



SRNT EUROPE 2016  
17th ANNUAL CONFERENCE  
September 8-10



## A Multifaceted Strategy to Implement Brief Smoking Cessation Counseling During Antenatal Care in Argentina and Uruguay: A Cluster Randomized Trial

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### Overview

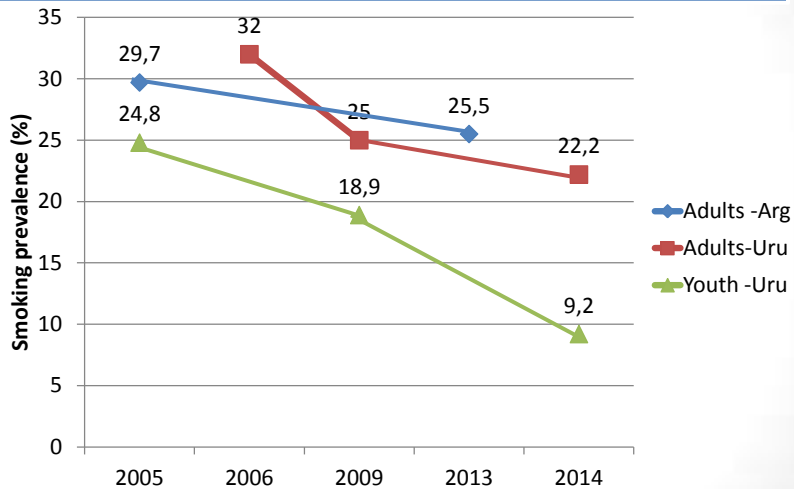
- Tobacco use in pregnancy in Argentina and Uruguay
- Results from cluster - RCT Brief Intervention cessation in pregnancy
- Implications & challenges



## Background & Objective

- Argentina and Uruguay implemented TC policies
- National smoking prevalence is decreasing
- Argentina and Uruguay have high prevalence of smoking during pregnancy, particularly in low SES groups
- Pregnant women are not routinely counselled in antenatal care (ANC).
- We evaluated a multifaceted strategy designed to increase the frequency of pregnant women who received a brief cessation counseling based on the 5As.

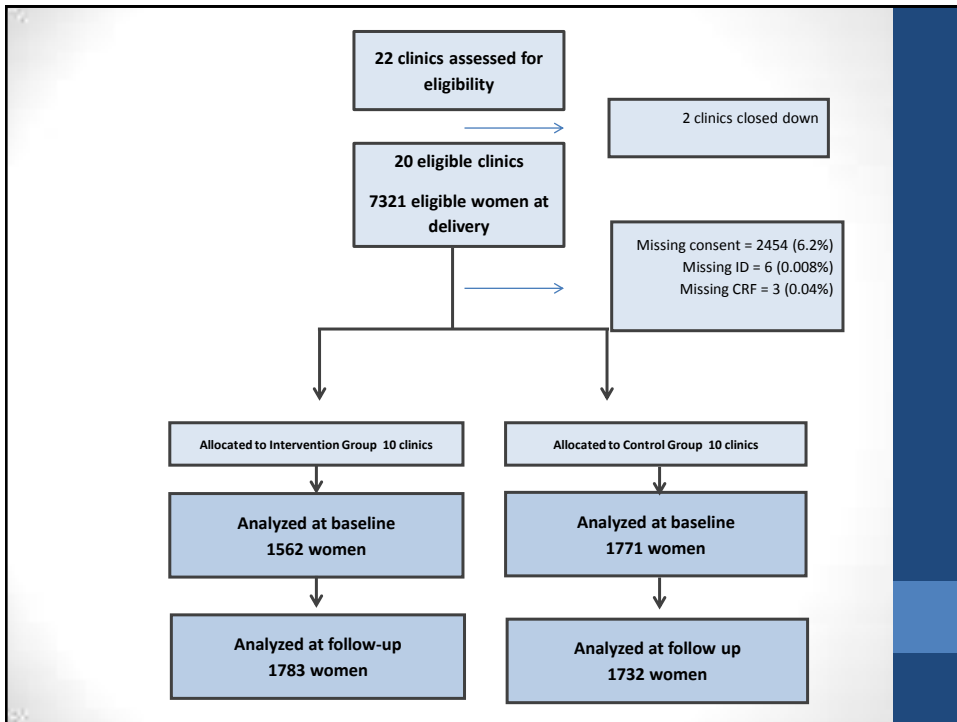
## Background - Context



Source: Encuesta Nacional de Factores de Riesgo, Argentina, Encuesta Continua de Hogares – Uruguay, GATS – Uruguay, GYTS – Uruguay

