Discharge Medication Reconciliation
Agenda

- Problem Identification / Importance
- Baseline Workflow
- Baseline Data
- Objectives
- Solution Selection
- Interventions
- End-User Involvement
- Revised Workflow
- Solution Details
- Effect of Interventions on Data
- Post-Implementation Adherence Data
- Post-Implementation Outcome Data
- Return on Investment
Data from across Ontario and within CAMH has shown that discharge from mental health diagnosis inpatient stays is difficult for people with mental health issues; high rates of readmission is indicative of this problem.

Evidence and data examined to determine factors related to discharge that have the greatest impact on readmission for a mental health population, and a multi-pronged project was designed to implement initiatives to address them at CAMH:

- Better patient education at discharge
- More timely completion and distribution of discharge summaries
- Improved patient safety and medication adherence through better medication reconciliation and associated practices
- Booking follow up appointments for better continuity
Problem Identification

- Discharge best practices include medication reconciliation and communicating medication clearly to patients and their outpatient providers
- CAMH’s Medication Reconciliation rate at Discharge was lower than best practice standards
- Feedback from patients via patient experience surveys demonstrated that they found CAMH’s medication information unclear

Why is this Important?

- Medication non-adherence is a major reason for readmission in patients with mental illnesses
- Transitions in care are risk periods for unintentional medication discrepancies
- Reduction of avoidable readmissions reduces system burden and improved patient treatment
Baseline Workflow

Discharge Planning Throughout Admission (Social Worker & Team) → Patient Ready for Discharge →

- Discharge Order (Physician)
- Medication Reconciliation (Physician)
- Outpatient Prescription Management (Physician, Pharmacist)
- Patient Medication Education (Pharmacist, Nurse)
- Client Summary Handout (Social Worker)

→ Patient Discharged
Discharge Summary – Previous State

**Your Medications:**

**New Medications**

- **ARIPiprazole (Abilify 2 mg oral tablet)**, See Instructions, 8 mg Oral qAM x 4 weeks
  **(Blistert pack)**

- **insulin glargine (insulin glargine (Lantus))**, See Instructions, 32 units S/C qAM x 2 weeks

- **Non Formulary Medication (Diabetes supplies)**, See Instructions, Please provide a glucometer, lancets, strips and needles for insulin x 4 weeks

  Then follow up with GP?

- **simGLIPltin (simGLIPltin 100 mg oral tablet)**, See Instructions, 100 mg Oral qAM x 2 weeks
  **(Blistert pack)**

**The following medications have been updated**

- Current: **atorvastatin (atorvastatin 20 mg oral tablet)**, See Instructions, 20 mg Oral qAM x 2 weeks
  **(Blistert pack)**

  STOP: **atorvastatin (atorvastatin 20 mg oral tablet)** 1 tab(s), Oral, once a day in the morning

  , Refills: 0

- Current: **candesartan (candesartan 4 mg oral tablet)**, See Instructions, 4 mg Oral, once a day (at dinner)
  x 2 weeks
  **(Blistert pack)**

  STOP: **candesartan (candesartan 4 mg oral tablet)** 1 tab(s), Oral, once a day at bedtime

  , Refills: 0

- Current: **metFORMIN (metFORMIN 500 mg oral tablet)**, See Instructions, 500 mg Oral TID with meals x 2 weeks
  **(Blistert pack)**

  STOP: **metFORMIN (metFORMIN 500 mg oral tablet)** 2 tab(s), Oral, 2 times a day, Refills: 0

**No Longer Take the Following Medications**

- **carbidopa-levodopa (carbidopa-levodopa 25 mg 250 mg oral tablet)** 1 tab(s), Oral, 5 times a day, Refills: 0

- **glipezide (glipezide 30 mg MR oral tablet)** 1 tab(s), Oral, 2 times a day with breakfast and dinner

  , do not crush or chew, Refills: 0

---

**Major Issues:**

- Medication information may not be accurate
  - Populated incorrect information if discharge medication reconciliation not completed or not completed correctly

- Excessive length of document made medication information difficult to find

- Medication information not in patient-friendly language
Baseline Data

<table>
<thead>
<tr>
<th>Year</th>
<th>Discharge Medication Reconciliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015 Q3</td>
<td>74.1%</td>
</tr>
<tr>
<td>2015 Q4</td>
<td>75.8%</td>
</tr>
<tr>
<td>2016 Q1</td>
<td>76.2%</td>
</tr>
<tr>
<td>2016 Q2</td>
<td>75.0%</td>
</tr>
</tbody>
</table>

Discharge Medication Reconciliation (Percentage)
Objectives

Streamline workflow processes to save clinician time and prevent errors

Multidisciplinary approach to discharge medication reconciliation

Improve rates of discharge medication reconciliation

Provide meaningful information about medication to patients upon discharge

Improve continuity of care and decrease readmission rates
Solution Selection

CAMH identified a method to increase Medication Reconciliation rates upon discharge.

