eAppendix A

eAppendix Table 1. Study inclusion and exclusion criteria[1,2]
Inclusion criteria
• Adults are at least 18 years of age. • Patients will be discharged from the ED to the home setting. • Taking at least 8 different medications, inclusive of as needed medications, at admission to the ED. • Patients have a primary care provider. • Patients speak and understand English.
Exclusion criteria
• Prisoners or patients in police custody. • Patients who do not have a telephone with which to be contacted by a pharmacist. • Patients who leave against medical advice. • Patients who are readmitted to the ED or hospital prior to receiving a phone call from the pharmacist.
Abbreviation. ED, emergency department. Note. Participants were selected from patients admitted to the ED at Erie County Medical Center (ECMC) and placed in a treatment area of the ED. ECMC is a tertiary care medical center, located in an area designated by the Health Resources and Service Administration as a medically underserved area. Written informed consent was obtained from patients by research assistants at ECMC.

Reference

1. Ibrahim IA, Kang E, Dansky KH. Polypharmacy and possible drug-drug interactions among diabetic patients receiving home health care services. *Home Health Care Serv Q*. 2005;24(1-2):87-99. doi:10.1300/J027v24n01_07

2. Bauer S, Nauck MA. Polypharmacy in people with Type 1 and Type 2 diabetes is justified by current guidelines--a comprehensive assessment of drug prescriptions in patients needing inpatient treatment for diabetes-associated problems. *Diabet Med*. Sep 2014;31(9):1078-85. doi:10.1111/dme.12497

eAppendix B

Study procedures

When a patient was admitted to the ED at ECMC and placed in a treatment area, the research assistants (RAs) would review patient's current medication list via electronic health record system as part of the assessment process. If a patient was taking 8 or more medications, the patient would be approached by the RAs to participate in the study. The RAs described the research study and administered a screening tool using REDCap (Research electronic Data Capture) questionnaire (e**Appendix C**). The questionnaire collected subject's demographics (name, date of birth, and gender), phone number for follow-up, ED visit information (date of service, medical record number), and primary care provider (PCP) information. Patients without a PCP and without a telephone were excluded from the study. Patients who decided to enroll in the study would be asked to sign a written informed consent document. This process ensured that all participants were fully informed and had the opportunity to make an informed decision about their participation.

Pharmacists on the research team would review REDCap every 24-72 hours to identify newly enrolled subjects in need of follow-up. When discharged from the ED, each subject was assigned randomly to either intervention group (usual care+pharmacist intervention) or control group (usual care only) using the simple randomization technique performed in Microsoft Excel 2016.

Interventions

The subjects in the interventional group were contacted by a pharmacist via telephone between 48 – 96 hours after ED discharge to perform a medication reconciliation interview with the subject or the caregiver.

The aim of the interview was to gather information related to subject's medication regimens, including (1) whether the subject understood the purpose of their medications, (2) comprehended the discharge instructions given by ED physicians, (3) adhered to their medications, and (4) scheduled any necessary follow-up appointments with a PCP. Prior to calling the subject, the pharmacist would review the ED discharge summary/chart for each subject to determine the most current documented list of medications. The subject was then administered a standard script (e**Appendix D**) for data collection during the interview. If the pharmacist identified any discrepancies in the subject's medication regimen, or any other pertinent issues during the phone call, the information was documented in a standardized form and sent to the PCP via fax

(**eAppendix E**). In cases where the identified issues were deemed to be time-sensitive, the PCP was contacted immediately by phone.

Subjects who could not be contacted after 3 attempts within the 48-to-96-hour period were classified as "unable to contact." The diagram was provided to show the attrition of subjects after applying exclusion criteria and subject drop out (**Figure**).

Covariates

The variables collected during the interview included (1) knowledge of taking medications, (2) adherence to the medications, (3) barriers of access medications, and (4) confirmed follow-up appointment with PCP. Medication discrepancy was collected by comparing the list directly from the EHRs to medication reconciliation by the pharmacist via phone call.

