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# Stewardship is the right word

Jim Hutchinson

Medical Microbiologist

Medical Director - Antimicrobial Stewardship

Island Health



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20 minutes



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# Principles



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No blame



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“Don’t focus on resistance, focus on use”

Jim Hutchinson



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Is antimicrobial use in animals causing  
resistance to antimicrobials in infections of  
humans?



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Yes



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Is antimicrobial use in animals more important than use in humans?

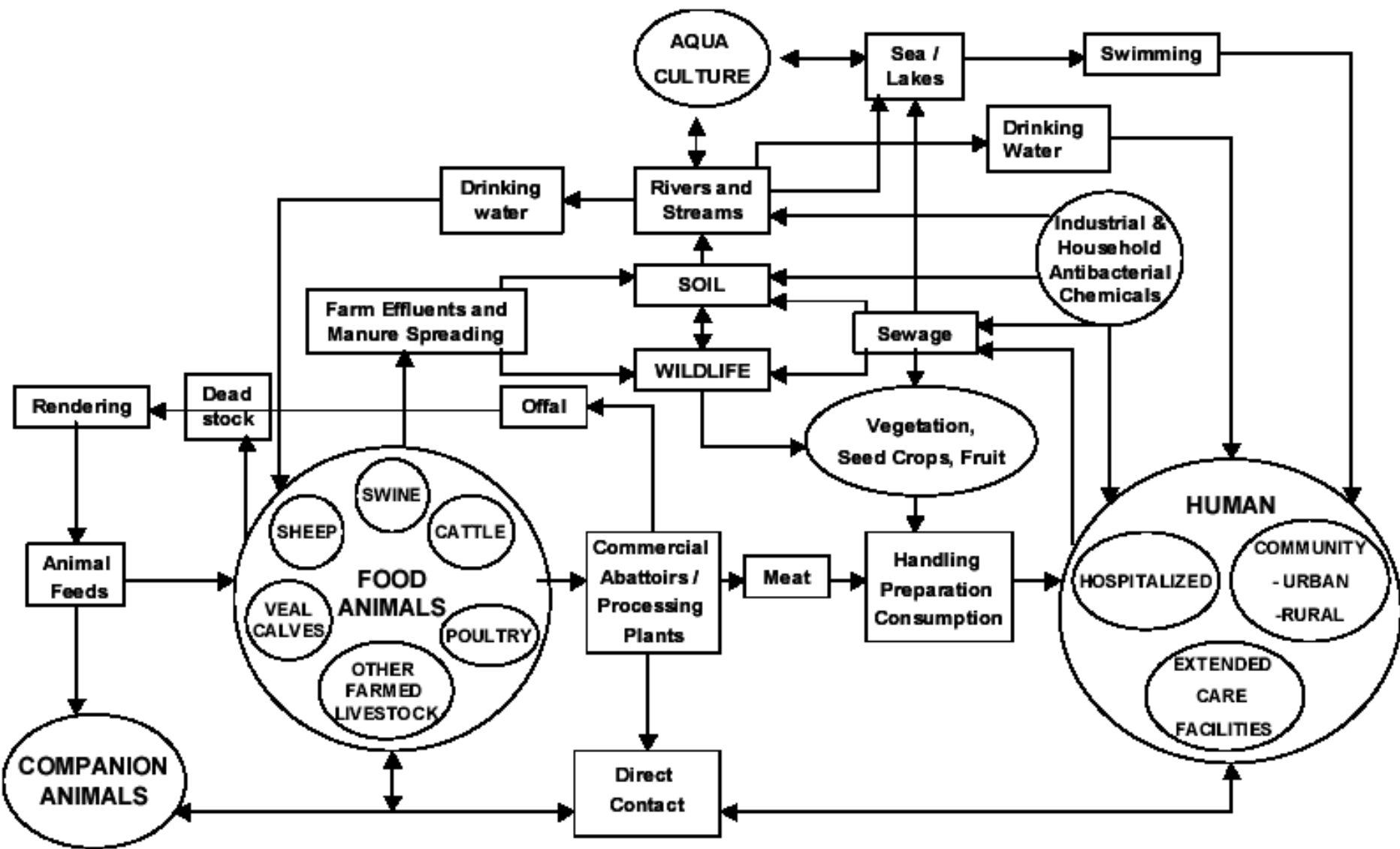




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No





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The people are good



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Their motivations are “normal”