Options reviewed and selected by Medication Reconciliation P&T Subcommittee members and Discharge Optimization Project Working Group members.

- Clinician familiarity
- Dynamic reporting
- Communication tools
- Existing change management
- Tracking and feedback
- Standardized practice
- Existing governance
- Standardized documentation

I-CARE
Interventions

- **Discharge Date On Electronic Whiteboards**
  - Estimated discharge date placed on electronic whiteboards and pharmacist electronic patient list; monthly reporting of data (May 2017)

- **Patient Oriented Discharge Summary (PODS)**
  - Pilot (Sept. 2017) and rollout of patient oriented discharge summaries (Nov. 2017)

- **Discharge Medication Reconciliation Alert**
  - Alert fired if Discharge Medication Reconciliation is not completed upon discharge (Mar. 2018)
** Advisory / Working Groups established as required**
End-User Involvement

**Integrated Health Record Committee**
- Chair: Pharmacist
- Representatives from pharmacy, physicians, nurses, IT education, medical informatics, health information management

**Medication Reconciliation P&T Subcommittee**
- Chair: Pharmacist
- Representatives from pharmacy, physicians, nurses, IT education, medical informatics, health information management

**Pharmacy & Therapeutics**
- Co-chairs: Appointed Physician and Dir. Pharmacy
- Owners and approvers of Med Rec Policies
- Includes a minimum of 6 physicians, 4 pharmacists

**Discharge Optimization Project**
- Senior Executive Sponsorship
- Included membership from clinical programs, Professional Practice, front line managers, social workers, pharmacists, physicians, nurses, patients, and families

**Design and Implementation**
- Initial approval of need
- Involves clinicians and other stakeholders

**Value Derived**
- Exclusive membership from clinical programs, Professional Practice, front line managers, social workers, pharmacists, physicians, nurses, patients, and families

**How Health IT was Used**
- Chair: Dir. Interprofessional Practice, Dir. Medical Informatics
- Includes clinicians and other stakeholders
- Initial approval of need
Revised Workflow

Patient ready for discharge

Physician initiates Discharge Order

Has physician completed discharge medication reconciliation?

Yes

Physician completes Powerform for customized medication grid to auto populate into PODS*

No

Alert pop-up that medication reconciliation is not complete*

Pharmacist completes Powerform for customized medication grid to auto populate into PODS*

Patient Oriented Discharge Summary (PODS) printed*

Patient discharged

Has physician completed discharge medication reconciliation?

Yes

Pharmacist completes Powerform for customized medication grid to auto populate into PODS*

No

Alert pop-up that medication reconciliation is not complete*

Estimated Discharge Date on pharmacist patient lists aids in coordinating discharge process*

New Health IT used within intervention *
Estimated Discharge Date on Electronic Whiteboards

<table>
<thead>
<tr>
<th>Entered by assigned clinician</th>
<th>Value Derived</th>
<th>How Health IT was Used</th>
<th>Design and Implementation</th>
<th>Local Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Estimated Discharge Date</th>
<th>Estimated Discharge Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>22/10/2018</td>
<td>03:00</td>
</tr>
</tbody>
</table>
# Estimated Discharge Date on Electronic Whiteboards

