Myth Versus Reality - Emergency Department Revisits Within 72 Hours, At A Tertiary Care Hospital In Saudi Arabia.

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Abstract

Any return to ED within a short time frame after discharge is classed as “revisit”. Revisits’ study is required to understand the dynamics governing these attendances, quality and safety of medical care delivered, and for correct system designing, efficient use of resources as well as benchmarking for future referencing. Methods: Retrospective review of electronic patient database was undertaken for one summer and one winter months at our institution. All patients were included who revisited ED within 72 hours of initial visit. Detailed study was carried out for first 100 revisit records for each of these months’ for demographics, timing as well as acuity of presentation, management and disposition. Results: 7473 patient visits were recorded for the study periods of 1st to 30th Nov 2018 (3754) and June 2019 (3719). 768 (387+381) of these were revisits within 72 hours, qualified for this study, 425 (250+275) of these were adults and 243 (137+106) were paediatric patients. Revisits’ male and female ratio was 57% and 43% respectively. Age distribution in years was 14 to 55 53%, 56-69 26%, paediatrics 8% and geriatrics 13%. Majority of index visits as well as revisits were between 14:00 and midnight (75% and 90% respectively). 44% visited within 24 hours after first visit while 36% in 25-48 hours and 20% during next 24 hours post discharge. Patient triage category 4 and 3 was (58% and 29%) at initial visit and (55% and 30%) at revisits, respectively. 40% of studied revisits were found to be scheduled! 56% re-attendances were family medicine and 30% speciality related. Only 14% of studied returns were deemed “validated ED revisits” making our revisit rate of 1.4% of all ED visits! 8% of studied revisit cases had specialty involvement prior to discharge at first visit. 14% of revisited cases were subsequently readmitted while rest were discharged. Conclusions: Overall 10% patients revisited our unit, but only 1.4% were found to be validated ED revisits. Many of these complex re-attendances were multifactorial and further work is required to explore various interventions and their effects on the addressable factors for revisits.

Background:

Our institution is a tertiary care teaching hospital with annual ED census of around 45000 patients. The vast majority of our patients are referred from other institutions and are receiving complex medical or surgical care at our specialized centre, however we also cater for employees and their dependents. Due to the increasing demand on health services, it can take a long time for patients to be seen by the primary care or sub-specialists clinics, which can make it hard for patients not to use the ED as a quick solution for non-urgent reasons and lingering symptoms. Our ED, as expected, is considered overcrowded most of the times, with long waiting times and length of stay.

Presently we have 72-hour revisit to be as high as 15% according to our Data Warehouse that retrieves information from CERNER (our Electronic Medical Records). However, this number is crude and it includes all revisits from ED patients seen and discharged from the ED, with or without consultation to other services followed by decision to discharge home by our doctors or theirs. But they can also be recalls from specialties and their clinics to visit the ED for treatment or for admission, or revisits to the after-hours ED clinic which is run by family medicine staff (during 1600–2100 weekdays and more extended ours over weekends).
It was deemed necessary to study “revisits” in detail and categorise them properly to know the real reasons, especially if they are related to our ED practice, which will help to identify areas of improvement and intervention and perhaps streamlining.

Methods:

We retrospectively reviewed our electronic patient database (CERNER©), which is used to capture all aspects of every patient encounter including documentation, for one summer and one winter months at our institution (in order to remove any seasonal variation). All patients who revisited our ED within 72 hours of the initial visits were included. Review of our database was carried out for each of these months for the first 100 revisit cases for demographics, timing as well as acuity of presentation, management and disposition.

Our focus was to differentiate “true” (hereafter) known as “validated ED revisits” that we defined as, “unscheduled (unplanned) re-attendance to ED for any urgent issue, related to previous visit that required ED physician’s (re)assessment and some intervention, within 72 hours of the first or “index” visit. These cases were dissected out of any specialties’ urgent admissions from clinics and recalls, including returns after referral or formal consultation to other specialties at the index ED visit. Family Medicine (GP) After-Hours ED clinic recalls or revisits were also excluded from the validated ED revisits. All scheduled ED returns were excluded since they had been “arranged” due to unviability of suitable alternative arrangements (example: daily IV injections). Validated ED revisits were further scrutinized for deficiencies in management at the index visits hence leading to revisit, which could have been avoided in the first place.

