Author’s response to reviews

Title: Uncompleted emergency department care and discharge against medical advice in patients with neurological complaints: a chart review.

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Author’s response to reviews:

To whom it may concern

Thank you very much for providing us with the opportunity to revise our manuscript and enhance its quality so as to make it suitable for publication in BMC Emergency Medicine. We thank the reviewers for their time and effort and their valuable comments – please find a point-by-point response below. We also provide a marked version of our manuscript indicating all changes that were made for the revision.

Please also note that we reanalyzed the data regarding door-to-doctor and waiting time. The system had output values for patients who never saw a physician (hence for whom no door-to-doctor time is logically possible), and we coded these data as missing. As a consequence, values given in table 1 as well as part of the results section of the abstract differ from the originally submitted version.

Should you have further questions or concerns, please do not hesitate to contact me.

On behalf of the authors
with kind regards,

Carolin Hoyer

Detailed response to reviewers’ comments

Reviewer 1
- The aim and rationale of this study are not clearly expressed in the background section. Therefore, it is unclear how the findings of this study would influence clinical practice or service delivery in this area.

Authors’ response:
We reworked parts of the background section in order to clarify the aim of our study.
- In the abstract section, there is no description of the study aim or what outcomes/endpoints will be evaluated. Information about the study period and cohort is also not adequately described.

Authors’ response:
We add the relevant points in both the background and the results section of the abstract.

- In the methods section, the authors have not described how the data was obtained and how encounters or presentations were selected to be included in this study? Were there any presentations which were excluded from the analyses and the reasons?

Authors’ response:
This question is repeatedly brought up. Briefly, patients receiving a numeric code indicating a chief neurologic complaint were included, their medical records were checked and details regarding presenting symptom, mode of discharge etc. were obtained from the documentation. From the cohort of patients presenting with neurological chief complaint, none were excluded. We also kindly refer to our comments to reviewers 2 and 3 on this issue below.

- The statistical analyses need review because in the main text a p-value of <0.05 was indicated to be of significance but in Table 1, p-value of <0.0015 was used.

Authors’ response:
The p-value results from application of a Bonferroni correction. Below the table there is a remark indicating that statistical significance for 32 tests applied is reached if p<0.05/32, i.e. p<0.0016.

- The limitations of the current study are not adequately elaborated.

Authors’ response:
We specify and elaborate the limitations section to include, for example, the conflation of DAMA and PL patients into one group, the possibility of making tentative diagnoses in cases of premature leaves as well as the lack of follow-up.

- Some of the statements in the conclusion are ambiguous and are difficult to connect with the findings of this study.

Authors’ response:
The conclusion has been rewritten to correctly reflect our results and what follows from them.

- Why is figure 1 required when similar data has been presented in Table 1? For Table 1, the heading for the DAMA/PL can be simplified. p-value of 0.000 needs to be clarified.

Authors’ response:
This point is repeatedly raised. We accordingly eliminate figure 1. The p-value of 0.000 has been corrected to p<0.001.
- The axes of figures are not labelled.
Authors’ response:
We added a label to the axes in figure 1.

- Please reconsider the terminology "neurological patients". This may be better worded as patients with neurological symptoms/conditions.
Authors’ response:
Throughout the text, we replace “neurological patients” with “patient with neurological complaints” for a more accurate and patient-centric phrasing.

- Is "against medical advice" a stand-alone keyword?
Authors’ response:
We checked meshb.nlm.nih.gov/. As we could not find “against medical advice” as a keyword there, we modified our keyword list accordingly even though “patient discharge”, which is a listed keyword, does not adequately reflect the primary focus of our manuscript.

- The grammar of this manuscript needs review. There are many uses of the colon punctuation in the middle of the sentence. A number of sentence structures need revision. Inconsistent abbreviations for Emergency Department also needs to be corrected.
Authors’ response:
We checked for grammar/structural errors and inconsistencies regarding abbreviations throughout the manuscript and corrected accordingly.

