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Toronto General Hospital Toronto Western Hospital Princess Margaret Hospital

Development of an Electronic Tool to Facilitate Medication Reconciliation and Improve Prescribing Practices

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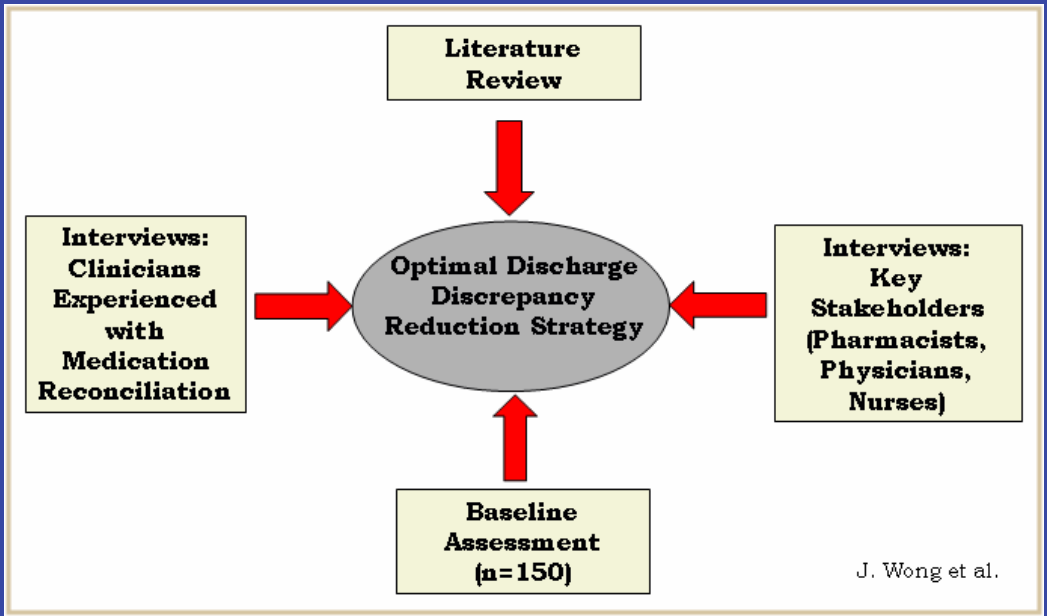
Project Objectives

- To develop a web-based tool that integrates the hospital's electronic patient record (EPR) and facilitates medication reconciliation

- To develop a process to guide clinicians through the medication information transfer process, and help prevent discrepancies by improving prescribing practices

Methods

- A multidisciplinary team conducted a literature review, needs assessment and a baseline measurement of prescription discrepancies.
- The Electronic Medication Information Transfer Tool (EMITT) was built internally by developers in the hospital's information technology department.