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Leaders influence motivations



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# Stewardship



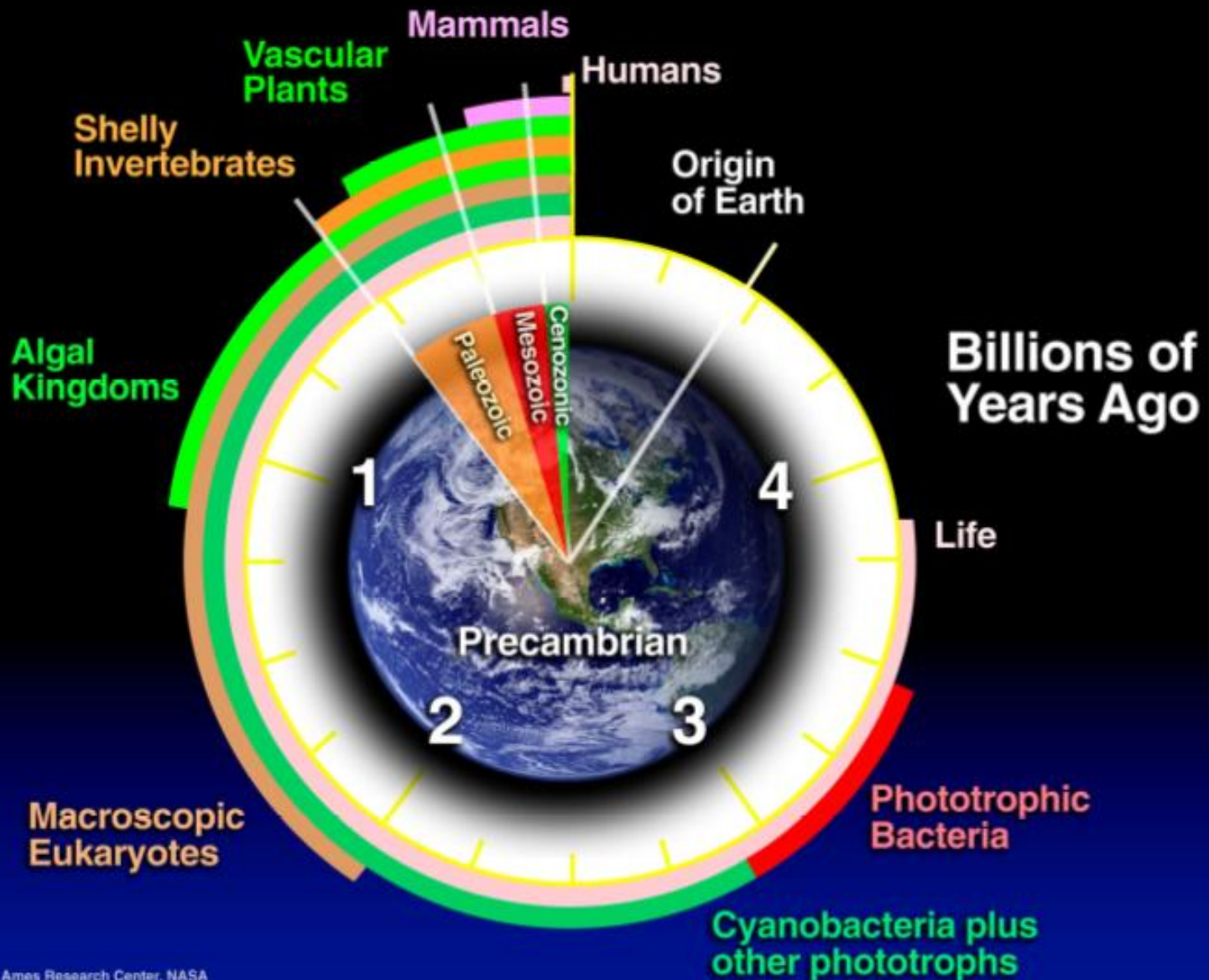
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Stewardship is leadership



