A dynamic assessment of medication taking behavior during pregnancy and postpartum: should cART adherence be reinforced during postpartum?

A. Gertsch Rotzinger, O. Michel, I. Locatelli, O. Bugnon, M. Rickenbach, M. Cavassini, M. P. Schneider

15 novembre 2013

ESPACOMP
Combined antiretroviral therapy (cART) in pregnant women

- Mother-to-child transmission prevention
- Mother treatment

<table>
<thead>
<tr>
<th>Clinical situation</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women becoming pregnant while already on cART</td>
<td>Maintain cART</td>
</tr>
<tr>
<td>Women becoming pregnant while treatment naive</td>
<td>Start cART at beginning of 2nd trimester</td>
</tr>
<tr>
<td>Women, whose follow-up starts after Week 28 of pregnancy</td>
<td>Start cART immediately</td>
</tr>
</tbody>
</table>

EACS guidelines 2012
Medication adherence in HIV

80–90% adherence required to reach undetectable viral load\(^1\)

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\(^1\)For boosted PI, 80% of subject suppressed. Kobin et al, Annals Pharmacotherapy, 2011
Kreitchmann et al. AIDS Care 2012; 26(8):486-495
Aim of the Study

To compare adherence to the entire cART during pregnancy and postpartum using continuous electronic drug monitoring data.
Study characteristics

• **Design:**
  Retrospective study

• **Inclusion criteria:**
  – Pregnant women taking cART
  – Participation in the adherence program during pregnancy between 2004 and 2012
  – Using electronic monitors

• **Observation period:**
  From first visit post last menstruation to 6 months after childbirth
Medication adherence program in Switzerland (MI&MEMS program)

Motivational interviewing patient-pharmacist (MI)
- Face-to-face
- Theoretical framework
- Patient-centered
- Directive & goal-oriented
- Short but repeated
- Long-term duration

Medication Event Monitoring System (MEMS®)
- Objective and dynamic measure of daily medication intake
- LCD display

Medication adherence report
- Data collection and secure record
- Feedback to the patient
- Continuity of care
- Quality management system

Krummenacher, Cavassini, Bugnon, Schneider. AIDS Care 2011; 23(5):550-61
Krummenacher, Cavassini, Bugnon, Spirig, Schneider. PWS 2010; 32:776–786
Adherence data management & analysis

- Pocket-doses and non-monitored periods were managed.

- Individual adherence was described with a binary variable (1 = correct number of daily opening(s) of all electronic monitors per woman; 0 = less daily openings than prescribed).

- Delivery day was coded as day 0.

- Adherence at days 0–3 from childbirth has been replaced by missing values before entering the model, because of the bias due to hospitalization.

- Statistical analyses: piecewise logistic mixed effect model.

- Softwares: Stata/IC software (v12.0) and the R system (v2.12.1).

## Socio-demographic data at inclusion

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th></th>
<th>n = 25</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>6 (24%)</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>17 (68%)</td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>2 (8%)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>29.5 (26.5, 32)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contamination</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>19 (76%)</td>
<td></td>
</tr>
<tr>
<td>Missing data</td>
<td>4 (16%)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Life situation</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Live with someone else</td>
<td>16 (64%)</td>
<td></td>
</tr>
<tr>
<td>Missing data</td>
<td>6 (24%)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stable partner</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>18 (72%)</td>
<td></td>
</tr>
<tr>
<td>Missing data</td>
<td>6 (24%)</td>
<td></td>
</tr>
</tbody>
</table>
## Treatment characteristics

<table>
<thead>
<tr>
<th>Reason for inclusion</th>
<th>n = 25</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Pregnancy</td>
<td>20 (80%)</td>
</tr>
<tr>
<td>- Pregnancy desire</td>
<td>1 (4%)</td>
</tr>
<tr>
<td>- VL rebound</td>
<td>1 (4%)</td>
</tr>
<tr>
<td>- missing data</td>
<td>2 (12%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Women under cART at inclusion</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Yes</td>
<td>13 (52%)</td>
</tr>
<tr>
<td>- No</td>
<td>12 (48%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of cART at inclusion</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- PI¹ + NRTI²</td>
<td>24 (96%)</td>
</tr>
<tr>
<td>- NRTI</td>
<td>1 (4%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Still in adherence program beyond the 6-month post-partum</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Yes</td>
<td>12 (48%)</td>
</tr>
<tr>
<td>- No</td>
<td>13 (52%)</td>
</tr>
</tbody>
</table>

¹PI: protease inhibitor
²NRTI: nucleos(t)ide reverse transcriptase inhibitor
Adherence during pregnancy and postpartum
Adherence during pregnancy and postpartum

High adherence level during pregnancy: 97% (IC 94%-98%)
Adherence during pregnancy and postpartum

