The Hospital as a Reachable Moment

Terry Horton, MD
Chief, Division of Addiction Medicine
Christian Care Health System
November 16, 2017
1. Project Engage

2. Addressing opioid withdrawal on the medical floor of a hospital provides a reachable moment to engage opioid use disordered patients

3. Christiana Care’s response

No Financial Disclosures
Project Engage

- Since 2008, 2000 patients/yr in the Inpt hospital, ED and outpt clinics
- Imbedded Peer counselor from local drug treatment program
- Bedside peer-to-peer intervention using Motivational Interviewing
- Partnering with a Social Worker for rapid discharge planning
Early data from project engage: a program to identify and transition medically hospitalized patients into addictions treatment
Anna Pecoraro, Terry Horton, Edward Ewen, Julie Becher, Patricia A Wright, Basha Silverman, Patty McGraw, and George E Woody

- N = 415 patients
- 180 (43%) were admitted for SUD treatment
- Significant reductions in inpt and Er utilization with concomitant savings (approx $3000/pt seen)

Addiction Science & Clinical Practice
Preliminary Results of the Project Engage Program Evaluation:
A BIFRT Program to Engage Medically Hospitalized Patients with Substance Use Disorders into Treatment

Terry Horton MD1, Anna Pecoraro PsyD2,3,4, Claudine Jurkovitz MD MPH1, Beverly Wilson MS1, Bailey Ingraham MS1, George Woody MD2,3

1. Background
- Patients with untreated substance use disorders (SUDs) often present to hospitals for treatment of substance-related medical problems and are associated with increased healthcare utilization.
- Project Engage (PE) is a bedside intervention using peer counselors to help facilitate referral to community-based SUDs specialty care and followup medical treatment.
- Peer counselors are screened, trained, and supervised by our partner, Brandywine Counseling and Community Service.
- Peer counselors employ early engagement strategies based on motivational interviewing and on sharing of community resources.
- Peer counselors are assisted by a team of social workers who are expert in community resources.
- PE was piloted at Christiana Care Health System, the region’s largest not-for-profit health care providers, serving the people of Delaware, Maryland, Pennsylvania and New Jersey in 2008.
- Patients are identified through AUDIT-PC2,5, positive single drug use question, or clinical suspicion.
- PE was piloted on the medical floors of Wilmington Hospital and Christiana Hospital in 2012.
- Results from a pre-post analysis in 25 patients using Medicaid over a 12 month period in 2010 showed:
  - 56% ($86,422 decrease in inpatient medical admissions
  - 13% ($3,308) decrease in emergency department visits
  - 32% ($18,119) decrease in behavioral health/substance abuse admissions
  - 32% ($963) increase in outpatient behavioral health/substance abuse visits
  - Overall decrease of $86,886 (Pecoraro et al. 2012)

2. Program Evaluation Methods
Objective
- To assess the efficacy of program Engage on:
  - Post discharge SUD treatment engagement
  - Self-reported treatment engagement and substance use at 6 month followup

Hypothesis: 30% of patients seen by PE would engage in post-discharge treatment; and those who did would have less substance use at six-month follow-up.

Study Setting
- Christiana Care Health System
- A large Mid-Atlantic health care system with two hospitals

Study population
- Patients hospitalized for medical reasons at Christiana or Wilmington Hospitals who had a SUD and
- were seen by Project Engage Peer Counselors between 5/2012-7/2015
- Accepted SUD treatment
- Provided research informed consent for a baseline and 6 months followup interviews
- Patients were given a $20 gift card to complete the 6 months followup interview

Study Design
- Prospective observational study with pre/post evaluation at 6 months followup
- Baseline questionnaires included ASI-Lite, DSM-IV SUD Checklist, CES-D
- Follow-up questionnaires included ASI-Lite and CES-D
- Demographic and clinical data were extracted from the Electronic Medical Record

Statistical Analysis
- Participants were included in the statistical analyses if they met DSM-IV diagnostic criteria for alcohol and/or drug dependence and reported recent (past 30 days) use of the substance(s) upon which they were dependent at baseline
- Non-parametric methods were used to calculate p values and 95% confidence intervals (CI).