Reviewer 2
The term premature leave is not commonly used in ED research and is not accurate enough. When googling this term I got websites for premature ejaculation. You identify that this group of patients may be rather heterogeneous, patients not telling staff that they were leaving after treatment had commenced and patients not waiting to be seen by a physician. I would like to see a breakdown of this group to better outline their characteristics. How did you get diagnosis for this group of patients? If they did not wait was this coded as such?
Authors’ response:
One-hundred and seven patients left prior to physical examination or contact with an ED neurologist, 49 left before diagnostic work-up was complete. It follows that in this group of patients, providing a diagnosis is difficult, and will in many cases have been tentative. We acknowledge this in the limitations. We do provide a comparison between those 156 patients who left prior to complete ED work-up (regardless of whether or not they signed DAMA documentation) and those who left after complete work-up (who, except for one person, all left after signing respective documentation – cf. table 3.
The term “premature leave” is indeed not commonly used. It subsumes, as the reviewer correctly notes, patients who either left without being seen – and who would be adequately captured by the established term “LWBS” accordingly - an those who left after an initial physician-contact or while waiting for diagnostic procedures/results. So this is, as noted here and also by reviewer 3, a heterogeneous group, which we considered would be best captured by the term “premature leave”. When googling the phrase, we did not get results as those mentioned by the reviewer. We found several occurrences of the term with meaning close to/identical to our intended meaning in academic papers, also on ED research of the topic under consideration. In light of the potential ambiguity noted by the reviewer, we changed the title of the paper so as to avoid an occurrence of the term therein but still cover the aspects investigated.

In addition, we performed an additional subgroup analysis with several parameters regarding the group of patients who left the ED before the diagnostic work-up was complete and the group of patients who were discharged against medical advice after the diagnostic work-up.

In the introduction you do not clearly outline why you think an analysis of neurological patients is important. Are they at higher risk of bad outcomes in general? High percentage of overall ED visits? Your final sentence in the introduction states that you will assess the characteristics of patients admitted to the ED for neurological evaluation. This is not the hypothesis that you seem to be trying to present in the paper. Needs to be changed to better reflect you research. Needs a hypothesis or research question.

Authors’ response:
This point is also raised by reviewer 1. We rewrote parts of the introduction/background section accordingly and specified that we were aiming to compare characteristics of discharged and DAMA/PL patients in order to identify factors associated with incomplete ED care.

This is not an observational study, it is a retrospective chart review. Observational assumes prospective review.

Authors’ response:
We agree with the reviewer and changed the title and respective occurrences of the phrase “observational study” accordingly.

I found the methods difficult to follow with some results presented in the opening paragraph rather than in the results section. Describe your ED-adult only? Trauma centre? Neurological specialty centre? Size of city? How were patients identified? Diagnosis from computer system? What computer software used? What diagnosis did you search for? Only referrals to neurologist?

Authors’ response:
We extended the methods section in order to provide relevant additional information. As stated in the methods section, patients receive a numerical “neurology” code in the SAP-based hospital information management software when first-line or second-line assessment suggests a neurological condition. The database was filtered for this neurology code, which was received by 5340 patients in the study period. Documentation generated from the ED visit of all of these patients was checked in detail for further information, such as presenting symptom, discharge diagnosis, if given, mode of discharge etc.
Under methods move the analysis section to the statistical section and list data collected here. Need to clearly outline the terms you used to find patients in your system-presenting complaint vs discharge diagnosis. You list the Royl article in the table 1. Is this what you used to define your terms?

Authors’ response:
We kindly refer to the response to our previous comment. The Royl article mentioned in table 1 is also cited in the methods section as presenting symptoms were categorized according to this study.

Use consistent terms between text and tables. In text you say "living in local area" and in table you have urban area. Are these the patients all within 25 km of hospital?

Authors’ response:
We checked for inconsistencies and corrected table 1 accordingly so that it is clear that these are the patients living in the local area within 25 km of the hospital. We uniformly labelled them as “living in the local area” (former “urban”).

I would remove the term discharged "regularly". I know what you are trying to say but I think just admitted or discharged is fine. The DAMA/PL patients were not admitted or discharged.

Authors’ response:
We corrected the term according to the reviewer’s suggestion.

You need to clarify your hypothesis, data collected and analysis plan. These areas should clearly flow but your hypothesis is vague and your conclusion had nothing to do with your results. The conclusion needs to be your results.

