The Discharge Assistant: Facilitating Information Transfer at Hospital Discharge

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Adverse events are common when patients transition from hospital to outpatient care¹

- 19-23% of patients experience adverse events within 4 weeks after acute care hospitalization
- Ineffective communication contributed to many of the preventable adverse events
- Discharge communication should include specific information:
 - The new discharge medication regimen
 - What follow-up physicians need to do
 - When they need to do it
 - What they should watch for
 - And more effort must be made to effectively communicate this information to the patient

1. Forster AJ, et al. The incidence and severity of adverse events affecting patients after discharge from the hospital, Ann Intern Med. 3 (2003) 161-167.

Miscommunication about Medications is a Common Cause of Many Adverse Events

66% of adverse events identified by Forster, et al. were adverse drug events¹

Following hospital discharge²:

- 64% of elderly patients have at least one medicine not ordered by the discharging physician
- 73% of patients fail to use at least one medicine as directed
- 32% of drugs ordered at discharge are not used by the patient

Integration of admission medications, in-hospital changes, and discharge medications on a single form increases the conformity rates of community pharmacy patient profiles after hospitalization³

1. Forster AJ, et al. The incidence and severity of adverse events affecting patients after discharge from the hospital, Ann Intern Med. 3 (2003) 161-167.

2. Beers MH, et al. Compliance with medication orders among the elderly after hospital discharge, Hosp Formul. 7 (1992) 720-724.

3. Paguette-Lamontagne, et al. Evaluation of a new integrated discharge prescription form. Ann Pharmacother 2001;35(7-8):953-8.

The most common form of information transfer is the structured discharge summary^{1,2}

Information is not received in a timely fashion...

- arrive, on average, 2-4 weeks after hospital discharge
- 66-92% of patients visit their outpatient physicians before complete discharge information is available
- Between 16 and 53% of patients contact their outpatient physician before arrival of any discharge information

...and for **51%** of patients, the discharge summary is *never sent* to the follow-up physician

When discharge communication is delayed or insufficiently detailed, post-discharge management is adversely affected for 10-14% of patients

Kripalani S., et al. Deficits in information transfer from inpatient to outpatient physicians at hospital discharge: a systematic review [abstract], *J Gen Intern Med.* 19 (2004) (suppl 1) 135.
 van Walraven C, et al. Dissemination of discharge summaries. Not reaching follow-up physicians, *Can Fam Physician.* 48 (2002) 737-742.

Immediate Discharge Documents¹

Facilitated timely communication...

60% were received within 5 days

...but information was often incomplete

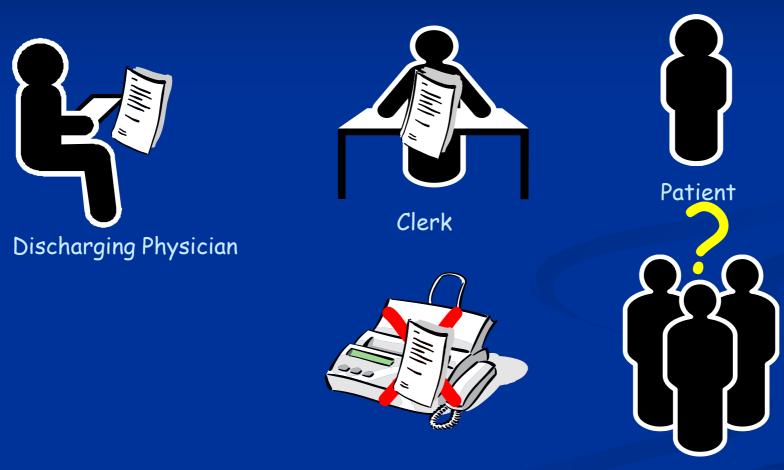
- 13% omitted a main diagnosis or condition
- Only 28% had clear F/U plans
- Only 12% stated whether further test results were pending
- 41% specified who to contact if further information was needed

and the signature was legible in only 39%

1. Foster DS, Paterson C, Fairfield G. Evaluation of immediate discharge documents – room for improvment? Scott Med J. 2002;47(4):77-9.

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The Challenge

Use an evidence-based approach to redesign our current process to facilitate information transfer between providers at the time of hospital discharge in a more reliable, legible, complete, and timely fashion

Application Requirements

- immediate utility,
- minimal development and deployment costs,
- acceptable to users and readily modifiable based on user feedback,
- support quality and educational assessment audits, and
- might assist in the identification of additional functions and features desirable in this and other discharge software applications.

