

## 2005 MICROBIOLOGY ACTIVITY REPORT

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### A/ FREQUENCY OF ISOLATION BY SAMPLE SITE

#### 1. Urine Cultures

- 869 tests done in 2005
- 308 sterile urine cultures
- 280 contaminated urine cultures
- 281 identifications and antibiograms

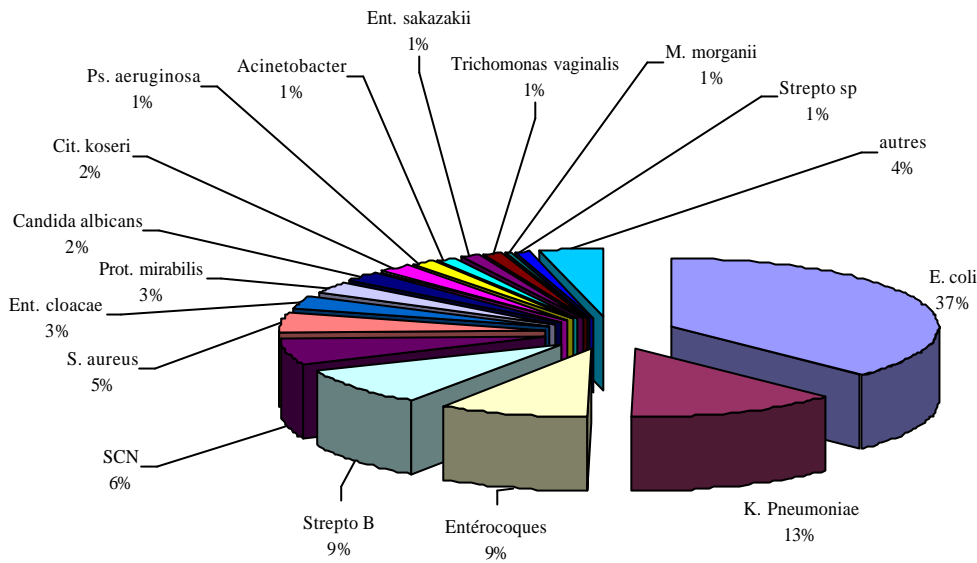
Species isolated	2005	
	N	%
Escherichia coli	105	37 %
Klebsiella pneumoniae	36	13 %
Enterococcus faecium or faecalis	26	9 %
Streptococcus agalactiae (Group B)	25	9 %
Coagulase-negative staphylococci,	18	6 %
Staphylococcus aureus	13	5 %
Enterobacter cloacae	9	3 %
Proteus mirabilis	8	3 %
Candida albicans	6	2 %
Citrobacter koseri	6	2 %
Pseudomonas aeruginosa	4	1 %
Acinetobacter sp	4	1 %
Enterobacter sakazakii	3	1 %
Trichomonas vaginalis	3	1 %
Morganella morganii	2	< 1 %
Streptococcus sp	2	< 1 %
Citrobacter freundii	1	< 1 %
Salmonella enteritidis	1	< 1 %
Enterobacter aerogenes	1	< 1 %
Providencia rettgeri	1	< 1 %
Haemophilus influenzae	1	< 1 %
Branhamella catarrhalis	1	< 1 %
Gardnerella vaginalis	1	< 1 %
Corynebacterium sp	1	< 1 %
Neisseria sp	1	< 1 %
Microbacterium	1	< 1 %
Candida non albicans	1	< 1 %
<b>TOTAL</b>	<b>281</b>	

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**Frequency of species responsible for urinary tract infections in 2005**

**Fréquence des espèces responsables d'infections du tractus urinaire en 2005**



**2. Blood cultures**

- 226 patients had at least one haemoculture
- 22 pathologies isolated
- 43 contaminations