Electronic Medical Records were reviewed by three physicians (one paediatric and two adult ED consultants) after initial agreement on standardising the process of reviews and data collection and the definitions being used. In order to minimize variability in the inter-observer analysis, regular meetings were conducted, as required, to settle any ambiguity/disagreement in complex cases/categorisations.

Results:

There were total of 7473 patient visits recorded during November 2018 and June 2019 (3754 + 3719). During these two months, 768 (387 + 381) of these were revisits within 72 hours which qualified for this study. Out of these revisits 425 (250 + 275) of these were adults (14 year or more) and 243 (137 + 106) were less than 14 years of age (classified as paediatric at our hospital).

Overall 57% of the revisits were made by females and 43% by males. More than half (53%) of the cases were between 14 and 55 years and around a quarter (26%) were between 56–69 years. Remaining were extremes of ages (8% paediatrics and 13% geriatrics). Majority of index visits as well as revisits were between 14:00 and midnight (75% and 90% respectively). 44% visited within 24 hours after first visit while 36% within 25–48 hours and 20% during 49–72 hours from discharge.
Predominantly patients were triaged as CTAS (Canadian Triage Acuity Scoring) category 4 (58%) and 3 (29%) at initial visit as well as revisits (55% and 30% respectively), few patients had their acuity changed upon revisits.

| Acuity/category | Index visit | Index visit | Total | Revisit | Revisit | Total |
|-----------------|-------------|-------------|-------|---------|---------|-------|
|                 | Nov 2018    | June 2019   |       | Nov 2018 | June 2019 |       |
| 5               | 3           | 16          | 19    | 11      | 25      | 36    |
| 4               | 57          | 59          | 116   | 45      | 66      | 111   |
| 3               | 35          | 23          | 58    | 38      | 23      | 61    |
| 2               | 5           | 2           | 7     | 8       | 1       | 9     |
| 1               | 0           | 0           | 0     | 1       | 0       | 1     |
| total           | 100         | 100         | 100   | 100     | 100     | 100   |

For both months, 40% of studied revisits were found to be scheduled! Most (86%) of the patient re-attendances were attributed to family medicine (56%) and speciality (30%) while only 14% patients were found to be “validated ED revisits” which were further scrutinised to show that 16/28 were deemed to have received inadequate treatment, half of them were avoidable at index visit while eight (8) other cases required only re-education and reinforcement, which was again simply avoidable. Four (4) cases were found to be inappropriately managed at initial visit and subsequently got admitted at the revisit!

8% of studied revisit cases had a specialty involvement prior to discharge at the first visit. 14% of revisited cases were subsequently readmitted (mainly under internal medicine) while rest were discharged. There were variety of conditions registered as presenting complaints, with fever (21%) and pain (20%) being the most common. Respiratory tract infection was found to be the most frequent diagnosis (13%) followed by UTI (11%).

Based on incidence of 14% validated ED revisits we can estimate that 107 patients as valid ED revisits out of total 768 of all identified returns for the given two months. That takes us to calculate ED revisits from total 7473 visits in these two months which brings the overall estimated validated ED revisit rate of 1.4% (107/7473), well below the apparent re-attendance rate of 10%.

**Discussion:**

ED is usually considered as a barometer for primary care in any community and its healthcare. Overcrowding in ED is becoming an increasing concern around the world. Although overcrowding in ED is multifactorial, with limitations to control some of the contributing factors that lie outside the department and hospital, more focus has been put at the internal factors which are likely be to influence able.
“Revisits to ED” is considered as one of remediable “internal” factors which is also linked to quality of care delivered in ED. But revisit has to be considered with caution as being complex and contentious, e.g. bounce back of referred patients, not admitted and early discharges from other specialities can be associated with higher revisits; That itself can be the result of challenges and factors that have to do with the hospital operational system.

