Material and Method

In 2007 all birth files were analyzed through a birth registration database. It was not necessary to seek the advice of the ethics committee because the study did not affect the normal care procedures.

Screening vaginal or vaginorectal swabs and culture results were performed at the 35th gestational week to all pregnant women who gave birth in Piedmont or Aosta Valley hospitals.

In spring 2008 we sent by post to all 70 public and private microbiological laboratories of Piedmont and Aosta Valley a file card regarding clinical tests performed in 2007 for GBS search in pregnancy and usually culture methods. The requested items for each laboratory were:

1. Sample technique and number of samples per year.
2. Typology of culture procedures: selective, chromogenic or broth.
3. Incubation atmosphere of cultures.
4. Identification systems.
5. Lay out of antibiotics sensitive tests.
6. Use of internal and external quality check.
7. Report standard: qualitative, half-quantitative, quantitative.

Four months after posting the file card, we performed a phone reminder to the laboratories which did not reply. A last reminder was posted two months later.

Results

We contacted 70 laboratories, 23 did not reply at all. Among the 47 responders, 16 provided partial results: five returned not interpretable data for the scope of research, four did not have a microbiology section, three laboratories sent all data except positivity percentage, and four only survey data, omitting answer to further inquiries; evaluable but partial data from these 16 labs were 6316.

Thirty-one labs provided all requested data, accounting for 22175 tests, 57.5% of the 38565 births recorded in Piedmont and Aosta Valley in 2007. Overall, 28491 (22175+6316) evaluable tests were collected: (24.36%) for vaginal, and (75.64%) for vaginorectal swabs. The average positivity percentage for GBS stands at 12.7% (CI ± 95%: 12.2-13.1) with a huge variability within each laboratory (range 2.4-22.6%). In 4183 cases (14.6%), GBS culture was positive.

During data analysis, a lack of homogeneity related to search methods for GBS in the different laboratories has been evidenced. In particular, reasons for such variability were:

1. Routine use of selective culture composed by Columbia agar + 5% blood + colistin-nalidixid acid (CNA), was related to 78% of

17	c	0%	100%	946	14.00%	a	yes	a	b
19	c	0%	100%	180	12.20%	a + c	no	a	a
28	b	20%	80%	158	13.80%	a + c	yes	a	b
38	a	0%	100%	800	11.00%	b	no	c	b
41	b	46%	54%	435	12.00%	a	yes	a	a + b
48*	c	94%	6%	237	14.35%	b	yes	a	b
49*	c	75%	25%	112	12.00%	b	no	b	b
67*	c	91%	9%	110	10.00%	a	no	b	b
Tot. e%		29%	71%	10418	12.61%		no 55.46%		

a: Blood agar Columbia CNA ; b: Chromogenic media

c: Blood agar; d: other culture media

of the European Association of Perinatal Medicine in 1999. The reported incidence of GBS colonization among pregnant women in Europe ranged from 1.5 to 30% [12].

The efficacy of cultural methods for GBS search is often dependent on several variables of accuracy operations which include

1. Period in which the survey was conducted. The most suitable to provide sensibility and specificity in detection women, who remain colonized until delivery is between 35th and 37th gestation week.
2. A preanalytical phase characterized by accuracy of sample collection. This can be carried out with only one swab, taking together vaginal and rectal specimens, or with two distinct swabs. Double swabbing improves the efficacy of microbiological survey. Such swabs, put in non-nutritive culture (Amies or Stuart's) keep viability of GBS for four days at room temperature. Badri et al. demonstrated that the higher incidence of positive rectal swabs in comparison with vaginal cultures suggests that the gastrointestinal tract is the primary site of GBS colonization and vaginal colonization may represent a contamination [14].
3. Analytical phase, whose efficacy, in part conditioned by used materials, depends particularly on adherence to protocols, as well as accuracy of operators who conduct the microbiological survey. Utilizing one swab for both sample taking, or two swabs, one for each place, does not influence diagnostic efficacy of the survey.

4. Heath PT, Balfour G, Weisner AM, Efstratiou A, Lamagni TL, et al. (2004) Group B streptococcal disease in UK and Irish infants younger than 90 days. Lancet 363: 292-294.
5. Edwards MS, Baker CJ (2005) Streptococcus agalactiae (group B streptococcus). Principles and practice of infectious diseases. (6th edn) Philadelphia Elsevier.
6. Sensini A, Tissi L, Verducci N, Orofino M, von Hunolstein C, et al. (1997) Carriage of group B Streptococcus in pregnant women and newborns: a 2-year study at Perugia General Hospital. Clin Microbiol