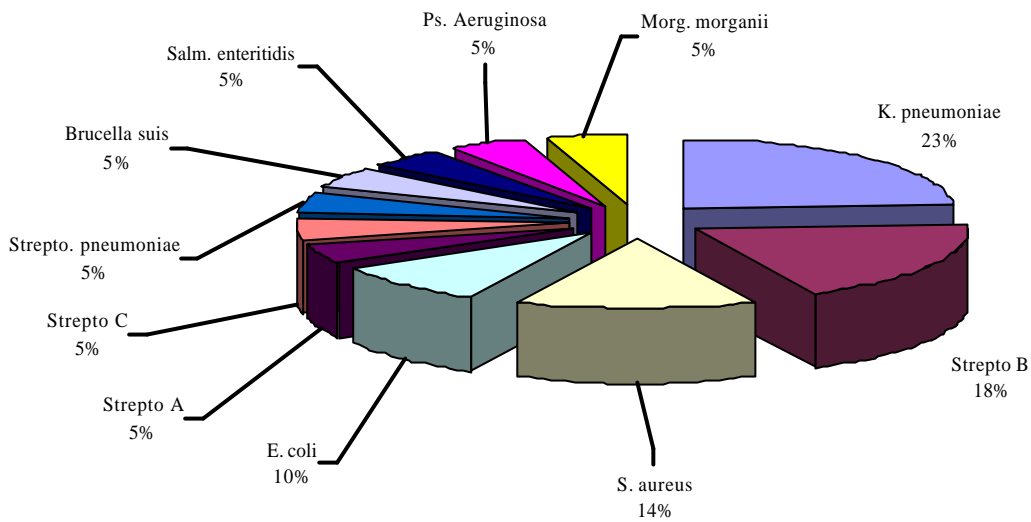
Species isolated and identified as pathogens	2005
	N
Klebsiella pneumoniae	5
Streptococcus agalactiae (Group B)	4
Staphylococcus aureus	3
Escherichia coli	2
Streptococcus pyogenes (Group A)	1
Group C β-haemolytic Streptococci	1
Streptococcus pneumoniae	1
Brucella suis	1
Salmonella enteritidis	1
Pseudomonas aeruginosa	1
Morganella morganii	1
Streptococcus mitis	1
<b>TOTAL</b>	<b>22</b>

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**Frequency of isolation of germs responsible for bacterial infections in  
2005**

**Fréquence d'isolement des germes responsables de bactériémies en 2005**

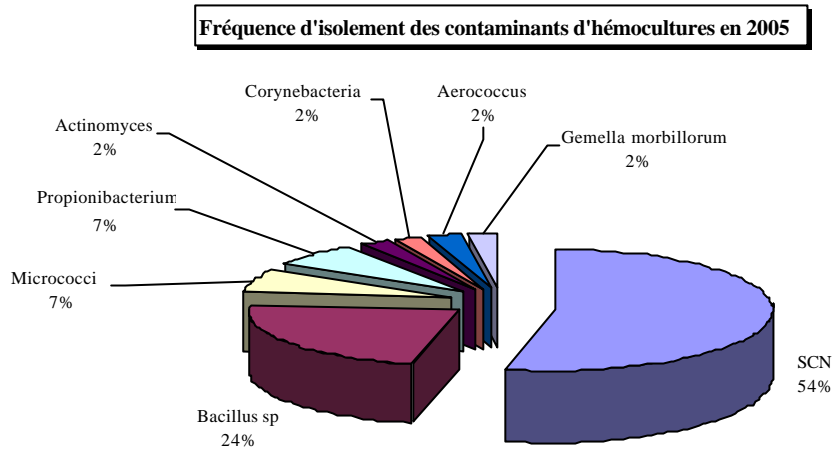


Species isolated and identified as contaminants	2005
	N
Coagulase-negative staphylococci	23
Bacillus sp	10
Micrococci	3
Propionibacterium	3
Actinomyces	1
Corynebacteria	1
Aerococcus	1
Gemella morbillorum	1
<b>TOTAL</b>	<b>43</b>

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**Frequency of isolation of blood culture contaminants in 2005**