Authors’ response:
As stated above, we re-worked the background section to clarify our research question. The conclusion has also been rewritten to correctly reflect our results and what follows from them.

Did you check for normality in your data? You have very large SD which makes me think that some of your data is not normally distributed and median (IQR) should be use rather than mean (SD). Please add a 0 before all of the . in your P values in the text and tables.

Authors’ response:
The reviewer’s point is valid, some important variables were indeed not normally distributed, thus we used the Kolmogorov-Smirnov goodness-of-fit test to test whether variables such as basic demographic information door-to-doctor time and length of ED stay were normally distributed. As the data were not normally distributed, non-parametric tests (i.e. Wilcoxon's rank sum test) were used. The results did not change, IQR was added where appropriate. A 0 has been added to P values in text and tables.

What is self initiated presentation? Should you change this to mode of arrival? Did the patients who came by EMS not self initiate the call? Perhaps state why an ED physician would be on some of the EMS calls? Dispatch for sick patients? Luck of the draw?
Authors’ response:

We agree with the reviewer that “self-initiated” does not adequately reflect the intended meaning and corrected this to “self-presenting”, which is, as the reviewer correctly notes, a mode of arrival. The reasons for why an ED physician is on some of the EMS calls is not always reproducible or documented. EMS staff is allowed to apply only certain types of drugs, but this does not necessarily reflect that the patient is more seriously ill. It is, to some extent, certainly luck of the draw. Therefore, we decided to keep this information in table 1 but removed the sentence in the results beginning with “notably.”.

The patients who left after admission indicated would be interesting to say if these were the ones who subsequently got admitted.

Authors’ response:

We agree with the reviewer that this would be an interesting question to pursue. Timing and frequency of readmission in DAMA/PL patients, however, cannot be interpreted without a control group. We elaborate on this aspect in the limitations section. In addition, due to the lack of a central data registry which would allow us to obtain data from other hospitals in the area, information about subsequent readmission would be limited to readmission to our hospital. We mention the lack of follow-up information, which would be useful for this and other questions regarding the medical relevance of against-advice discharges.

In the cases that stated need to wait as reason for leaving was this for tests? again waiting time has large SD. Should this be median? Could you compare this to the whole group?

Authors’ response:

The mean door-to-doctor times in these group of patients was 97.7 (±106.3) mins. We added the IQR for information. Waiting time was for the first contact with and examination by the ED neurologist. Those patients had indeed a longer waiting time than all the other patients (58.1 ±85.7 mins; IQR: 11-63; p=0.006). We added this information in the results section of the manuscript.

Do not repeat data in manuscript and tables/figures. These items should supplement each other. Figure 1 is unnecessary. Figure 2 is replicating data as well. Decide which modality best presents your data and use that. Figure 4-clean it up, either alphabetical order or most frequent to least, something organized.

Authors’ response:

As this issue is raised repeatedly, we omitted figures 1 and 2 and changed the presentation mode of the data in figure 4 to a table, as suggested by reviewer 3.

Table 2 what is the W for in sex? Seems like 8, 13 and 14 had different second diagnoses. Was the original diagnosis missed? Investigations not completed?

Authors’ response:

With regard to major comments #5 and #9 of reviewer 3, we removed table 2 from the manuscript and kindly refer to our responses to these comments.
I would not use "latter two" or retrospectively. This terms make the reader have to think about which results go together. Make it simple, clear and easy for the reader.

Authors’ response:
We checked and rewrote the respective paragraph.

Put like results together in the manuscript. Have all sex and age results listed together. (first paragraph under demographics) % admitted and discharged aren't demographics. Review this paragraph and rewrite or change title.

Authors’ response:
We reorganized this part of results section accordingly. We changed the heading to “Disposition an demographics and restructured so that age and gender information is listed in one paragraph.

Why did you not include other hospitals in the area to see if patients presented there? Death registry for results? Just outline how many other EDs are in town, difficulty obtaining results etc. In discussion change ED representations in the "next month" to 30 days, not all months are the same length.