## Background & Objective

- Argentina and Uruguay implemented TC policies
- National smoking prevalence is decreasing
- Argentina and Uruguay have high prevalence of smoking during pregnancy, particularly in low SES groups
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## Methods

- Publicly funded clinics, **deprived economic sectors**
- Primary outcome:
  - frequency of women who recalled receiving 5As
- Secondary outcomes
  - frequency of women who smoked until the end of pregnancy
  - ANC providers' attitudes & readiness to provide counseling
- Outcomes were measured in a survey within the first 48 hours after delivery, during postpartum hospital stay.
- Smoking status was validated by saliva cotinine

*Althabe et al. Nicotine & Tobacco Research, 2016,  
Althabe et al. Reproductive Health, 2013*

## The intervention

- Intervention was tailored by formative research
- ANC providers were trained during a 2-day workshop
- Additional components:
  - reminders, posters, written materials



## The intervention

- 2 day workshop:
  - Overview of smoking prevalence and trends,
  - Consequences of smoking for mother & newborn
  - Role of the health care provider
  - 5As intervention, adapted to pregnant women
  - Communication and motivational interviewing skills in several role-play scenarios.
  - Plan to implement the 5As program

# Results: characteristics of women

Table 1. Characteristics of Clinics, ANC Providers, and Women at Baseline and Follow-up<sup>a</sup>

| Characteristic                                      | Baseline period <sup>b</sup> |                        | Follow-up period            |                        |
|---|------------------------------|------------------------|-----------------------------|------------------------|
|   | Intervention group (N = 10)  | Control group (N = 10) | Intervention group (N = 10) | Control group (N = 10) |
| <b>Women's and newborns' characteristics</b>        |                              |                        |                             |                        |
| Maternal age <20 years (%)                          | 20.4±4.4                     | 20.8±5.4               | 24.5±5.1                    | 22.7±8.6               |
| Primiparous women (%)                               | 35.5±7.1                     | 36.9±7.1               | 42.4±14.7                   | 41.7±11.5              |
| Number of prenatal care visits                      | 7.9±1.1                      | 8.0±1.5                | 7.8±1.5                     | 7.6±1.5                |
| Recall 5As during prenatal care <sup>c</sup> (%)    | 4.1±4.1                      | 3.7±4.6                |                             |                        |
| Cigarette smoking during pregnancy <sup>d</sup> (%) | 21.9±11.1                    | 21.8±10.0              |                             |                        |
| Nonsmokers  | 69.1±8.1                     | 69.0±9.7               |                             |                        |
| Stroke-free home rate (%)                           | 68.0±7.6                     | 64.5±9.1               |                             |                        |
| Partner/household member smokes (%)                 | 45.9±6.4                     | 42.1±4.0               |                             |                        |
| Infant's birth weight <2500g (%)                    | 6.7±2.1                      | 7.5±2.1                |                             |                        |