The study collected information on various time-related aspect, including the (1) number of attempts, (2) the duration of record review to initiating contact, (3) the time taken for the pharmacist to make the 1st attempt, (4) the time of total subject contact (including all attempted calls), (5) the duration of the patient interview, (6) the time taken to document subject contact, and (7) the time required to follow-up with the subject's PCP.

The subject's demographic and clinical variables were extracted from the ED discharge summaries/charts. Demographic variables included age, gender, and race. Race was categorized as White, African American, and multiracial. Clinical variables included total number of medications and comorbidities. For clinical variables, we manually reviewed each subject's ED discharge summary/chart documented by the ED physicians and collected the comorbidities and medications from the chart.

Outcomes

The primary outcome was to evaluate the effectiveness of a pharmacist telephone intervention in reducing the incidence of unplanned hospital utilization within 30 days following discharge from the index ED visit. The unplanned hospital utilization was defined as a composite of unexpected ED visits and/or hospital admissions. To ensure accurate healthcare utilization counts, ED visits that led to hospitalizations were not included in the ED visit counts. Patient hospital records were reviewed 30 days after the index ED discharge to determine these data. Secondary outcome included ED revisits within 30 days after ED discharge.

eAppendix C

Enrollment screening questionnaire

Record ID	
Hospital medical record number	
Date of emergency department visit	
First name of subject	
Last name of subject	
Date of birth	
Gender	Male Female
What is the best telephone number for the pharmacist to call you?	
What is the best to call? The pharmacist may not always be able to call you at your best time.	Morning Afternoon Evening
What is the name of your primary care provider? (Name, location, numbers, etc)	
When is the last time you saw your primary care provider?	In the past 30 days In the past 3 months In the past 6 months In the past year More than a year ago I cannot remember

eAppendix D

Telephone Intervention Interview

Interview flow

Before phone call

- Review documented medications listed in electronic health record system.
- Review discharge report from the emergency department (ED).
- Identify chief complaint of visit.
- Determine primary care provider and pharmacy of subject if possible.

Order of questions

1. Determine the current health of a patient.
2. Determine status of follow up appointment with a primary care provider.
3. Determine medication status on the following items.
    a. Knowledge
    b. Adherence
    c. Discrepancies

Interview script/questions

1. Team member: Hello Mr/Ms. _____________. I am [caller's name], from the University at Buffalo School of Pharmacy research team. You may remember that when you were in the ED, you agreed to be part of our study about the medicines you are taking. A study assistant mentioned you'd receive a call checking in on things. I am hoping to talk to you about your medications and see how you are doing. Do you mind if I ask you a few questions so I can see if there is anything I can help you with? Is this a good time to talk? It will probably take about 20 minutes, depending on the number of medicines you are taking. **YES/NO**
    a. If **yes**, continue with questions.
    b. If **no**, is there a better time that I can call you back?

If subject answered **Yes** to question 1 proceed with the following questions

2. Why did you visit the ED on (Date of visit taken from hospital record)?
3. How do you feel now? (What do we do if they sound like they are ready to go back to the ED?)

4. Have you scheduled a follow-up visit with your primary care provider? (Yes/No)
    a. If **yes**, confirm date and name of provider and move onto question 5.
    b. If **no**, ask if they have a primary care provider (PCP)?
        i. If **yes**, encourage making a follow-up appointment.
        ii. If **no**, provide information on contacting a PCP or hospital social worker.
5. Were you given any prescriptions from the provider in the ED? (Yes/No)
    a. If answered **yes**. "The primary purpose of this call is to go over the medications you are currently taking. Do you have your medications in front of you right now or a list of medications with you to make this process go smoother?
        i. If **yes**, begin medication reconciliation section.
        ii. If **no**, ask to collect them or schedule a time to call back when they have their medications.
        iii. If they do not have any medications, ask if there are barriers to access. (Subjects should have at least 8 medications per inclusion/exclusion criteria)
6. Have you picked up the prescription(s) prescribed to you in the ED? (Yes/No)
    a. If **no**, "What barriers are keeping you from getting your medication?"
    b. If issues with access, provide information for how to access medications, social services referral.