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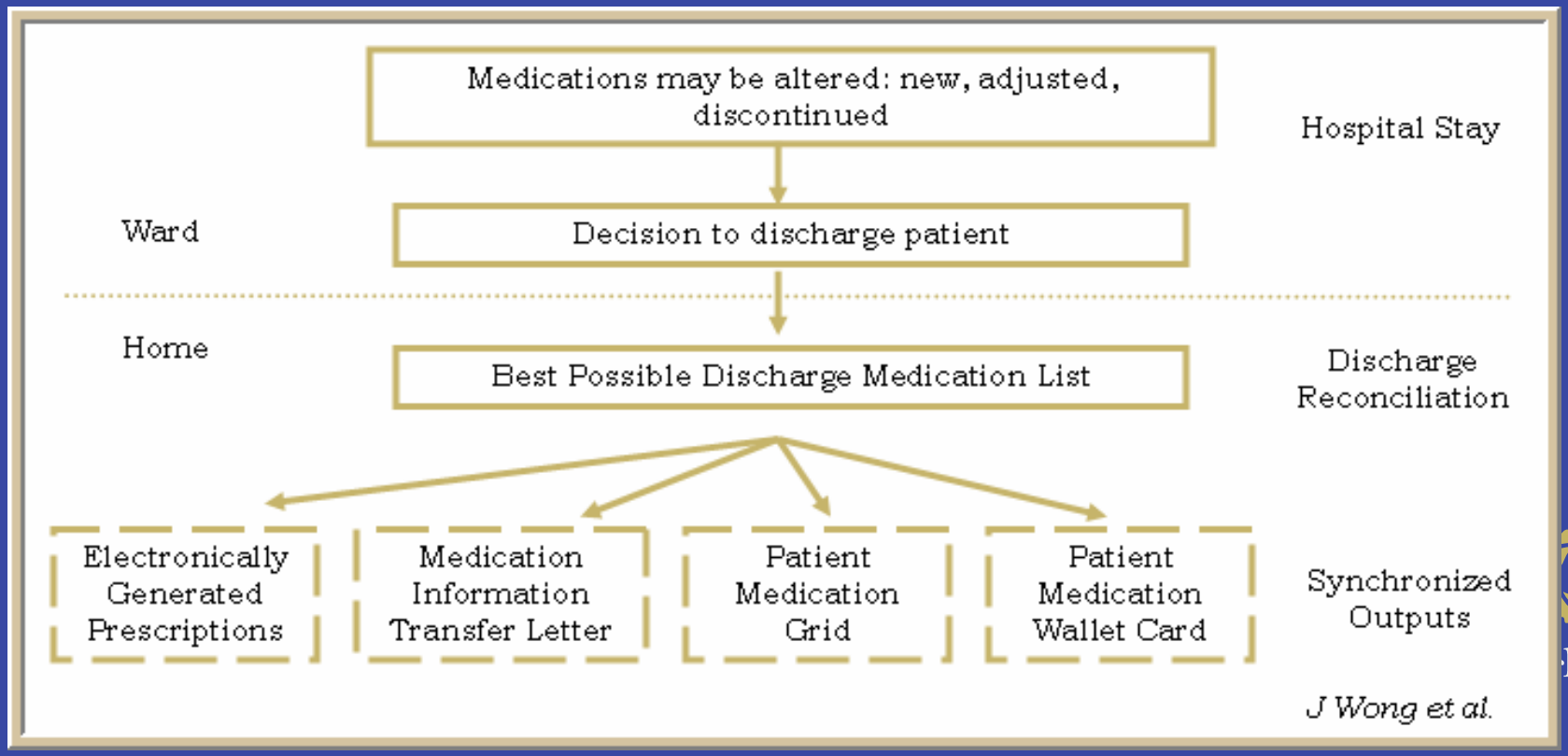
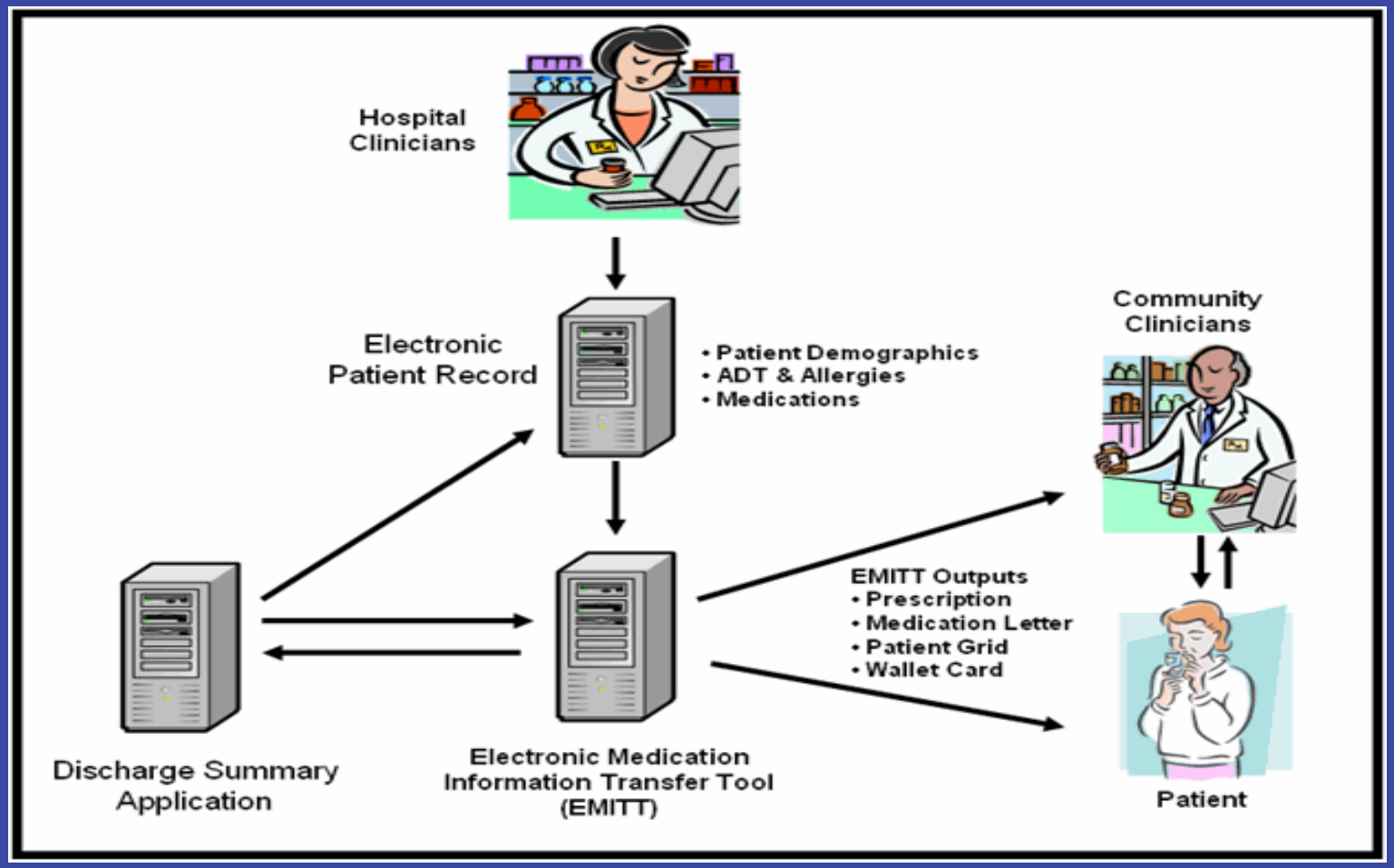
Results