3. Results
- A total of 319 patients enrolled in the study
  - Of 319 participants
    - 222 completed follow-up
    - 192 were dependent on alcohol and/or drug with recent use (past 30 days) at baseline
    - Characteristics at baseline (n=192)
      - Mean age was 43 (SD=11) years
      - 65% were male, 77% Caucasian, 3% Hispanic
      - 71% had Medicaid/Medicare
      - 91% scored >16 on the CES-D
      - 37% had >4 comorbidities
      - 5% were homeless
      - 53% (n=102) were dependent on alcohol only; 32% (n=61) drugs only, and 15% (n=29), both

- Statistical Analysis of Baseline and Follow up (n=102)
  - For patients with drug only or drug and alcohol dependent patients reported no alcohol use at 6 months.
  - 37% (n=37) were homeless
  - 91% (n=91) were Caucasian, 3% Hispanic
  - 71% (n=71) had Medicaid/Medicare
  - 91% (n=91) scored >16 on the CES-D
  - 37% (n=37) had >4 comorbidities

- Table 1. Difference in number of days of use between baseline and FU

<table>
<thead>
<tr>
<th>Patients with alcohol dependence</th>
<th>Patients with drugs dependence or both drugs/alcohol</th>
</tr>
</thead>
<tbody>
<tr>
<td>-15 (-20,-10) p&lt;0.0001*</td>
<td>-14 (-17,-9) p&lt;0.0001*</td>
</tr>
</tbody>
</table>

- * Wilcoxon signed-rank test
- 65% of alcohol dependent patients reported no alcohol use at 6 months
- 68% of drug only or drug and alcohol dependent patients reported no alcohol use at 6 months

- Figure 1: Patients who went to SUD treatment at discharge and are still in treatment at 6 months followup (n=192)
- Figure 2: Alcohol only dependent patients who went to SUD treatment at discharge and are still in treatment 6 months followup (n=102)

4. Conclusions
Conclusions
- PE patients who attended post-discharge SUD treatment seemed to have enduring benefits in SUD Treatment engagement, as well as reduced substance use at followup.
- PE is a potentially effective addition to existing hospital services.

Limitations
- Conducted in a single healthcare system.
- Further research such as a multi-center randomized clinical trial may be needed to validate these results.

Related Citations


Contact Information:
Terry Horton, MD, thorton@christianacare.org
Anna Pecoraro, PsyD, pecoraro.a@christianacare.org
George Woody, MD, woodyg@mail.med.upenn.edu

Accepted SUD treatment and followup interviews
- 60% (n=222) were in treatment at 6 months
- 80% (n=192) were still in treatment at 6 months followup
- 20% (n=37) were homeless
- 91% (n=91) were Caucasian, 3% Hispanic
- 71% (n=71) had Medicaid/Medicare
- 91% (n=91) scored >16 on the CES-D
- 37% (n=37) had >4 comorbidities

- Figure 2. Alcohol only dependent patients who went to SUD treatment at discharge and are still in treatment 6 months followup (n=102)
Program Evaluation

- A total of 319 patients enrolled in the study
  - Of 319 participants
    - 222 completed follow-up
    - 192 were dependent on alcohol and/or drug with recent use (past 30 days) at baseline

- Characteristics at baseline (n=192)
  - Mean age was 43 (SD=11) years
  - 60% were male, 77% Caucasian, 3% Hispanic
  - 73% had Medicaid/Medicare
  - 91% scored ≥16 on the CES-D
  - 37% had >4 medical comorbidities
  - 5% were homeless
  - 53% (n=102) were dependent on alcohol only; 32% (n=61) drugs only, and 15% (n=29), both.
Figure 1. Patients who went to SUD treatment at discharge and are still in treatment at 6 months follow-up (n=192)

\[ p = 0.0182 \]

Horton, CPDD 2017
### Program Evaluation

**Difference in number of days of use between baseline and FU**

<table>
<thead>
<tr>
<th></th>
<th>Patients with alcohol dependence</th>
<th>Patients with drugs dependence or both drugs/alcohol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difference in number of days of use between baseline and 6 months FU, median (95% CI)</td>
<td>-15 (-20, -10) p&lt;0.0001*</td>
<td>-14 (-17, -9) p&lt;0.0001*</td>
</tr>
</tbody>
</table>

* Wilcoxon signed-rank test

- **65%** of alcohol dependent patients reported no alcohol use at 6 months
- **60%** of drug only or drug and alcohol dependent patients reported no alcohol use at 6 months

Horton, CPDD 2017
Conclusions

• PE patients who attended post-discharge SUD treatment seemed to have **enduring benefits** in SUD treatment engagement, as well as reduced substance use at follow-up.