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# Earth's Biogeologic Clock



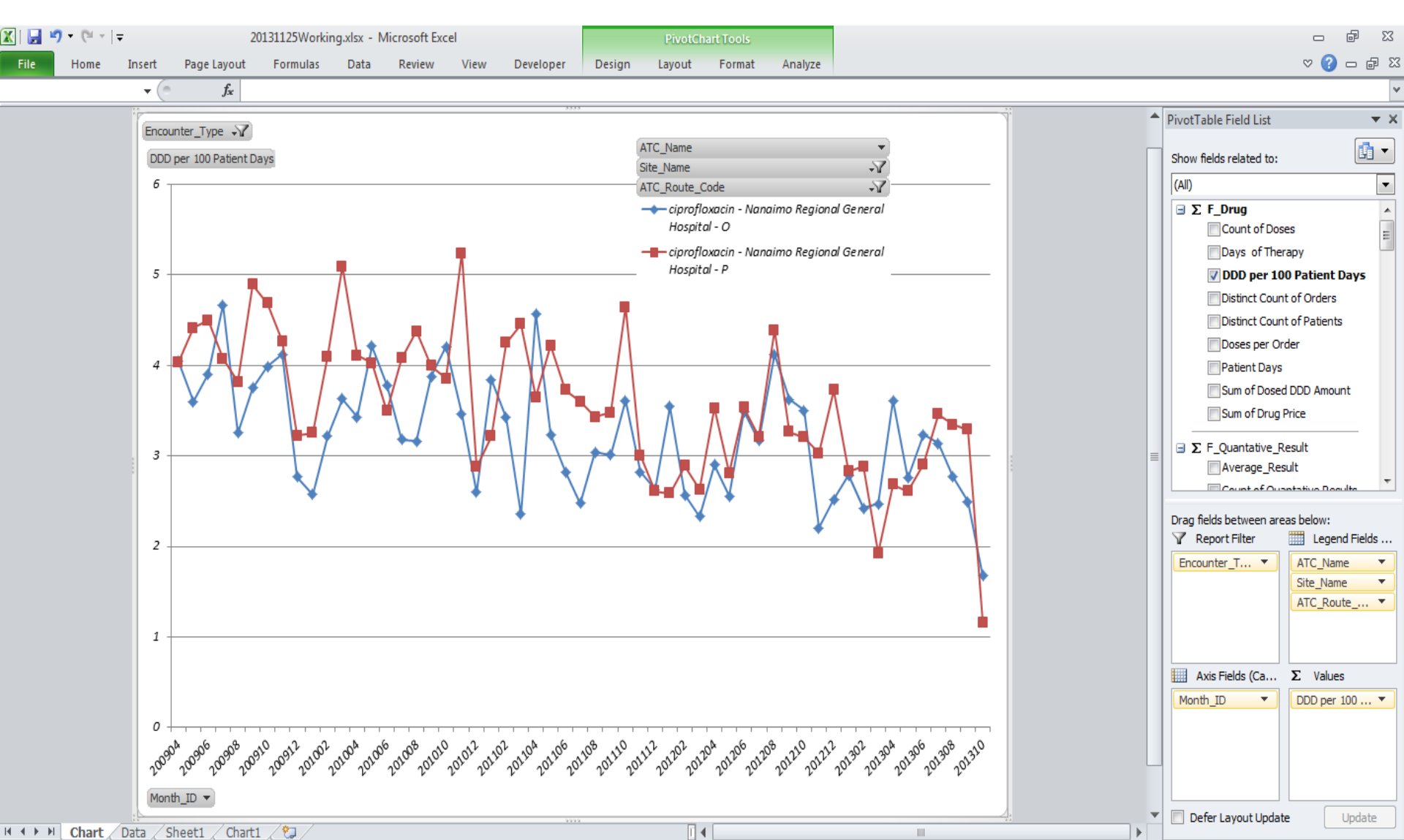


# What data is needed for quality management of infections?

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- Antibiotic use
- Antibiotic resistance
  - “Antibiogram”
- Measures of inflammation
  - e.g. WBC, Temperature, Procalcitonin
- Outcome measures
  - e.g. LOS, mortality, complications, readmissions