Table 1. Main Characteristics of Pregnant Women by Smoking Status

|   | Nonsmokers,<br>N = 2283 (67.2%) | Spontaneous<br>quitters,<br>N = 282 (8.3%) | Late quitters,<br>N = 122 (3.6%) | Continued<br>smokers,<br>N = 711 (20.9%) | Total, N = 3400<br>(100.0%) |
|---|---------------------------------|--|----------------------------------|--|-----------------------------|
| Age (yr)                                  |                                 |  |                                  |  |                             |
| <19                                       | 478 (21.1%)                     | 60 (21.6%)                                 | 26 (21.3%)                       | 127 (17.9%)                              | 691 (20.3%)                 |
| 20-34                                     | 1536 (67.9%)                    | 198 (71.2%)                                | 89 (73.6%)                       | 500 (70.6%)                              | 2323 (69.0%)                |
| ≥35                                       | 249 (11.0%)                     | 20 (7.2%)                                  | 6 (5.0%)                         | 81 (11.4%)                               | 355 (10.5%)                 |
| Country citizenship                       | 2067 (91.1%)                    | 267 (95.0%)                                | 120 (99.2%)                      | 697 (98.4%)                              | 3151 (93.3%)                |
| Marital status                            |                                 |  |                                  |  |                             |
| Married or living with a partner          | 1860 (82.2%)                    | 220 (78.9%)                                | 93 (76.9%)                       | 531 (75.3%)                              | 2704 (80.3%)                |
| Partner but not living together           | 110 (4.9%)                      | 13 (4.7%)                                  | 8 (6.6%)                         | 38 (5.4%)                                | 169 (5.0%)                  |
| Single (divorced, separated, widowed)     | 294 (13.0%)                     | 46 (16.5%)                                 | 20 (16.5%)                       | 154 (21.7%)                              | 494 (14.7%)                 |
| Level of education                        |                                 |  |                                  |  |                             |
| Incomplete primary school or less         | 149 (6.7%)                      | 12 (4.4%)                                  | 9 (7.6%)                         | 49 (7.0%)                                | 219 (6.6%)                  |
| Complete primary school                   | 584 (26.1%)                     | 76 (27.6%)                                 | 27 (22.9%)                       | 246 (35.2%)                              | 933 (28.0%)                 |
| Incomplete secondary school               | 1011 (45.2%)                    | 132 (48.0%)                                | 63 (53.1%)                       | 327 (46.8%)                              | 1533 (46.1%)                |
| Complete secondary school or more         | 494 (22.1%)                     | 55 (20.0%)                                 | 17 (14.4%)                       | 76 (10.9%)                               | 642 (19.3%)                 |
| Work status in past year                  |                                 |  |                                  |  |                             |
| Employed                                  | 462 (20.6%)                     | 63 (23.5%)                                 | 36 (30.0%)                       | 137 (22.6%)                              | 698 (21.2%)                 |
| Student                                   | 77 (3.4%)                       | 10 (3.7%)                                  | 1 (0.8%)                         | 12 (1.7%)                                | 100 (3.0%)                  |
| Unemployed                                | 1703 (77.2%)                    | 186 (67.1%)                                | 84 (70.0%)                       | 528 (76.1%)                              | 2501 (76.4%)                |
| Live with at least one smoker             | 1000 (44.0%)                    | 177 (63.0%)                                | 87 (71.9%)                       | 517 (72.9%)                              | 1781 (53.1%)                |
| Diagnosis of any prenatal care initiation |                                 |  |                                  |  |                             |
| First                                     | 1322 (52.4%)                    | 137 (51.3%)                                | 62 (51.7%)                       | 342 (52.3%)                              | 1665 (52.3%)                |
| Second                                    | 839 (39.1%)                     | 108 (40.4%)                                | 50 (41.7%)                       | 266 (40.7%)                              | 1263 (39.7%)                |
| Third                                     | 181 (8.5%)                      | 22 (8.2%)                                  | 8 (6.7%)                         | 46 (7.0%)                                | 257 (8.1%)                  |
| Number of prenatal care visits            | 8 (6-10)                        | 8 (6-10)                                   | 8 (6-10)                         | 7 (5-10)                                 | 8 (6-10)                    |
| Multiparous                               | 1376 (62.6%)                    | 136 (50.7%)                                | 73 (62.5%)                       | 503 (73.0%)                              | 2119 (64.5%)                |

## Results: rates of implementation of 5As

Table 2. Effect of the intervention on the Rates of Implementation of the 5As During Antenatal Care