Design Specifications

Creation of legible documents including:

- Prescriptions for medications, diet, activity, and self-care behaviors
- Instructions for patients about followup diagnostic tests and appointments, including dates and addresses
- Correspondence to outpatient physicians which would contain all pertinent information necessary for follow-up care

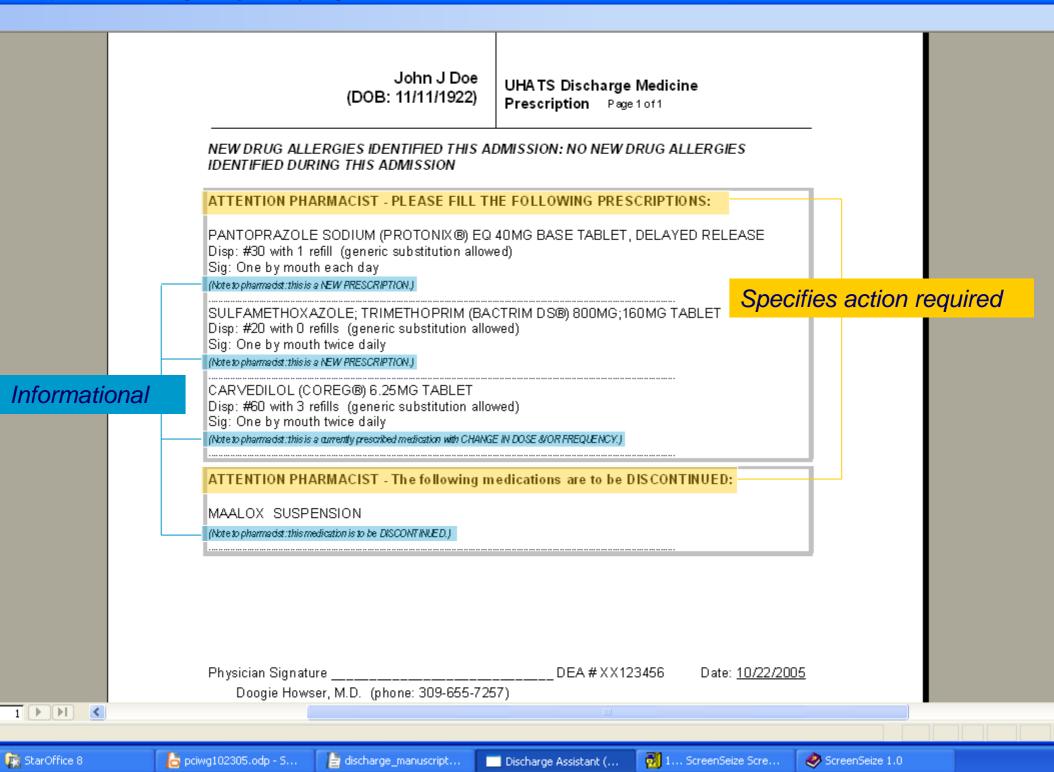
Use of prompts and basic error checks to improve the completeness and quality of the documents

Emphasize speed of data entry and ease of use by:

- Minimizing text entry by making extensive use of drop-down menus, option boxes and check boxes
- Designing logically presented screens which conformed as much as possible to currently used forms and workflow patterns
- Designing search algorithms which would allow flexible yet efficient lookups.

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G. Stephen Nace, M.D.

Arristant Professor of Chnical Medicine

Department of Medicine Saint Francis Medical Center 530 N.E. Glen Oak Avenue Peoria, Illinois 61637-3001

0 ctober 22, 2005

Sara L. Rusch,MD 530 NEGle∎ Oak Ave Peorta,IL 61637

Re: John J Doe (DO B: 11/11/1922)

Dear Dr. Rusch:

Your patient John J Doe was admitted to OSF Saint Francis Medical Center on 10/14/2005, and was discharged from the University Hospitalist and Teaching Service on 10/21/2005. The following is a brefs unmary of the primary diagnoses, medibation changes, and discharge instructions pertinent to this lospitalization:

DISCHARGE DIAG NOS ES :

Chestpali, inspec. (18550) Hyperlip kiem la NOS (2724) Hypertension, benkgn (4011)

NEW MEDICATION ALLERGIES IDENTIFIED THIS ADMISSION: NO NEW DRUG ALLERGIES IDENTIFIED DURING THIS ADMISSION

DISCHARGE MEDICATIONS:

NEW Medications

PANTOP RAZOLE SO DIUM (PROTONIXOD) eq 40 mg base tablet, delayed re lease One by monthieach day Disp:#30 with 1 refill (generics ubstitution albwed) SULFAMETHOXAZOLE; TRIMETHOP RIM (SACTRIM DSOD) 800 mg;160 mg tablet One by monthi twibe daily Disp:#20 with 0 refills (generic substitution allowed)

Previous medications with CHANGES IN DOSE & JOR FREQUENCY CARVEDILOL (COREGOD) 6.25 mg tablet One by month twice daily Disp:#60 with 3 refils (generic substitution allowed)

DISCONTINUED medications

MAALOX suspension

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OSF Saint Francis Medical Center - Peoria

