

Context

- Optimization of antimicrobial use includes prevention, risk management systems and consumption data analysis.
- In 2010, Health-Canada implemented a federal program to improve medication incident and accidents (I/A) reporting.
- In Quebec, according to the *Ministère de la Santé et des Services Sociaux* (MSSS), the reporting of medication I/A occurring in any health care situation has been mandatory since 2002, in a national data register.

Methodology

- **Antimicrobial drug consumption** were extracted from pharmaceutical software (GESPHARx8®) for all hospitalized patients who received systemic antimicrobials between April 1st, 2012 and March 31st, 2013.
- **I/As** were reported using the MSSS approved written formulary (AH-223) and were paired with associated antimicrobial drug consumption data, using two new approaches: I/As/DDD and I/As/DOT ratios.

Results

- **Ten** antimicrobial agents (29% of antimicrobial agents) associated with the highest number of I/A reports **accounted for 76% of the DDD, 70% of DOT and 58% of I/As reports.**

Table I Incidents and accidents and consumption data for antimicrobial agents in 2012-2013, graded by DDD consumption

Antimicrobial agents	Number of I/A	Number of DDD	Number of DOT	Number of I/A/10000 DDD	Number of I/A /10000 DOT
Ampicillin	34	9199	9309	37	37
Tobramycin	18	3835	5323	47	34
Amoxicillin	15	3827	4143	39	36
Vancomycin	31	3342	6102	93	51
Cefotaxime	15	3149	4643	48	32
Cefazolin	14	3140	4652	45	30
Gentamycin	27	2879	8061	94	33
Fluconazole	4	2558	5230	16	8
Cloxacilline	14	2526	1854	55	76
Piperacillin + tazobactam	15	2501	5440	60	28
Ciprofloxacin	1	2257	2097	4	5
Clindamycin	12	2223	3024	54	40
Ceftazidime	2	1873	1987	11	10
Meropenem	6	1755	1864	34	32
Amoxicillin + clavulanic acid	5	1649	1375	30	36
Metronidazole	7	1390	2585	50	27
Caspofungin	1	1198	1683	8	6
Ticarcillin + clavulanic acid	4	1176	2509	34	16

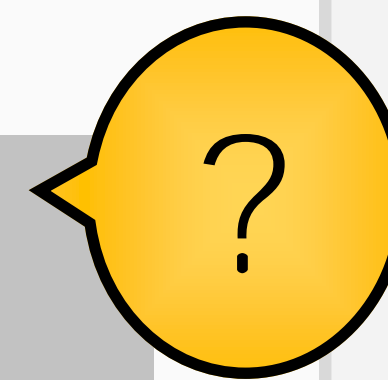
Antimicrobial agents	Number of I/A	Number of DDD	Number of DOT	Number of I/A/10000 DDD	Number of I/A /10000 DOT
Azithromycin	1	1084	999	9	10
Clarithromycine	1	791	1075	13	9
Cephalexin	2	748	1165	27	17
Ceftriaxone	6	612	1244	98	48
Levofloxacin	1	568	702	18	14
Erythromycin	4	497	1002	80	40
Voriconazole	1	414	483	24	21
Colistimethate	1	412	501	24	20
Acyclovir	8	397	2683	202	30
Cefoxitine	3	329	713	91	42
Amphotericin B (liposomal)	1	278	494	36	20
Rifampicin	2	190	306	105	65
Ganciclovir	1	185	460	54	22
Linezolid	5	133	189	376	265
Cefprozil	1	104	218	96	46
Doxycyclin	3	84	198	357	152
Imipenem+cilastatine	1	54	78	185	128
Total	315	48158	75082		

Legend

DDD : defined daily dose
 DOT : dose days of therapy
 I/A : incidents and accidents

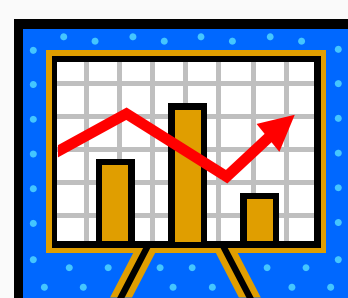
Top ten antimicrobial agents with the lowest ratio I/A /10000 DOT

Top ten antimicrobial agents with the highest ratio I/A /10000 DOT



What are I/A? (according to the MSSS)

- **Incident:** action or situation without consequences for the user but with unusual outcomes which might occur on other contexts.
- **Accident:** action or situation where the risk occurs and is considered responsible for effects on the user's health or wellness.



To monitor antimicrobial drug consumption, two data are used:

- **Defined daily dose (DDD):** average maintenance dose per day for a drug used for its main indication in adults (70kg) → *not adapted in pediatry*
- **Days of therapy (DOT):** number of days of therapy → *weight-independent, more adapted in pediatry*

Objectives

- Quantify antimicrobial-associated I/A rates
- Compare I/A rates with antimicrobial drug consumptions



Our center

- A mother-child Hospital
- 500 beds
- 18,000 admissions and 100,000 patient-day per year

Conclusion

- Ten antimicrobial agents commonly prescribed in our center were associated with 58% of all I/A reports (according to DDDs and DOTs).
- As part of antimicrobial stewardship and risks management program, it can be useful to compare I/A reports and consumption data to focus on antimicrobial agents that should be closely evaluated.