### 3. Stool bacteriological and/or parasite tests

- 282 stool microbiological analyses

Micro-organisms identified	2005
	N
Entamoeba histolytica histolytica	14
Shigella flexneri	11
Salmonella enterica	7
- serotype weltevreden	3
- serotype enteritidis	2
- serotype manhattan	1
- serotype mississippi	1
Candida albicans	7
Enteropathogenic Escherichia coli (EPEC)	6
Trichuris trichiura eggs (trichocephalus)	6
Enterotoxigenic Escherichia coli (ETEC)	5
Enteroinvasive Escherichia coli (EIEC)	4
Campylobacter	3
- Camp. jejuni	2
- Camp. coli	1
Ancylostoma eggs (ankylostome)	3
Pseudomonas aeruginosa	3
Candida non albicans	3
Entamoeba histolytica minuta	2
Pleisiomonas shigelloïdes	1
Aeromonas hydrophila	1
Ascaris lumbricoides eggs	1
Pinworm eggs	1
<b>TOTAL</b>	<b>78</b>

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#### 4. Suppurations and purulent discharges

##### 4.1. Surface wounds and open abscesses

- 190 tests conducted in 2005
- 22 sterile samples

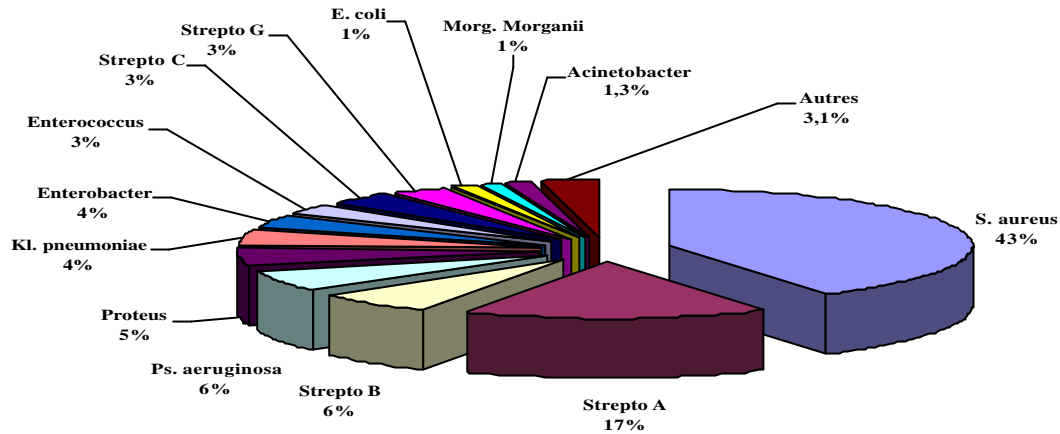
Species isolated	2005	
	N	%
Staphylococcus aureus	66	41.5
Streptococcus pyogenes	46	28.9
- Str pyogenes (Group A)	26	
- Str. agalactiae (Group B)	10	
- Group C $\beta$ -haemolytic str.	5	
- Group G $\beta$ -haemolytic str	5	
Pseudomonas aeruginosa	10	6.3
Genus Proteus	8	5.0
- Prot. mirabilis	7	
- Prot. penneri	1	
Klebsiella pneumoniae	7	4.4
Genus Enterobacter	6	3.8
- Ent. cloacae	3	
- Ent. aerogenes	2	
- Ent. sakazakii	1	
Enterococcus sp	5	3.1
Escherichia coli	2	1.3
Morganella morganii	2	1.3
Acinetobacter sp	2	1.3
Serratia liquefaciens	1	< 1.0
Streptococcus pneumoniae	1	< 1.0
Streptococcus anginosus	1	< 1.0
Corynebacterium sp	1	< 1.0
Haemophilus aphrophilus	1	< 1.0
<b>TOTAL</b>	<b>159</b>	

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**Frequency of isolation of germs responsible for surface suppurations in 2005**