Authors’ response:
Due to the lack of a central registry, we were unable to find out if DAMA/PL patients leaving our hospital presented elsewhere. We mention this as a limitation of our study in the appropriate section of the manuscript but agree that this would be very informative.

Conclusion: This has nothing to do with your results. You do not assess any structural issues in your paper. This may be listed as areas for possible investigation at the end of your discussion but the conclusion needs to be what you conclude from your study.

Authors’ response:
We modified the conclusion in order to more accurately reflect study findings and conclusions therefrom.

Additional author comment:
We thank the reviewer for the suggested additional references.

Reviewer 3:
Major Comments:
1. Aggregating DAMA and PL may be a limitation of the study that should be addressed. These patients are different in that the former left after an informed consent discussion while the latter did not. That may have implications for differing rates of readmissions and other risks of leaving the hospital. Furthermore, these two cohorts of patients are not typically aggregated in other studies in the literature.
Authors’ response:

We agree with the reviewer that the conflation of DAMA/PL patients, whom in addition left at different stages throughout their ED stay, is a limitation of our study which has not yet been sufficiently addressed. We elaborate on this aspect in the respective section of the manuscript.

DAMA/PL basically denotes all patients who were discharged irregularly, differing in that, as the reviewer correctly notes, the former had an informed consent discussion and signed respective documentation and the latter did not. We added a comparison of the two groups regarding potential differences of patient characteristics.

2. The authors describe "neurological patients," throughout the manuscript. More patient-centered (as well as accurate) terminology would describe these patients as "patients with neurological complaints."

Authors’ response:

This issue is also raised by reviewer 1. We corrected the wording throughout the manuscript.

3. The authors repeatedly refer to the interdisciplinary ED. Some readers may wish to know what this is and if it differs from other types of ED's.

Authors’ response:

We thank the reviewer for this suggestion and include additional information in the methods section.

4. Regarding patient selection and categorization, the authors indicate that DAMA was if the patient signed standardized documentation. However, what if the patient declined to sign the form? How was that patient categorized? This is relevant because there was at least one patient described in the results who met this criteria. The authors should specify clearly how DAMA was defined in methods and only include those patients who met those criteria. Relevant papers from the literature (Alfandre, David. "Reconsidering against medical advice discharges: embracing patient-centeredness to promote high quality care and a renewed research agenda." Journal of general internal medicine 28.12 (2013): 1657-1662) or by appealing to an authoritative reference would support this section.

Authors’ response:

The following sentence in our manuscript apparently has potential for semantic ambiguity: “All but one of those leaving after complete work-up signed respective documentation.”

The reviewer understood that this patient left but refused to sign documentation. However, this patient was, according to our definitions, PL because they left without informing staff about their plans and before a physician could talk with them regarding risks and consequences of leaving against advice, they did not refuse to sign. We rephrased the sentence to eliminate ambiguity: “One-hundred and twenty-five patients (44.5%) left after complete diagnostic work-up yielding an indication for admission, one of these patients left after complete work-up but did not inform ED staff of their intention to leave.”

In the methods section, we define DAMA as follows: “Patients were categorized as discharged against
medical advice (DAMA) when they received an explanation about risks and consequences by an ED physician at any time during their stay and signed respective standardized documentation.”

We agree with the reviewer that this leaves open the categorization of a patient who declines to sign the form. This did not happen in our study population as it would have been noted in the records. When patients decline to sign the form, they have, however, had a conversation with the physician about their wish to leave and the physician’s recommendation to stay in hospital as well as an explanation of risks and consequences. Thus, assuming the patient is mentally capable of understanding this and has sufficient insight into potential consequences of their behavior, such a patient would also be DAMA in our hospital, and physician usually note this procedure in the records. If deemed necessary, we can further specify this but as such a case did not appear in our study, we currently leave the definition as given above.

We thank the reviewer for providing us with the reference in major comment #4. Standardized discharge forms are used in our hospital for ED and inpatients wishing to leave prematurely, and there is certainly a lot of improvement in our own practices regarding the management of these patients. The fast-paced and often hectic ED environment may pose additional challenges to implement and maintain communicative or structural practices and processes for the promotion of a patient-centered and empathetic approach to the issue and led by principles of shared decision-making. We have modified and added to the discussion accordingly.