Our study concentrated on the ED patterns and characteristics of revisits, as a part of our internal care review and system efficiency enhancement effort, with the hypothesis that our revisits are high and constitute to considerable volume of extra work, some of which could be avoidable. But with this study results we found out that unplanned re-attendance rate was not high and actually was lower or comparable to international figures. It was of note that most of patients who re-attended were of low acuity and were again discharged from ED, more than some other studies. Only small number of patients had speciality involvement at the initial visit but once they revisited, speciality involvement increased and 14% got admitted. However, our admission rate of revisits was lower than the reported figures of 25%-36% (i).

Patients who revisited our ED mostly had moderate to low acuity at initial visit which remained same pattern at subsequent revisits. Only few patients had their acuity level moved up or down at revisit as compared to initial visit. Most of low acuity problems could have been dealt with at the level of primary care clinic or elsewhere but because of other comorbidities and patients’ choice, they preferred to attend to our ED.

Revisits are generally known to have high risk associated with higher morbidity and mortality, one study reported increased mortality (hazard ratio 1.89, 95% confidence interval 1.06–3.35, P = 0.03) . We identified two cases of mismanagement as missed diagnosis and one case of unavoidable death. Our admission rate for revisits was 14%, less than other reported studies 25–36%. Avoidable validated ED revisits (28) were found to be around 4% of all revisits (768) in our study comparable to other reports of 32% (ix).

It may appear interesting at first glance that majority of people who re-attended were less than 55 years of age rather than elderly patients (xii) but being tertiary care facility our “younger patients” usually tend to have multiple comorbidities, having apparent “medical age” comparable to geriatrics.

Our study has limitations like any other study including some projected figures generated from first 100 cases for each month of data study although there are no known influencing factors to introduce any bias as index attendances or revisits are not known to have any tendency towards any particular dates or parts of the month. Therefore, we believe that our projections from good case mix give us a good and reliable idea of our revisit dynamics and enable us to take appropriate measures accordingly.

Based on our study findings we have made certain recommendations, which include:

- Monthly revisit audit.
• Defined and agreed-upon pathways with specialities to look after their urgent admissions and recalls with separate coding/booking mechanisms, and not to be included in ED returns.

• Separating urgent care patient streams of family medicine clinic as well as coding and agreed mechanism of their follow up in regular family medicine outpatient clinics.

• Organisation and support of better primary and secondary care locally near patient homes in collaboration with the local Health Authorities.

Conclusion:

Overall 10% of patients revisited our unit, but only 1.4% were found to be validated ED revisits. Many of these complex re-attendances were multifactorial with strong association to the dynamics of our hospital system, offering unique and specialized services, but primary care availability is an important associated factor, closely related with many of ED attendances. Further work is required to explore various interventions and their effects on the addressable factors for revisits.

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Declarations

Ethics approval and consent to participate:
Formal approval (ref RC-J/317/41) for this study by local IRB was obtained from Research Centre, King Faisal Specialist Hospital & Research Centre, Jeddah.

Consent to participate:

“Not Applicable” as no human subjects/tissues or interventions were used during this study.

Consent to participate:

“Not Applicable” as no human subjects/tissues/personal information/image or interventions were used during this study.

Availability of data and materials:

“Please contact author for data requests.”

Competing interests:

The authors declare that they have no competing interests.

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Authors’ contributions:

1. Dr Imran Zakria, conceived the idea, study design, obtained and extracted data, drafted the manuscript.
2. Dr Adel Alaeddin, extracted and analysed data.
3. Dr Mourad Alnatour, extracted and analysed data and prepared results.
4. Dr Mwaffak Bashir, facilitated the study and resources, helped in preparation of the manuscript.

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**Figures**

**Figure 1**

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Figure 1
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Figure 2

Scheduled returns
40%

Unscheduled revisits
60%

Speciality revisits
c =60

Family medicine
Clinic revisits
b = 112

Validated ED revisits
a = 28

Total ED revisits
"x"