**Fréquence d'isolement des germes responsables de suppurations superficielles en 2005**



**4.2. Pus of auricular origin**

Species isolated	2005	
	N	%
Pseudomonas aeruginosa	10	
Staphylococcus aureus	6	
Streptococcus pyogenes	8	
- Str pyogenes (Group A)	5	
- Str. agalactiae (Group B)	1	
- Group G $\beta$ -haemolytic str.	2	
Corynebacterium sp	4	
Genus Candida	4	
- C. albicans	2	
- C. non albicans	2	
Enterobacteriaceae	3	
- Klebsiella pneumoniae	1	
- Proteus mirabilis	1	
- Enterobacter cloacae	1	
Genus Alcaligenes	2	
- Alc. faecalis	1	
- Alc. xylosoxydans	1	
Aspergillus	1	
Acinetobacter sp	1	
Pseudomonas stutzeri	1	
Enterococcus faecium	1	
<b>TOTAL</b>	<b>45</b>	

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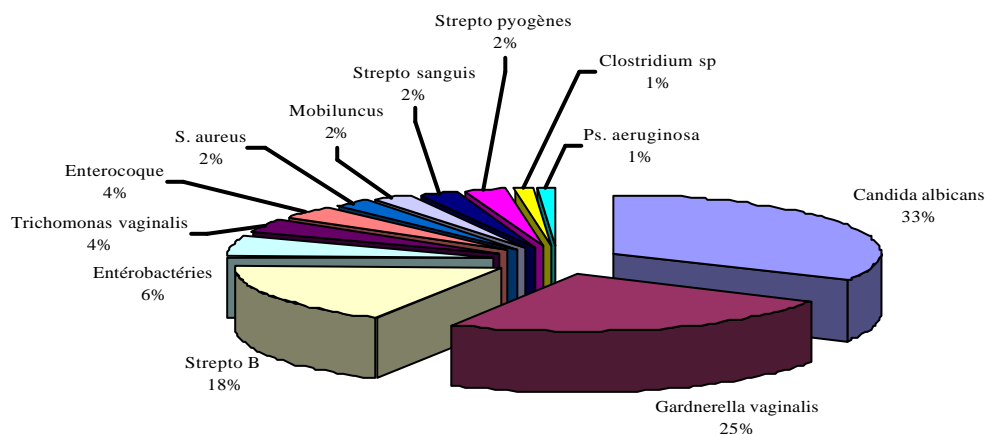
## 5. Vaginal samples

- 121 samples taken in 2005
- 35 tests did not reveal any pathogenic germs

Species isolated	2005	
	N	%
Candida albicans	28	33
Gardnerella vaginalis	21	25
Streptococcus agalactiae (Group B)	15	18
Enterobacteriaceae	6	6
- Escherichia coli	3	
- Klebsiella pneumoniae	1	
- Klebsiella oxytoca	1	
- Shigella flexneri	1	
Trichomonas vaginalis	3	4
Enterococcus sp	3	4
Staphylococcus aureus	2	2
Mobiluncus	2	2
Streptococcus sanguis	2	2
Streptococcus pyogenes	2	2
- Str pyogenes (Group A)	1	
- Group G $\beta$ -haemolytic str.	1	
Clostridium sp	1	1
Pseudomonas aeruginosa	1	1
<b>TOTAL</b>	<b>86</b>	

### Frequency of isolation of germs responsible for vaginal infections

**Fréquence d'isolement des germes responsables d'infections vaginales en 2005**



## 6. Streptococcus agalactiae (Group B) carriers

- 33 % of pregnant women were Streptococcus agalactiae carriers (26 % in 2004)

## 7. Broncho-pulmonary secretions

- 22 sputum samples, 15 BALs (bronchoalveolar lavage) and 6 bronchial aspirations

Species isolated	2005
	N
Streptococcus pneumoniae	3
Candida albicans	3
Haemophilus influenzae	2
Staphylococcus aureus	1
Klebsiella pneumoniae	1
Pseudomonas aeruginosa	1
<b>TOTAL</b>	<b>11</b>

## 8. Cerebrospinal fluids

- 8 spinal taps conducted in 2004 ; 1 Corynebacterium aquaticum meningeal syndrome