5. The inclusion of symptom duration and repeat visits within 30-days only for patients with DAMA/PL cannot be fully interpreted without a control group (i.e., compared to other ED patients discharged conventionally). This should be either eliminated or listed as a limitation of the study.

Authors’ response:

We agree with the reviewer that it is difficult to interpret repeat visits within 30 days and symptom in DAMA/PL patients without reference to a control group. We therefore eliminated the respective sentences from the methods section and also left out table 2, given ethical considerations (cf. major comment #9 and absence of control group.

6. "Self-motivated" should be defined in the methods section as this is not a typical description of patients described in the literature.

Authors’ response:

As mentioned above (reply to comment by reviewer 2), we changed this term to “self-presenting”, i.e. not being transported by EMS.

7. The authors may wish to supplement their claim that negative radiological studies may be more reassuring for patients than providers by appealing to similar data in the literature that shows similar conclusions. This will strengthen their discussion of this point.

Authors’ response:

We thank the reviewer for drawing our attention to this point. Imaging and other investigations have been demonstrated to have some reassuring effects but the data are not unanimous (e.g. Howard, L. M., & Wessely, S. (1996). Reappraising reassurance—The role of investigations. Journal of Psychosomatic Research, 41(4), 307–311. doi:10.1016/s0022-3999(96)00164-x, Howard L, Wessely S, Leese M, et al. Are investigations anxiolytic or anxiogenic? A randomised controlled trial of

We have added this information to the manuscript. It would be very interesting to pursue this question further in an emergency care context as there appear to be no dedicated investigations of the impact of imaging on patients’ levels of fear and anxiety when presenting in the emergency room.

8. The authors conclude that individual reasons for DAMA are not amenable to modifications in the structure of emergency care provision. However, there are some studies that have found that increasing the rounding frequency on patients can reduce DAMA. The authors should include this and other literature that provides support for hospital interventions that may impact patient's behavior surrounding DAMA. [Meade, Christine M., Julie Kennedy, and Jay Kaplan. "The effects of emergency department staff rounding on patient safety and satisfaction." The Journal of emergency medicine 38.5 (2010): 666-674.]

Authors’ response:

We thank the reviewer for this comment and the suggested literature. We modified the discussion accordingly and added a paragraph on the relevance of psychological and communication-related factors as well as structural modifications in the ED with potential or demonstrated positive impact on irregular discharges.

9. Although Table 2 has been modified, from an ethics perspective, it may still permit identification of patient data. Given this and the concerns identified in Major Comment #2, this section should be considered for elimination as its absence would not affect the quality of the manuscript.

Authors’ response:

We assume that the reviewer in this comment refers to major comment #5 rather than #2. We kindly refer to response to major comment #5.

10. Figures 1 & 2 do not provide any new information not provided in Table 1. This reviewer recommends not including it.

Authors’ response:

As this point is raised by reviewer 2, we are happy to follow these suggestions and omit figures 1 and 2.

11. The manuscript would benefit from specification of "waiting time." Is it "Till seen by an MD in the ER" or "waiting to complete clinical evaluation." This distinction is important because that was described as the main reason patients chose to leave.

Authors’ response:

“Waiting time” is equal to door-to-doctor time. We specified this in the results section in order to avoid ambiguity.
Minor comments:

1. P.3 line 7: Readers are likely to want to know specifically what kind of "institutional problems" are associated with AMA discharges. Clarifying this statement will help focus the aims of the background section.
   Authors’ response:
   We elaborated on and specified this point in order to improve the contentual and argumentative flow of the background section.

2. P.3 line 9: the inclusion of "dignity" in this sentence was not clear to this reviewer. Please specify how this relates to the care of neurological patients in the ED.
   Authors’ response:
   We omitted the word.

3. P. 9, line 17 should clarify that the campaigns are directed to patients and families.
   Authors’ response:
   We modified this sentence and added “directed to patients and families..” according to the reviewer’s suggestion.

4. Figure 4 may be easier for readers to digest in Table format.
   Authors’ response:
   As reviewer 2 also raised concerns regarding figure 4, we follow this reviewer’s suggestion and present the respective data in table format.