| Intervention group (10 clusters) |  |                     | Control group (10 clusters)    |  |                     | Intervention effect                               |      |
|----------------------------------|--|---------------------|--------------------------------|--|---------------------|---|------|
| Median baseline rate (N = 111)   | Median follow-up period rate (N = 179) | Median rate change* | Median baseline rate (N = 117) | Median follow-up period rate (N = 175) | Median rate change* | Median difference in median rate change (95% CI)† | P    |
| 100%                             | 100%                                   | 0%                  | 100%                           | 100%                                   | 0%                  | 0% (-10% to 10%)                                  | 0.99 |
| 100%                             | 100%                                   | 0%                  | 100%                           | 100%                                   | 0%                  | 0% (-10% to 10%)                                  | 0.99 |
| 100%                             | 100%                                   | 0%                  | 100%                           | 100%                                   | 0%                  | 0% (-10% to 10%)                                  | 0.99 |
| 100%                             | 100%                                   | 0%                  | 100%                           | 100%                                   | 0%                  | 0% (-10% to 10%)                                  | 0.99 |
| 100%                             | 100%                                   | 0%                  | 100%                           | 100%                                   | 0%                  | 0% (-10% to 10%)                                  | 0.99 |
| 100%                             | 100%                                   | 0%                  | 100%                           | 100%                                   | 0%                  | 0% (-10% to 10%)                                  | 0.99 |
| 100%                             | 100%                                   | 0%                  | 100%                           | 100%                                   | 0%                  | 0% (-10% to 10%)                                  | 0.99 |
| 100%                             | 100%                                   | 0%                  | 100%                           | 100%                                   | 0%                  | 0% (-10% to 10%)                                  | 0.99 |
| 100%                             | 100%                                   | 0%                  | 100%                           | 100%                                   | 0%                  | 0% (-10% to 10%)                                  | 0.99 |
| 100%                             | 100%                                   | 0%                  | 100%                           | 100%                                   | 0%                  | 0% (-10% to 10%)                                  | 0.99 |

The intervention resulted in an overall increase of 17 % in the frequency of women recalling the 5As

However, only one third of women attending intervention clinics recalled 5As in more than one visit.

## Results: Rates of cessation

Table 3. Effect of Intervention on Smoking During Pregnancy

| Intervention group (10 clusters) |  |                     | Control group (10 clusters)    |  |                     | Intervention effect                               |      |
|----------------------------------|--|---------------------|--------------------------------|--|---------------------|---|------|
| Median baseline rate (N = 111)   | Median follow-up period rate (N = 179) | Median rate change* | Median baseline rate (N = 117) | Median follow-up period rate (N = 175) | Median rate change* | Median difference in median rate change (95% CI)† | P    |
| 100%                             | 100%                                   | 0%                  | 100%                           | 100%                                   | 0%                  | 0% (-10% to 10%)                                  | 0.99 |
| 100%                             | 100%                                   | 0%                  | 100%                           | 100%                                   | 0%                  | 0% (-10% to 10%)                                  | 0.99 |
| 100%                             | 100%                                   | 0%                  | 100%                           | 100%                                   | 0%                  | 0% (-10% to 10%)                                  | 0.99 |
| 100%                             | 100%                                   | 0%                  | 100%                           | 100%                                   | 0%                  | 0% (-10% to 10%)                                  | 0.99 |
| 100%                             | 100%                                   | 0%                  | 100%                           | 100%                                   | 0%                  | 0% (-10% to 10%)                                  | 0.99 |
| 100%                             | 100%                                   | 0%                  | 100%                           | 100%                                   | 0%                  | 0% (-10% to 10%)                                  | 0.99 |
| 100%                             | 100%                                   | 0%                  | 100%                           | 100%                                   | 0%                  | 0% (-10% to 10%)                                  | 0.99 |
| 100%                             | 100%                                   | 0%                  | 100%                           | 100%                                   | 0%                  | 0% (-10% to 10%)                                  | 0.99 |
| 100%                             | 100%                                   | 0%                  | 100%                           | 100%                                   | 0%                  | 0% (-10% to 10%)                                  | 0.99 |
| 100%                             | 100%                                   | 0%                  | 100%                           | 100%                                   | 0%                  | 0% (-10% to 10%)                                  | 0.99 |

The intervention did not significantly affect the rate of women who continued smoking during pregnancy

## Discussion - Strengths

- Rigorous experimental design
- Careful training of interviewers
- Monitoring of data acquisition
- Data collectors well separated from intervention teams: prevented observer bias of outcomes
- Biochemical validation

## Discussion - Limitations

- Interviewing women during the postpartum stay and not during pregnancy could have affected recall of the ANC process, increasing outcome misclassification.
- Social desirability bias in the responses of women interviewed in the intervention group.



## Interpretation

- Our findings are consistent **with implementation challenges** found in clinical practice
- Interventions that change the existing routines, demand training and new skills, and require substantial organizational changes have been associated with low implementation.
- **Quality** of intervention ?
- **Lack of time** as a barrier to providing counseling

## In context – Future challenges

- Smoking in pregnancy ↔ Social inequities
- Hard –core smokers
- Need for studies on intensive/multicomponent interventions



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