- EMITT facilitates the collection and reconciliation of medication information from admission to discharge.
- It also allows for the coding and the documentation of medication discrepancies.



Results – System Design



Innovative Features

- Medications are automatically populated by the hospital's EPR to eliminate the duplication of documentation
- Medications auto-align themselves by name for easy comparison and reconciliation
- The application follows the Institute for Safer Medication Practices guidelines and eliminates unsafe abbreviations
- EMITT is integrated with the hospital's Online Discharge Summary application
- EMITT automatically uses the best discharge medication list to generate synchronized outputs:
    - Electronically generated prescription
    - Medication Letter
    - Patient Grid
    - Medication List and Wallet Card

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Benefits of an Electronic Tool

- Communicates patient's complete medication regimen to community clinicians post discharge
- Ability to leverage real-time data captured in the EPR
- Guides clinicians through the medication reconciliation process
- Eliminates the need for duplicate documentation
- Capability to generate reports and identify potential safety issues
- Addresses areas of potential prescription discrepancies upon discharge
    - Quantity and repeat fields are mandatory for prescription medications
    - Electronically generated prescription is clear and legible
    - Flags clinicians to write Limited Use (LU) codes on prescription

Screen Capture – Admission Reconciliation

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Medication Reconciliation

Close medication reconciliation
Logged in as Kelly Costa Lane. Context-help is ON Change font size +/-

Date: 16-May-2007
DOB: 23-Jul-1976
Visit number: 261000820

Wonder Woman
MRN: 7003728

Referring physician: Generic,Moe PhysicianThree
Family physician:
Attending physician: Generic,Physician Moe

Save all

Allergies and BPMH | Admission Reconciliation | Discharge Medications | Medication Letter | Patient Grid | Discharge Reconciliation | Prescription

Print Admit Reconciliation | Audit Trail | Sign Off Reconciliation

Admission Medication Reconciliation:

Admission Reconciliation HAS NOT been signed off.

Last Updated By:

Date Completed: 16-May-2007

Time from Ward Admission to Reconciliation: 45 mins

Safer Health Care Now Codes
Type 0 - No Discrepancy
Type 1 - Documented Intentional Discrepancy
Type 2 - Undocumented Intentional Discrepancy
Type 3 - Unintentional Discrepancy

Admission Medications: Load medications from Misys

BPMH Before Admission	Reconciliation Options	Admission Medications	Discrepancy	Intended	Documented	SHCN Discrep. Code	UHN Discrep. Code	Resolved	Description of Discrepancy	
Ramipril 2.5 mg PO Daily	Continue	Ramipril 2.5 mg PO Daily	☐	☐	☐			☐		Delete
Atorvastatin 80 mg PO Daily at bedtime	Stopped		☐	☐	☐			☐		Delete
Bisoprolol 10 mg PO Daily	Adjusted	Bisoprolol 5 mg PO Daily	☑	☐	☐	Type 3	C1	☐	Patient previously on 10 mg at home.	Delete
Clopidrogrel 75 mg PO Daily	On Hold		☑	☑	☐	Type 2	G1	☐	Medication put on hold by team.	Delete
BPMH Before Admission	Reconciliation Options	Admission Medications	Discrepancy	Intended	Documented	SHCN Discrep. Code	UHN Discrep. Code	Resolved	Description of Discrepancy	