Drop just after childbirth 93% (IC 87%-96%)
Adherence during pregnancy and postpartum

Time to retrieve previous adherence level: 164 days
Change in CD4 and viral load

4 women over 13 had increased viral load after childbirth
Conclusion

• Childbirth impacts transiently on medication adherence

• This drop in medication adherence may result in viral rebound

• Emphasis should be put on postpartum care

• A medication adherence program helps promoting continuity of care between physicians, nurses and pharmacists.
Adherence to Antiretroviral Treatment Decreases During Postpartum Compared to Pregnancy: A Longitudinal Electronic Monitoring Study

Aurélie Gertsch, RPh,1,2 Odile Michel,1 Isabella Locatelli, PhD,3,4 Olivier Bugnon, RPh, PhD,1,2 Martin Rickenbach, MD,5 Matthias Cavassini, MD,6 and Marie-Paule Schneider, RPh, PhD1,2
Thanks to

Mrs Odile Michel, who worked on this study during her master thesis
Dr Matthias Cavassini for his expertise in the HIV field
Dr Isabella Locatelli, for her expertise in statistics
Dr Martin Rickenbach for his support and help with data extraction
Mrs Séverine Gorgerat and Pilar Zuniga Rojas for their logistic support

And all women, who participated in this study

And thank you for your attention!
Number of unattended visits

• Nr postponed or unattended visits:
  - Pregnancy: 17%
  - Postpartum: 38%  \( p=0.001^* \)

• Interval between 2 visits:
  - Pregnancy: 32 days+ 20
  - Postpartum: 41 days+ 31  \( p=0.054^* \)

* McNemar test
The Impact of Adherence Quality Measures on the US Healthcare Marketplace

Samuel Stolpe, PharmD
Associate Director, Quality Initiatives
Pharmacy Quality Alliance

PQA
Established in April 2006, as a public-private partnership

Consensus-based, non-profit, alliance with >135 member organizations, including:

- Health Plans & PBMs
- Independent and chain community pharmacies
- Trade and professional associations
- Federal agencies (CMS, FDA)
- Pharmaceutical manufacturers
- Consumer advocates
- Technology & consulting groups
- Universities
PQA Mission

To improve the quality of medication management and use across health care settings with the goal of improving patients’ health through a collaborative process to develop and implement performance measures and recognize examples of exceptional pharmacy quality.
Adoption of PQA Measures

- Medicare Part D Star Ratings
  - Star measures:
    - medication adherence (diabetes, BP, cholesterol)
    - medication safety (HRM, Diabetes/RASA)
  - Display measures:
    - 2 safety measures and 1 MTM measure
- URAC accreditation programs
  - Health plan, PBM, mail/specialty pharmacy
- National Business Coalition on Health (NBCH)
  - eValue8 (health plan evaluation)
- State Insurance Exchanges / Marketplaces ?
Medicare Star Ratings

- Annual ratings of Medicare plans that are made available on Medicare Plan Finder and CMS website
- Ratings are displayed as 1 to 5 stars
- Stars are calculated for each measure, as well as each domain, summary, and overall (applies to MA-PDs) level
- Ratings of all Medicare plans can be found at:
  - [http://www.cms.gov/Medicare/Prescription-Drug-Coverage/PrescriptionDrugCovGenIn/PerformanceData.html](http://www.cms.gov/Medicare/Prescription-Drug-Coverage/PrescriptionDrugCovGenIn/PerformanceData.html)
Medicare Advantage plans (Part C) often include a prescription drug benefit (Part D) and are known as MA-PDs. The MA-PDs are evaluated on both the Part C and Part D measures.

- **Part C ratings:** 36 quality measures

- **Medication/biological - related measures:**
  - Osteoporosis
  - Rheumatoid arthritis
  - Annual flu vaccine

- **Measures affected by medication adherence:**
  - Diabetes Care: Blood sugar controlled
  - Diabetes Care: Cholesterol controlled
  - Blood pressure controlled
Medicare Star Ratings – Part D

- PQA measures 48% of Part D summary ratings in 2014
- 15 individual measures
- 5 measures are from PQA:
  - 2 medication safety
    - High risk medications in the elderly
    - Appropriate treatment of blood pressure in persons with diabetes
  - 3 medication adherence (using PDC method)
    - Oral diabetes
    - Cholesterol (statins)
    - Blood pressure (renin-angiotensin system antagonists)
## 2014 Star Thresholds