Date of Discharge: 10/21/2005

Instructions and Appointments for John J Doe (DOB: 11/11/1922)

INSTRUCTIONS:

Diet: low fat. Use home oxygen at 2 liters per min continually. NEVER USE OXYGEN NEAR AN OPEN FLAME. Return to work in one week

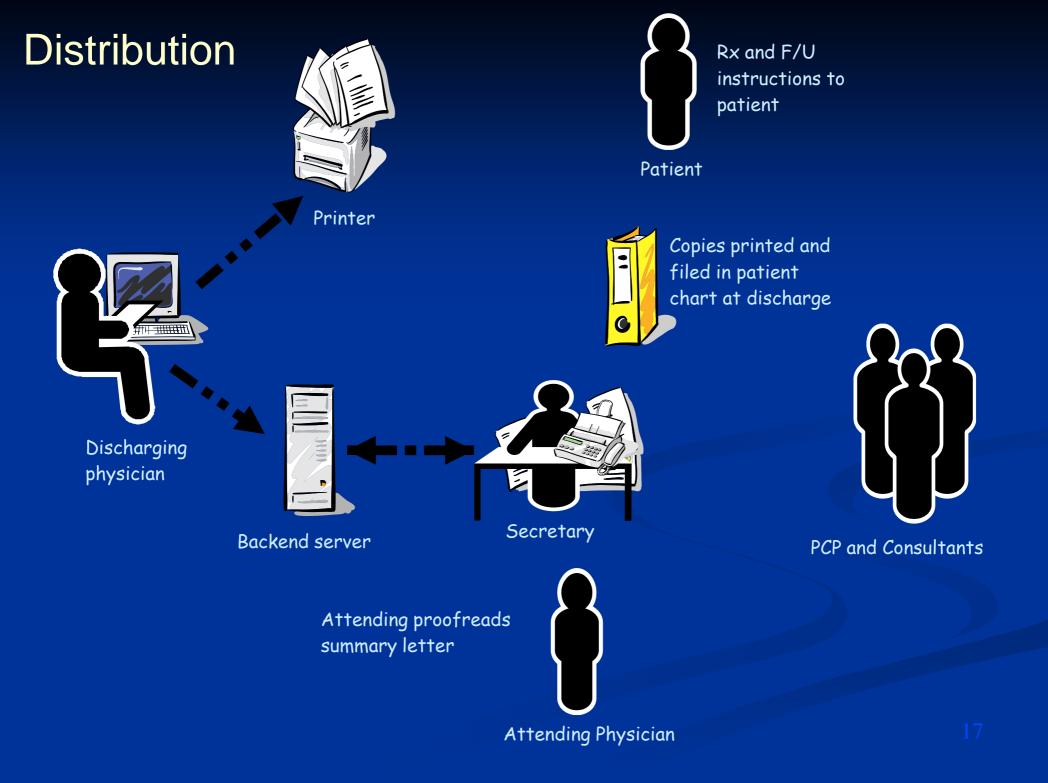
FOLLOW-UP APPOINTMENTS:

When: 2 weeks (is to be scheduled by patient) Sara Rusch MD OSF Saint Francis Medical Center 530 NE Glen Oak Ave Peoria, IL 61637 (309)655-2730

FOLLOW-UP STUDIES:

BLOOD WORK 2 weeks at outpatient physician's office (is to be scheduled by patient)

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Time Study – Initial Results

- Discharges N = 358
- Population [mean (ranges)]:
 - LOS = 5.1 days (1, 58)
 - # of diagnoses = 7.6 (1, 25)
 - # of medication directions[^] = 9.8 (1, 34)
 - words of free text entered = 99 (0, 592)
- Users N = 25
 - 23 residents, 2 attendings
- Median time per discharge = 36 minutes (9, 209)

* Includes new rx's, changes in existing medications, medications from before admission which are to be continued without change, and discontinued medications

What Have We Learned So Far?

- The new process results in information transfer which is: More reliable,
 - More legible,
 - More timely, and
 - More complete.
- Referring physicians like the new process.
- Output is helpful to have with early re-admissions.
- Discharging residents are mixed in their reviews:
 Major complaint is that it takes too much time...

...but they like it when they are on the receiving end

Vision

- Alternate reference databases (e.g., SNOMED, NDC)
- Alternate distribution mechanism (fax server +/- secure email)
- Incentives for use (e.g., substitute for a dictated summary)
- Web-based platform
- Integration with EHR
- Incorporation within EHR

Acknowledgements

- James F. Graumlich, M.D.
- Nancy Novotny, R.N., M.S.N.
- Jean Aldag, Ph.D.
- Howard S. Cohen, M.D.
- **John Whittington, M.D.**
- Sara L. Rusch, M.D.
- **OSF-Saint Francis Medical Center, Peoria, Illinois**

This project was supported by grant number 5 R01 HS015084 from the Agency for Healthcare Research and Quality.