Medication reconciliation section

7. I'm going to ask you some questions about your medicine to see if there is anything I can help you with. I also want to make sure that the medications you have are the right ones. We will go through what you have one by one.
8. What is the medication name? (Insert name in data collection form)
    a. What do you take (medication name) for?
    b. How were you told to take (medication name)?
    c. What were you told to expect when taking (medication name)?
9. Ask the subject, are there any over-the-counter medications, herbal supplements, or nutraceuticals you are taking but have not mentioned?
10. Compare this to the information in the hospital electronic health record. Note any differences.

11. Drug related problems may fall into one of the following categories.
    a. Adherence (identify barriers to access, difficulty taking, financial, etc)
    b. Consistency (drugs in hospital electronic health record do not match with patient record)
    c. Drug-drug interaction
    d. Drug-disease interaction
12. Thank you for your time. We will contact your primary care provider to let them know that we spoke. We will provide your PCP with the list of medications you have given me and let them know about any problems we identified.
    a. Confirm the date and time of the subjects follow up appointment.
13. Take care and have a nice day.

eAppendix E

DATE:

Dear Dr,

Upon telephone medication reconciliation conversation with **Patient Name (DOB),** who was discharged from ECMC Emergency Department on **Date** and has consented to participating in the research study, **Evaluation of Health Outcomes Associated with a Pharmacist's Telephone Intervention in Transitions of Care in an Underserved Population,** I have identified a concern that warrants your attention. This phone call to the patient is the intervention in the study. Also attached to this fax is an updated list of medications based on this phone call.

Please consider discussing these concerns with your patient.

Thank you,

IMPORTANT: This facsimile transmission contains confidential information, some or all of which may be protected health information as defined by the federal Health Insurance Portability & Accountability Act (HIPAA) Privacy Rule. This transmission is intended for the exclusive use of the individual or entity to whom it is addressed and may contain information that is proprietary, privileged, confidential and/or exempt from disclosure under applicable law. If you are not the intended recipient (or an employee or agent responsible for delivering this facsimile transmission to the intended recipient), you are hereby notified that any disclosure, dissemination, distribution or copying of this information is strictly prohibited and may be subject to legal restriction or sanction. Please notify the sender by telephone (number listed above) to arrange the return or destruction of the information and all copies.

eAppendix F

eAppendix Table 2. Demographic characteristics of participants						
	Main analysis			**Secondary analysis**		
	Case group (n=45)	Control group (n=45)	P-value	Case group (n=26)	Control group (n=45)	P-value
Age (y), median (IQR)	60 (52, 66)	59 (54, 68)	0.73	59.5 (52, 67)	59 (54, 68)	0.86
Sex (%)			0.20			0.24
Male	16 (35.6)	22 (48.9)		9 (34.6)	22 (48.9)	
Female	29 (64.4)	23 (51.1)		17 (65.4)	23 (51.1)	
Race (%)			0.30			0.29
White	15 (33.3)	17 (37.8)		10 (38.5)	17 (37.8)	
Black	29 (64.4)	24 (53.3)		16 (61.5)	24 (53.3)	
Other	1 (2.2)	4 (8.9)		-	4 (8.9)	
No. of comorbidities, median (IQR)	6 (5, 8)	5 (4, 7)	0.11	6.5 (5, 8)	5 (4, 7)	**0.02**
No. of medications, median (IQR)	13 (11, 16)	12 (10, 14)	0.08	14 (12, 17)	12 (10, 14)	**0.02**
Abbreviation: IQR, interquartile range; ED, emergency department						

eAppendix Table 3: Intervention Type	**Number of Incidents**
General counseling/monitoring	13
Patient advised to follow-up with primary care provider	9
Discrepancy in updated medication list	5
Current medication regimen ineffective	5
Non-adherence/adherence counseling	4
Missing medication/device or medications not received post-discharge	3
Adverse event(s)	3
Medication access	3
Referral to specialist	2
Refills	2
Allergy	1