### MA-PD Contracts

<table>
<thead>
<tr>
<th></th>
<th>3-star</th>
<th>4-star</th>
<th>5-star</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDC – Diabetes</td>
<td>71 %</td>
<td>74 %</td>
<td>77 %</td>
</tr>
<tr>
<td>PDC - RASA</td>
<td>72 %</td>
<td>75 %</td>
<td>79 %</td>
</tr>
<tr>
<td>PDC – Statins</td>
<td>68 %</td>
<td>71 %</td>
<td>75 %</td>
</tr>
<tr>
<td>Diabetes Treatment:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RASA in diabetes</td>
<td>85%</td>
<td>86 %</td>
<td>87 %</td>
</tr>
<tr>
<td>High-Risk Medications</td>
<td>≤ 8 %</td>
<td>≤ 5 %</td>
<td>≤ 3 %</td>
</tr>
</tbody>
</table>
## Improvement in Adherence Rates

<table>
<thead>
<tr>
<th>Part D Measure</th>
<th>MA-PD</th>
<th>PDP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2012</td>
<td>2013</td>
</tr>
<tr>
<td>PDC - Diabetes</td>
<td>73.0%</td>
<td>73.7%</td>
</tr>
<tr>
<td>PDC - Hypertension</td>
<td>72.2%</td>
<td>73.9%</td>
</tr>
<tr>
<td>PDC - Cholesterol</td>
<td>68.0%</td>
<td>69.0%</td>
</tr>
</tbody>
</table>

*Average across all contracts for each year*
Enrollment in 4-5 Star Contracts

MA-PD

- Approximately 38% of MA-PD contracts for 2014 are at 4 stars or higher
- Weighted by enrollment, these contracts serve about 52% of MA-PD enrollees

PDP

- Approximately 37% of PDP contracts for 2014 are at 4 stars or higher
- Weighted by enrollment, these contracts serve about 9% of PDP enrollees
39 Medicare contracts received a “low performer icon” which means that they have consistently been below 3 stars for either Part C or Part D

Most low-performance contracts were in southern states and Puerto Rico

107 contracts had 2 stars or lower on all 3 PDC adherence measures.
Higher-rated plans attract more enrollees

- JAMA 2013: “Medicare's 5-star rating program for Medicare Advantage is associated with beneficiaries' enrollment decisions.”

- New enrollment: 1-star higher rating = 9.5% (95% CI, 9.3-9.6) increase

- Changing enrollment: 1-star higher rating = 4.4% (95% CI, 4.2-4.7) increase in likelihood to enroll.

- Star ratings were less strongly associated with enrollment for black, rural, low-income, and the youngest beneficiaries.

Citation: Ried, Partha, Howell & Shrank. JAMA 2013;309(3):267-274
Medicare Advantage is Growing

Exhibit 1
Total Medicare Private Health Plan Enrollment, 1999-2013

In millions:

<table>
<thead>
<tr>
<th>Year</th>
<th>Enrollment (in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>6.9</td>
</tr>
<tr>
<td>2000</td>
<td>6.8</td>
</tr>
<tr>
<td>2001</td>
<td>6.2</td>
</tr>
<tr>
<td>2002</td>
<td>5.6</td>
</tr>
<tr>
<td>2003</td>
<td>5.3</td>
</tr>
<tr>
<td>2004</td>
<td>5.3</td>
</tr>
<tr>
<td>2005</td>
<td>5.6</td>
</tr>
<tr>
<td>2006</td>
<td>6.8</td>
</tr>
<tr>
<td>2007</td>
<td>8.4</td>
</tr>
<tr>
<td>2008</td>
<td>9.7</td>
</tr>
<tr>
<td>2009</td>
<td>10.5</td>
</tr>
<tr>
<td>2010</td>
<td>11.1</td>
</tr>
<tr>
<td>2011</td>
<td>11.9</td>
</tr>
<tr>
<td>2012</td>
<td>13.1</td>
</tr>
<tr>
<td>2013</td>
<td>14.4</td>
</tr>
</tbody>
</table>

% of Medicare Beneficiaries:
- 1999: 18%
- 2000: 17%
- 2001: 15%
- 2002: 14%
- 2003: 13%
- 2004: 13%
- 2005: 13%
- 2006: 16%
- 2007: 19%
- 2008: 22%
- 2009: 23%
- 2010: 24%
- 2011: 25%
- 2012: 27%
- 2013: 28%

Medicare Advantage Payments

- The star ratings now affect payment to Medicare Advantage plans wherein higher-rated plans get higher payment.
- Quality Bonus Payments (QBPs) are being awarded to contracts that achieve at least 4 stars overall.
- QBPs were created by PPACA but were “phased in” via a demonstration project.
- 2015 payments will be based on 2014 ratings which were based on 2012 and 2013 data.
- Stand-alone Part D plans will have marketing advantages related to star ratings, but they are not eligible for QBPs.
How are plans responding?

