake further analysis of the non AEC activity undertaken in AEC to identify high volume pathways that might be added to the directory (38,426 (29.1%) of reported AEC activity did not match the Directory)

[deborah@nhselect.org.uk](mailto:deborah@nhselect.org.uk)



AEC at NHS Elect  
Suite 2, Adam House  
7-10 Adam Street  
London, WC2N 6AA

Tel: 020 7520 9088  
Email: [aec@nhselect.org.uk](mailto:aec@nhselect.org.uk)  
[www.ambulatoryemergencycare.org.uk](http://www.ambulatoryemergencycare.org.uk)