• PE is a potentially effective addition to existing hospital services.

Limitations

• Conducted in a single healthcare system.

• Further research such as a multi-center randomized clinical trial may be needed to validate these results.
National Death Rate Increasing

Increases in Drug and Opioid-Involved Overdose Deaths — United States, 2010–2015

*Weekly / December 30, 2016 / 65(50-51); 1445–1452*

- 12.3 per 100,000 population in 2010 to 16.3 in 2015.
- Death rates increased in 30 states and DC
- During 2015, 52,404 persons died from a drug overdose
- 33,091 (63.1%) involved an opioid
- Death rates for natural/semisynthetic opioids, heroin, and synthetic opioids other than methadone increased by 2.6%, 20.6%, and 72.2%, respectively
HospitalsAggregate the Addicted

- Doors are always open
- Substance use disorders are common and severe*
- High dosages of heroin/fentanyl
- IVDA instead of inhaled
- Early medical sequelae
- Increasing OD rate

* Saitz, JGIM, 2006; Bertholet, JGIM, 2010
Opioid Withdrawal

- With dependence, brain mal adapts
- Collection of reproducible symptoms when opioids are removed – PRIMAL MISERY
- Highly motivating
Opioid Withdrawal is a Safety Issue

Poorly addressed opioid withdrawal negatively impacts:

1. ability to address acute serious health consequences of addiction
2. ability to engage and transition into community-based drug treatment

Figure 1. National rate of opioid-related inpatient stays and emergency department visits, 2005–2014

- Inpatient stays: 89.1 (2005) to 224.6 (2014)
- ED visits: 82.6 (2005) to 177.7 (2014)

64.1% cumulative increase, 5.7% average annual growth rate
99.4% cumulative increase, 8.0% average annual growth rate

Abbreviation: ED, emergency department
Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), HCUP Fast Stats, Opioid-Related Hospital Use (http://www.hcup-us.ahrq.gov/faststats/landing.jsp) based on the HCUP National (Nationwide) Inpatient Sample (NIS) and the HCUP Nationwide Emergency Department Sample (NEDS)
Drug-related Endocarditis 2010-15 in NC

Morbidity and Mortality Weekly Report June 9, 2017 / 66(22);569–573
Rates of endocarditis, spinal and bone infections are increasing
Each requires 6 week hospitalization for IV ABX via PICC line
Anticipate 6216 bed days used in 2017
Intervening on the Medical Ward

JAMA Internal Medicine

N = 139 opioid-dependent patients admitted into a general medical hospital

- 5 day bup induction, stabilization and transition vs. detox
- Improved linkage 72.2% vs 11.9%, (P < .001 )
- 6 months retention 16.7% vs 3.0% (P = .007)
- less illicit opioid use in the 30 days before the 6-month interview (incidence rate ratio, 0.60; 95%CI, 0.46-0.73; P < .01)
CCHS Response to the Opioid Epidemic

• 2016: Behavioral Health partnered with Acute Care Service Line

• Inpatient Medical Service
  – Screening and Identification of admitted patients
  – Rapid treatment of withdrawal by medical team
  – Inpatient initiation of drug abuse treatment
  – Addiction Medicine Consultation Service
  – Referral to community-based care using Project Engage
Opioid Withdrawal Clinical Pathway

- Opioid Withdrawal Risk Assessment (OWRA)
  Yes to either question prompts patient for next screening process – COWS assessment of withdrawal.

<table>
<thead>
<tr>
<th>Information obtained from</th>
<th>Patient</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationship</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have you used heroin or prescription pain medications other than what was prescribed in the last week?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Do you get sick if you can't use heroin, methadone or prescription pain medications?</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>
## Clinical Opioid Withdrawal Scale (COWS)

### Resting Pulse Rate:
(Measured after patient is sitting or lying for one minute.)
- □ Pulse rate 80 or below
- □ Pulse rate 81-100
- □ Pulse rate 101-120
- □ Pulse rate greater than 120

### Sweating:
(Over past half hour not accounted for by room temperature or patient activity)
- □ No report of chills or flushing
- □ Subjective report of chills or flushing
- □ Flushed or observable moistness on face
- □ Beads of sweat on brow or face
- □ Sweat streaming off face