<table>
<thead>
<tr>
<th>BED</th>
<th>CLIENT</th>
<th>LOS</th>
<th>MRP</th>
<th>SW / SA</th>
<th>AX RESULTS</th>
<th>RISK FLAG</th>
<th>STATUS</th>
<th>PASSES</th>
<th>OBS</th>
<th>APPTS</th>
<th>ADT</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>ALEX H. (1100332)</td>
<td>8d</td>
<td>JR</td>
<td>TF / AC</td>
<td>Choking Alert</td>
<td>Vol</td>
<td>Indirect</td>
<td></td>
<td></td>
<td></td>
<td>Total LOS = 8 d</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>James Smith (348990)</td>
<td>364d</td>
<td>JR</td>
<td>AB / AC</td>
<td>SRA-High Falls: Yes Epipen No CPR</td>
<td>Vol</td>
<td>None</td>
<td>SR</td>
<td></td>
<td></td>
<td>EDD: 09/25/18</td>
<td>Total LOS = 364 d</td>
</tr>
<tr>
<td>101</td>
<td>C A (227398)</td>
<td>14d</td>
<td>JR</td>
<td>TF / RP</td>
<td>A&amp;C Epipen DAS = 7 Dyshyph: Yes</td>
<td>F33</td>
<td>None</td>
<td>MR</td>
<td>Yes</td>
<td></td>
<td>EDD: 10/14/18</td>
<td>Total LOS = 14 d</td>
</tr>
<tr>
<td>101</td>
<td>FIONA M. (234555)</td>
<td>2y 60d</td>
<td>KJ</td>
<td>AB / LX</td>
<td>D &amp; C Epipen DAS = none</td>
<td>F1 05/29</td>
<td>Escorted***</td>
<td>CO</td>
<td></td>
<td></td>
<td>F-ULOA</td>
<td>Primary Nurse: YP</td>
</tr>
<tr>
<td>101</td>
<td>B B (215555)</td>
<td>12d</td>
<td>KI</td>
<td>TF / AC</td>
<td>ETOH CAPI</td>
<td>F48 05/29</td>
<td>A***</td>
<td>PDP-MR</td>
<td>Yes</td>
<td></td>
<td>EDD: 10/12/18</td>
<td>Total LOS = 21 d</td>
</tr>
</tbody>
</table>

---

**Value Derived**

- **Local Problem**: How Health IT was Used
- **Design and Implementation**: Estimated Discharge Date on Electronic Whiteboards

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**Estimated Discharge Date**
## Estimated Discharge Date on Pharmacy Patient List

<table>
<thead>
<tr>
<th>Name</th>
<th>Admitted</th>
<th>Admitting Physician</th>
<th>Attending Physician</th>
<th>Primary Care Physician</th>
<th>Est Disch Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michelle Midtrey, MD, FRCP</td>
<td>05/07/2013 12:17</td>
<td>Andrew Lutig, MD, FRCP</td>
<td>Sony Fattas</td>
<td>20/07/2013 00:00 Est.</td>
<td></td>
</tr>
<tr>
<td>David Gratzer, MD, FRCP</td>
<td>11/07/2013 18:02</td>
<td>Alexander Cristian, MD, FRCP</td>
<td>Unable To Obtain</td>
<td>30/07/2013 00:00 Est.</td>
<td></td>
</tr>
<tr>
<td>Marvina Mammootty, MD, FRCP</td>
<td>12/07/2013 14:27</td>
<td>Andrew Lutig, MD, FRCP</td>
<td>Primary Care Provider</td>
<td>25/08/2013 00:00 Est.</td>
<td></td>
</tr>
<tr>
<td>Albert Wong, MD, FRCP</td>
<td>12/07/2013 18:42</td>
<td>Tamina Epan, MD, FRCP</td>
<td>Primary Care Provider</td>
<td>16/09/2013 00:00 Est.</td>
<td></td>
</tr>
<tr>
<td>Tamina Epan, MD, FRCP</td>
<td>12/07/2013 18:42</td>
<td>Primary Care Provider</td>
<td>16/09/2013 00:00 Est.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>David Gratzer, MD, FRCP</td>
<td>12/07/2013 22:39</td>
<td>Primary Care Provider</td>
<td>16/09/2013 00:00 Est.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yangping Zhou, MD, FRCP</td>
<td>06/08/2013 13:32</td>
<td>Shih Hsin, Physician - Psychiatrist</td>
<td>Maria del Junco</td>
<td>23/08/2013 00:00 Est.</td>
<td></td>
</tr>
<tr>
<td>Daniel De Jesus, MD</td>
<td>06/08/2013 20:29</td>
<td>Andrew Lutig, MD, FRCP</td>
<td>Suhil Vohra</td>
<td>23/08/2013 00:00 Est.</td>
<td></td>
</tr>
<tr>
<td>Richard Wong, MD, FRCP</td>
<td>07/08/2013 19:01</td>
<td>Shih Hsin, Physician - Psychiatrist</td>
<td>Raven - Joet Seeni, MD</td>
<td>23/08/2013 00:00 Est.</td>
<td></td>
</tr>
<tr>
<td>Rosslyn Byrne, MD</td>
<td>08/08/2013 00:00</td>
<td>Alexander Cristian, MD, FRCP</td>
<td>Jacqueline Shu Hong Choi, MD</td>
<td>23/08/2013 00:00 Est.</td>
<td></td>
</tr>
<tr>
<td>Alexander Cristian, MD, FRCP</td>
<td>08/08/2013 10:30</td>
<td>Primary Care Provider</td>
<td>23/08/2013 00:00 Est.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Karen Ng, MD, FRCP</td>
<td>11/08/2013 08:51</td>
<td>Shih Hsin, Physician - Psychiatrist</td>
<td>Unable To Obtain</td>
<td>24/08/2013 00:00 Est.</td>
<td></td>
</tr>
<tr>
<td>Justin Grase, MD, FRCP</td>
<td>12/09/2013 16:40</td>
<td>Shih Hsin, Physician - Psychiatrist</td>
<td>Edith Hui</td>
<td>31/08/2013 00:00 Est.</td>
<td></td>
</tr>
<tr>
<td>Debanjana Bhate, MD, FRCP</td>
<td>14/08/2013 15:09</td>
<td>Tamina Epan, MD, FRCP</td>
<td>Noah Aromun Vale</td>
<td>31/08/2013 00:00 Est.</td>
<td></td>
</tr>
<tr>
<td>Donna Kim, MD, FRCP</td>
<td>15/08/2013 10:13</td>
<td>Tamina Epan, MD, FRCP</td>
<td>Unable To Obtain</td>
<td>31/08/2013 00:00 Est.</td>
<td></td>
</tr>
<tr>
<td>Shilpa Ghat, MD, FRCP</td>
<td>16/08/2013 00:34</td>
<td>Shih Hsin, Physician - Psychiatrist</td>
<td>Christopher Prie</td>
<td>31/08/2013 00:00 Est.</td>
<td></td>
</tr>
</tbody>
</table>