## 9. Hospital infections

Species isolated from wound suppurations	2005
	N
Staphylococcus aureus	6
Enterobacter cloacae	2
Streptococcus pyogenes (Group A)	1
Coagulase-negative staphylococci	1
Escherichia coli	1
<b>TOTAL</b>	<b>11</b>



## **B/ BACTERIAL RESISTANCE TO ANTIBIOTICS**

### **1. Escherichia coli**

➤ 121 strains isolated in 2005

- *Frequency of E. coli resistance to b-lactams*

<b>Resistance phenotype</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
Sensitive to $\beta$ -lactams	46 %	51 %	42 %
Amoxicillin +/- Clavulanate I or R	54 %	49 %	58 %
Cefotaxime I or R	0 %	0 %	0 %

- *Frequency of E. coli resistance to antibiotics other than b-lactams*

	<b>2003</b> % I or R	<b>2004</b> % I or R	<b>2005</b> % I or R
Aminoglycosides	2 %	3 %	11 %
Nalidixic acid	4 %	6 %	16 %
Fluoroquinolones	3 %	4 %	7 %
Bactrim®	13 %	16 %	8 %

### **2. Klebsiella pneumoniae**

➤ 54 strains isolated in 2005

- *Frequency of Kl. pneumoniae resistance to antibiotics*

	<b>2003</b> % I or R	<b>2004</b> % I or R	<b>2005</b> % I or R
Augmentin®	19 %	12 %	23 %
Claforan®, Oroken®	0 %	0 %	0 %
Aminoglycosides	5.5 %	0 %	13 %
Nalidixic acid	5.5 %	3 %	2 %
Fluoroquinolones	2.8 %	3 %	2 %
Bactrim®	14 %	0 %	9 %

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### 3. *Enterobacter sp* (cloacae, aerogenes, sakazakii)

➤ 25 strains isolated in 2005

- *Frequency of Enterobacter sp resistance to b-lactams*

Resistance phenotype	2003	2004	2005
Ticarcillin S	65 %	80 %	76 %
Ticarcillin +/- Clavulanate I or R	12 %	10 %	8 %
Cefotaxime I or R	23 %	10 %	16 %

- *Frequency of Enterobacter sp resistance to antibiotics other than b-lactams*

	2003 % I or R	2004 % I or R	2004 % I or R
Aminoglycosides	0 %	20 %	28 %
Nalidixic acid	6 %	25 %	28 %
Fluoroquinolones	0 %	15 %	28 %
Bactrim®	0 %	20 %	24 %

### 4. *Staphylococcus aureus*

➤ 120 strains isolated in 2005

- *Frequency of Staphylococcus aureus resistance to antibiotics*

	2003 % I or R	2004 % I or R	2005 % I or R
Penicillin G	93 %	94 %	93 %
Oxacillin / Meticillin	18 %	13 %	11 %
Kanamycin	14 %	13 %	13 %
Gentamicin	7 %	3 %	5 %
Erythromycin	11 %	8 %	13 %
Lincomycin	11 %	7 %	11 %
Pristinamycin	0.9 %	0.5 %	3 %
Pefloxacin	19 %	19 %	13 %
Fusidic acid	38 %	38 %	30 %

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## 5. *Pseudomonas aeruginosa*

➤ 23 strains isolated in 2005

- *Frequency of Pseudomonas aeruginosa resistance to antibiotics*

	<b>2003</b> % I or R	<b>2004</b> % I or R	<b>2005</b> % I or R
Ticarcillin R	42 %	34 %	30 %
Ticarcillin + Clavulanate R	42 %	34 %	30 %
Ceftazidim (Fortum®) R	2.6 %	2.4 %	4 %
Imipenem R	2.6 %	0 %	<b>15 %</b>
Amikacin R	21 %	15 %	38 %
Ciprofloxacin (Ciflox®) R	2.6 %	2.4 %	<b>19 %</b>

Impermeability to imipenem and resistance to ciprofloxacin increased noticeably.

## 6. *Streptococcus pneumoniae*

➤ 8 strains isolated in 2005; 3 strains with decreased sensitivity to  $\beta$ -lactams but no strains with high-level resistance.