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Screen Capture – Discharge Medications

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Medication Reconciliation

Close medication reconciliation
Logged in as Kelly Costa Lane. Context-help is ON Change font size +/-

Date: 16-May-2007
DOB: 23-Jul-1976
Visit number: 261000820

Wonder Woman
MRN: 7003728

Referring physician: Generic,Moe PhysicianThree
Family physician:
Attending physician: Generic,Physician Moe

Save all

Allergies and BPMH | Admission Reconciliation | Discharge Medications | Medication Letter | Patient Grid | Discharge Reconciliation | Prescription

Print Discharge Meds | Audit Trail | Sign Off Discharge Meds

Discharge Medications:

Discharge Medications HAVE NOT been signed off.

Last Updated By:

Date Completed:

Best Possible Discharge Medications List: (Use generic names) Load medications from Misys

BPMH Before Admission	Reconciliation Options	Discharge Medication	Dose	Route	Frequency	Suggested Rx	LU	MD to Clarify	Prescription Comments	
Ramipril 2.5 mg PO Daily	Adjusted	Ramipril	5 mg	PO	Daily	☑	☐		Take with Food	Delete
Atorvastatin 80 mg PO Daily at bedtime	Continue	Atorvastatin	80 mg	PO	Daily	☐	☐			Delete
Bisoprolol 10 mg PO Daily	Continue	Bisoprolol	10 mg	PO	Daily	☐	☐			Delete
Clopidrogrel 75 mg PO Daily	Stopped					☐	☐			Delete
-	New	Acetylsalicylic Acid	81 mg	PO	Daily	☑	☐			Delete
BPMH Before Admission	Reconciliation Options	Discharge Medication	Dose	Route	Frequency	Suggested Rx	LU	MD to Clarify	Prescription Comments	

[Add Additional Discharge Medication]

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Screen Capture – Electronic Prescription

[OFFICIAL COPY]

Toronto General Hospital
200 Elizabeth St.
Toronto, ON
M5G 2C4
(416) 340-4800

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Toronto General Hospital Toronto Western Hospital Princess Margaret Hospital

Date: **May 16, 2007**
Patient Name: **Woman, Wonder**
Patient Address: **123 Some Street**
WINDSOR, ON
N9H 2H2
Patient Phone Number:

PRESCRIPTIONS TO BE DISPENSED

Medication:	Dose:	Route:	Frequency:	Quantity:	Repeats:
Acetylsalicylic Acid	81 mg	PO	Daily	30 Days	0
Ramirpril	5 mg	PO	Daily	14 days	0

Comment: Take with food.

Physician: Dr. Physician Moe Generic
CPSO Number: _____
Physician Phone Number: _____
Physician Signature: _____
Please contact family physician for repeats.

Summary of Medication Allergies:

- No Medication Allergies

Summary of Medication Changes Since Admission:

New Medications:

- Acetylsalicylic Acid
  81 mg PO Daily

Adjusted Medications:
(reflects updated frequency and/or dose)

- Ramirpril
  5 mg PO Daily

Stopped Medications:

- Clopidrogrel
  75 mg PO Daily

Medications to be Continued:

- Atorvastatin
  80 mg PO Daily
- Bisoprolol
  10 mg PO Daily

Inpatient Pharmacist helped to prepare this prescription.

Conclusions and Lessons Learned

- A thorough understanding of current practices is essential for developing an effective application that addresses medication information transfer issues.
- The ability to leverage information currently stored in the EPR may improve the accuracy and quality of the data being used to reconcile medications.
- It is anticipated that this electronic framework can be easily adopted at other healthcare organizations.
- Multi-disciplinary engagement is necessary throughout the entire design and development of the application.
- The ability to leverage information for the electronic patient record is only beneficial if the information is real-time and changes as the patient's care is modified.

Contact Information and References

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Wong J, Fernandes O, Bajcar J, Alibhai S, Wong G, Cesta A, Ong S, Huh J, Nagge J, Gomes K, Tripp T. Evaluation of Prescription Medication Discrepancies at Hospital Discharge. [Abstract] *Pharmacotherapy* 2006 ;26 : 76

Wong J, Fernandes O, Bajcar J, Alibhai S, Gomes K, Tripp T, Wong G, Cesta A, Ong S, Huh J, Nagge J. Development of a Structured, Integrated Medication Reconciliation Strategy from Hospital Admission to Discharge. [Abstract] *Pharmacotherapy* 2006 ;26 : 106

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