### Restlessness Observation During Assessment
- □ Able to sit still
- □ Reports difficulty sitting still, but is able to do so
- □ Frequent shifting or extraneous movements of legs/arms
- □ Unable to sit still for more than a few seconds

### Pupil Size
- □ Pupils pinned or normal size for room light
- □ Pupils possibly larger than normal for room light
- □ Pupils moderately dilated
- □ Pupils so dilated that only the rim of the iris is visible

### Bone or Joint Aches
(If patient was having pain previously, only the additional component attributed to opiate withdrawal is scored)
- □ Not present
- □ Mild diffuse discomfort
- □ Patient reports severe diffuse aching of joints/muscles
- □ Patient is rubbing joints or muscles and is unable to sit still because of discomfort
***Consider the benefit and risk of concurrent treatment with buprenorphine among those also receiving benzodiazepines. Buprenorphine can increase the risk of the patient experiencing lethargy, respiratory depression or coma.***

**Buprenorphine Doses for COWS score ≥ 8, check BOTH once orders AND the Q12H**

<table>
<thead>
<tr>
<th>Time</th>
<th>Medication Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Now</td>
<td><strong>buprenorphine-naloxone (Buprenorphine/Naloxone 4/1 mg (subOXONE))</strong> Dose = 1 EA, SL, Once Dose 1</td>
</tr>
<tr>
<td>1+ hr</td>
<td><strong>buprenorphine-naloxone (Buprenorphine/Naloxone 8/2 mg (subOXONE))</strong> Dose = 1 EA, SL, Once Dose 2. If COWS score ≥ 10 above.</td>
</tr>
<tr>
<td>13+ hr</td>
<td><strong>buprenorphine-naloxone (Buprenorphine/Naloxone 4...</strong></td>
</tr>
</tbody>
</table>

**Adjuvant Symptom Control Medications:**

- acetaminophen (Acetaminophen (Tylenol))
- ibuprofen (Ibuprofen (Motrin / Advil))
- loperamide (Loperamide (Imodium A-D))
- magnesium hydroxide (Magnesium Hydroxide (Milk ...
- ondansetron (Ondansetron ODT (Zofran ODT))
- traZoDoNE (traZoDoNE (Desyrel))

**Details**

- Dx Table
- Orders For Cosignature
- Orders For Nurse Review
## Opioid Withdrawal Clinical Pathway Results

<table>
<thead>
<tr>
<th>7 months of performance</th>
<th>#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Medical Service Admissions</td>
<td>34,503</td>
<td></td>
</tr>
<tr>
<td>Total Medical Service Admission Screened</td>
<td>24,748</td>
<td>72</td>
</tr>
<tr>
<td>Total Screened positive</td>
<td>767</td>
<td>3.1</td>
</tr>
<tr>
<td>Showing opioid withdrawal COWS &gt; 8</td>
<td>173</td>
<td>.7</td>
</tr>
</tbody>
</table>

- 22.5% of screen + have opioid withdrawal
- 49.7% of patients in Opioid Withdrawal (COWS>=8) receive bup/naloxone
- Estimate identifying 300+ opioid use disordered patients a year not engaged in treatment
- Value Institute partnering on validation study
Early Outcomes from Addiction Medicine CL

- 53/86 (62%) asked to remain on agonist therapy and transition to community care
  - Only 27/86 refused
  - 4/86 already in care
  - 12/86 ama, rest into nursing homes or ICU
- 10/27 (37%) who refused, signed out AMA vs 4% accepting
- 41/53 (78%) successfully attended their initial appt
- 29/40 (71%) retained at least 1 month at the community program
- 180 patients, 2/3 requesting MAT of which 63% remain in MAT at one month
Delaware's heroin babies: Starting life in withdrawal

3 in 100 babies born in Delaware last year went through opiate withdrawal just hours after birth.

James Fisher, The News Journal
NAS Patient Days

Christiana Hospital 2010 - 2017 (est. q1-2)

Patients (n)

Patient Days

Modified from Zadzielski, 2017
1. Project Engage helps engage pts into community-based care
2. Opioid withdrawal provides a reachable moment
3. Opioid pathway is showing early success identifying, engaging and transitioning patients into early recovery
4. Efforts are improving the NAS experience