*Patient information removed*
Patient Oriented Discharge Summaries

Patient-Oriented Discharge Summary (PODS)
Test Patient’s Care Guide

I came to CAMH on the 13 of June, 2017
I came in because I was feeling stressed.

Medications I need to take

Medications to be taken every day

<table>
<thead>
<tr>
<th>MEDICATION DETAILS</th>
<th>MORNING</th>
<th>MID-DAY</th>
<th>EVENING</th>
<th>BEDTIME</th>
<th>REASONS FOR TAKING NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epoxpresol</td>
<td>1 pill</td>
<td></td>
<td></td>
<td></td>
<td>Quit Smoking</td>
</tr>
</tbody>
</table>

Last updated on November 28, 2017 at 01:56 PM

NOTES:

Appointments I have to go to

GO SEE: MRI Clinic
FOR: MRI Scan
ON: Monday, January 01, 2018 at 12:00 PM
LOCATED: 140 Stokes St, Toronto
TEL: 416-535-8501

SPECIAL INSTRUCTIONS: Avoid wearing jewelry

NOTES:

How I might feel and what to do

Things to notice and plan for, including a crisis.

IF I WHAT TO DO REACH THEM
Notice I’m gaining weight Call my family doctor and make an appointment Dr. Sue; 416-318-2111
I am in crisis and need help now Call for an appointment to CAMH Emergency Department
Have suicidal ideation Call crisis support line right away 2011

NOTES:

My goals and community help to reach them

I WANT TO HOW REACH THEM NOTES

My supports after discharge

<table>
<thead>
<tr>
<th>SUPPORT NAME</th>
<th>WHO IS</th>
<th>REACH THEM</th>
<th>PERMISSION TO SHARE DOCUMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Doe</td>
<td>My Brother</td>
<td>416-515-202</td>
<td>Yes</td>
</tr>
</tbody>
</table>

My notes

Revised medications section
### Medications to be taken every day

<table>
<thead>
<tr>
<th>Name</th>
<th>Morning</th>
<th>Mid-Day</th>
<th>Evening</th>
<th>Bedtime</th>
<th>Reason For Taking / Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Olanzapine 5 mg tablet</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>To reduce symptoms of schizophrenia</td>
</tr>
<tr>
<td>(Take 1 tablet once each day)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Medication to be taken regularly but less often

<table>
<thead>
<tr>
<th>Name</th>
<th>Reason For Taking / Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depo-Provera (medroxyprogesterone) 150 mg injection every 3 months</td>
<td>For birth control&lt;br&gt;Last dose: July 5, 2017&lt;br&gt;Next dose due: Sept 27, 2017</td>
</tr>
</tbody>
</table>

### Medications to be taken only when needed

<table>
<thead>
<tr>
<th>Name</th>
<th>Reason For Taking / Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lorazepam 1 mg tablet every 4 hours (up to 3 tablets per day at most)</td>
<td>To reduce anxiety</td>
</tr>
</tbody>
</table>