- Formularies, clinical strategies, network contracts, marketing/promotions, aligning with star measures

- Significant investments in “drive to 5”

- Contract strategies for pharmacy networks
  - Pay for Performance (P4P) – pharmacies may be eligible for bonus payment based on star performance
  - Preferred pharmacy network based partly on star performance of chain or stores
Pharmacy P4P

- A few health plans have already implemented P4P for pharmacies, including Health Partners and Inland Empire Health Plan

- Example: Inland Empire Health Plan (IEHP)
  - Launched in October 2013
  - Pharmacies are evaluated on Star measures plus asthma and GDR
  - EQuIPP allows pharmacies to track their performance
  - Pharmacies will receive bonus payments every six months depending on their performance on each measure:
    - 3-star attainment = small bonus
    - 5-star attainment = large bonus
  - Bonus is based on number of patients at each store in addition to score on each measure
  - IEHP may also publicly recognize top performers
What is EQuIPP?

- EQuIPP connects health plans and pharmacies:
  - Allows plans to benchmark their network pharmacies’ Part D stars performance
  - Allows community pharmacies to see their performance on Part D stars
  - Enhance engagement of retail pharmacies for stars improvement
- EQuIPP provides a neutral assessment of quality
- EQuIPP facilitates Pay-for-performance (P4P)
Why include pharmacies in Stars Improvement strategies?

- PQA-supported demonstrations in Pennsylvania showed:
  - Rite Aid’s pharmacies were able to achieve significant improvement in PDC rates over 1 year while remaining efficient.
  - Health Plan PDC measures increased by 1 star during demo period.

- Economies of Scale:
  - Thousands of pharmacists in a plan’s network with frequent visits of Medicare patients to pharmacies (i.e., many touch points).
  - Most Medicare Part D plans could move from 3 stars to 4 stars on each PDC measure if every pharmacy in its network helped just 1 more ACEI/ARB patient, 1 more diabetes patient, and 1 more statin patient become highly adherent.
## State Report

**May 2013**

Change Time Period

Data last updated on 03/01/2013

### Medicare PDP

<table>
<thead>
<tr>
<th>Measure</th>
<th>Trend</th>
<th># of Patients</th>
<th>Performance Score</th>
<th>Goal (%)</th>
<th>Versus Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACEI/ARB in Diabetes</td>
<td>✏️</td>
<td>14569</td>
<td>70.1%</td>
<td>87%</td>
<td>16.9%</td>
</tr>
<tr>
<td>ACEI/ARB PDC</td>
<td>✏️</td>
<td>40098</td>
<td>82.7%</td>
<td>78%</td>
<td>✓</td>
</tr>
<tr>
<td>Cholesterol PDC</td>
<td>✏️</td>
<td>36925</td>
<td>78%</td>
<td>75%</td>
<td>✓</td>
</tr>
<tr>
<td>Diabetes PDC</td>
<td>✏️</td>
<td>11385</td>
<td>78.8%</td>
<td>79%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Drug-Drug Interactions</td>
<td>✏️</td>
<td>32419</td>
<td>5.6%</td>
<td>5.5%</td>
<td>0.1%</td>
</tr>
<tr>
<td>High-risk Medications</td>
<td>✏️</td>
<td>88905</td>
<td>13.4%</td>
<td>9%</td>
<td>4.4%</td>
</tr>
</tbody>
</table>
**Traditional vs. Appointment-based Model**

**Traditional Model**
- Patients manage own medication therapy
- Inefficient and hinders pharmacist’s ability to provide services that improve adherence and health

**ABM**
- One monthly call from pharmacy to patient, prior to appointment date
- Customers don’t manage their refills
- Pharmacy develops a “panel of patients”
Pharmacy staff determines patient’s appointment date

All refills of chronic medications are synchronized to the appointment date

Patient receives call from pharmacy 5-7 days prior to appointment date to:
- Verify meds to be filled
- Capture any med changes from doctor/hospital visits

Prescriptions prepared prior to appointment

All fill issues and refill authorizations are resolved prior to the appointment

Patient visits pharmacy once for all medications

The opportunity for additional services at the time of appointment is greatly enhanced
Results of VCU Twelve Month Analysis\(^1\) of ABM in a Regional Chain

### Average Proportion of Days Covered (PDC)

- **Control Group**: 58–63%
- **ABM Patients**: 80–87%

### The Percent of Patients Adherent (PDC ≥ 80%)

- **Control Group**: 37–41%
- **ABM Patients**: 66–80%

### Non-Persistence

- **Control Group**: 67–74%
- **ABM Patients**: 34–47%

- Project results demonstrated that ABM patients have, on average, an **additional 84 days of medication therapy on hand/sync prescription/year\(^2\)**

- Depending on the drug class, patients enrolled in ABM were 3 to 6 times more likely than controls to be adherent during the evaluation period

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1. Appointment Based Model (ABM) 12 month data analysis report, David Holford, PhD, et al, Virginia Commonwealth University School of Pharmacy, January 2013
2. Pfizer Health Economics and Outcomes Research Group

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PQA