---

**Option 1 – Discharge Med Rec + Pharmacy Form**

**Option 2 – Discharge Med Rec only**

**Option 3 – Incomplete Discharge Med Rec**

Please follow-up with your physician or pharmacist.
Discharge Medication Reconciliation Alert

Local Problem

Design and Implementation

How Health IT was Used

Value Derived

How Health IT was Used

Physician initiates discharge order

Select "Cancel"

Complete Discharge med rec

Select "Override"

Complete override reason form

Patient discharged

Override function
Effect of Interventions on Data

**Discharge Date on Electronic Whiteboards**
- Estimated discharge date placed on electronic whiteboards and pharmacist electronic patient list; monthly reporting of data (May 2017)
- Team able to better coordinate patient discharge planning (social workers, nurses, physicians, pharmacists)
- Pharmacists able to better track pending discharges remotely, since most pharmacists provide care on multiple units

**Patient Oriented Discharge Summary (PODS)**
- Pilot (Sept. 2017) and rollout of patient oriented discharge summaries (Nov. 2017)
- Patients able to better understand and ask questions about medications
- Tangible evidence of medication reconciliation in a patient-facing document

**Discharge Medication Reconciliation Alert**
- Alert fired if Discharge Medication Reconciliation is not completed upon discharge (Mar. 2018)
- Clinical decision support reminds physicians to complete medication reconciliation step early in the discharge process to enable medication information to populate into PODS
Post-Implementation Adherence Data

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>75.3%</td>
<td>92.8%</td>
</tr>
</tbody>
</table>

Discharge Medication Reconciliation (Percentage)
## Post-Implementation Outcome Data

<table>
<thead>
<tr>
<th>7-Day Readmission Rate</th>
<th>2015 Q3 – 2016 Q2</th>
<th>2017 Q3 – 2018 Q2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.12%</td>
<td>2.64%</td>
</tr>
</tbody>
</table>

### 7-Day Readmission Rate

![7-Day Readmission Rate Chart](chart.png)

- **Pre-implementation**: 2.6% (2015 Q3) to 3.7% (2016 Q3)
- **Post-implementation**: 2.1% (2018 Q1) to 1.9% (2018 Q2)
- **EDD PODS Alert**: 2015 Q3 – 2016 Q2
- **Value Derived**: 2015 Q3 – 2016 Q2, 2017 Q3 – 2018 Q2
From Jan 2018 – Aug 2018, patients discharged with a PODS and medication reconciliation completed have lower 7-day readmission rates than those without a PODS or medication reconciliation completed.
Post-Implementation Outcome Data

<table>
<thead>
<tr>
<th>30-Day Readmission Rate</th>
<th>2015 Q3 – 2016 Q2</th>
<th>2017 Q3 – 2018 Q2</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-Day Readmission Rate</td>
<td>9.82%</td>
<td>8.55%</td>
</tr>
</tbody>
</table>

30-Day Readmission Rate

![Graph showing the 30-Day Readmission Rate from 2015 Q3 to 2018 Q2 with Pre-implementation and Post-implementation periods highlighted.](image-url)
From Jan 2018 – Aug 2018, patients discharged with a PODS and medication reconciliation completed have lower 30-day readmission rates than those without a PODS or medication reconciliation completed.
Return on Investment

<table>
<thead>
<tr>
<th></th>
<th>Jun 2014 – May 2015</th>
<th>Apr 2017 – Mar 2018</th>
<th>Pre / Post intervention difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reconciliation rate</td>
<td>62.9%</td>
<td>88.8%</td>
<td>25.9%</td>
</tr>
<tr>
<td>Potential savings</td>
<td>$7 484 024</td>
<td>$9 280 512</td>
<td>$1 796 488</td>
</tr>
</tbody>
</table>

An increase in patients with medication reconciliation completed upon discharge can result in a decrease of adverse events after leaving CAMH.

(Reconciliated discharges * Cost of adverse event) = Potential savings**

**North York General Hospital winning Davies Submission. (2016)
Return on Investment

Reduce readmission rates for patients through improved continuity of care

Create a multidisciplinary approach to medication reconciliation

Adhere to best practice guidelines for the discharge process

Ensure that patients receive accurate medication information upon discharge
Lessons Learned

- Optimization of health IT can be used to support multidisciplinary care workflows.
- Inclusion of patients in health IT solution design can help improve documentation.
- Targeted physician alerts can be effective, even with override functions.
Thank You

camh