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	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1																
2																
3																
4																
5																
6																
7		Nanaimo Regional General Hospital Total		ciprofloxacin Total	Gran											
8	P															
9	4.035778175	8.0816935	8.0816935	8.0816935	8.0816935											
10	4.414403916	8.015382823	8.015382823	8.015382823	8.015382823											
11	4.499352865	8.402753265	8.402753265	8.402753265	8.402753265											
12	4.073006724	8.743996158	8.743996158	8.743996158	8.743996158											
13	3.816946888	7.068255205	7.068255205	7.068255205	7.068255205											
14	4.895411996	8.648445626	8.648445626	8.648445626	8.648445626											
15	4.68813961	8.679306259	8.679306259	8.679306259	8.679306259											
16	4.267622997	8.391796481	8.391796481	8.391796481	8.391796481											
17	3.226691042	5.997486289	5.997486289	5.997486289	5.997486289											
18	3.252184042	5.829353524	5.829353524	5.829353524	5.829353524											
19	4.095144679	7.313634134	7.313634134	7.313634134	7.313634134											
20	5.09024446	8.722869545	8.722869545	8.722869545	8.722869545											
21	4.111358575	7.541202673	7.541202673	7.541202673	7.541202673											
22	4.024219842	8.236492781	8.236492781	8.236492781	8.236492781											
23	3.498136646	7.280745342	7.280745342	7.280745342	7.280745342											
24	4.080180287	7.263966315	7.263966315	7.263966315	7.263966315											
25	4.379803713	7.5428639	7.5428639	7.5428639	7.5428639											
26	3.996791566	7.878423284	7.878423284	7.878423284	7.878423284											
27	3.85715895	8.064661485	8.064661485	8.064661485	8.064661485											
28	5.238040872	8.703048293	8.703048293	8.703048293	8.703048293											
29	2.876507754	5.475588742	5.475588742	5.475588742	5.475588742											
30	3.217372036	7.061821405	7.061821405	7.061821405	7.061821405											
31	4.249312119	7.670774016	7.670774016	7.670774016	7.670774016											
32	4.157549794	6.810949149	6.810949149	6.810949149	6.810949149											

**ATC Name**

- cefaclor
- cefalexin
- cefazolin
- cefepime
- cefixime
- cefotax...
- cefoxitin
- ceftazi...
- ceftriax...
- cefurox...
- ciproflo...**
- clarithr...
- clinda...
- cloxacil...

**Site\_Name**

- Campbell ...
- Cormorant...
- Cowichan ...
- Lady Mint...
- Nanaimo ...**
- Port Hardy...
- Port McNe...
- Queen Ale...
- Royal Jubil...
- Saanich Pe...
- St. Joseph'...
- Tofino Ge...
- Victoria G...
- West Coas...

**Unit\_Name**

- 2 North East-General P...
- 2 North West-General ...
- 2 South
- 2 South - Medical
- 2 South East-Geriatric ...
- 2 South West-Geriatric...
- 2 West - Medical
- 2B Oncology
- 3 East
- 3 North
- 3 North East-Clinical T...
- 3 North Short Stay Unit
- 3 North West-Heart H...
- 3 South

**ATC\_Rout...**

- O
- P**
- (undefi...
- Inhal.s...
- SL



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	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1																		
2																		
3																		
4																		
5																		
6																		
7																		
8	P	Royal Jubilee Hospital Total	ciprofloxacin Total	Gran														
9		3.248535192	6.705666395	6.705666395	6.70													
10		2.167123085	5.025904818	5.025904818	5.02													
11		2.180241327	5.385369532	5.385369532	5.38													
12		1.567799804	4.228536971	4.228536971	4.22													
13		1.976920741	5.643789857	5.643789857	5.64													
14		2.252747253	5.813682845	5.813682845	5.81													
15		2.056472314	5.554822149	5.554822149	5.55													
16		2.129615444	5.19764057	5.19764057	5.1													
17		2.073816486	5.542559077	5.542559077	5.54													
18		2.23221526	5.978990048	5.978990048	5.97													
19		0.861432439	3.716465666	3.716465666	3.71													
20		1.342124542	4.223076923	4.223076923	4.22													
21		1.717939075	5.166603986	5.166603986	5.16													
22		1.41151895	3.828334825	3.828334825	3.82													
23		1.469744983	4.370755998	4.370755998	4.37													
24		1.763574493	4.641219115	4.641219115	4.64													
25		1.997439181	5.192814642	5.192814642	5.19													
26		1.243366187	4.96398787	4.96398787	4.96													
27		1.753057659	4.426688992	4.426688992	4.42													
28		1.281043813	4.053673363	4.053673363	4.05													
29		1.385638908	4.031505697	4.031505697	4.03													
30		1.565626839	5.873307828	5.873307828	5.87													
31		1.621363853	4.780639008	4.780639008	4.78													
32		1.611588951	4.074996228	4.074996228	4.07													

**ATC Name**

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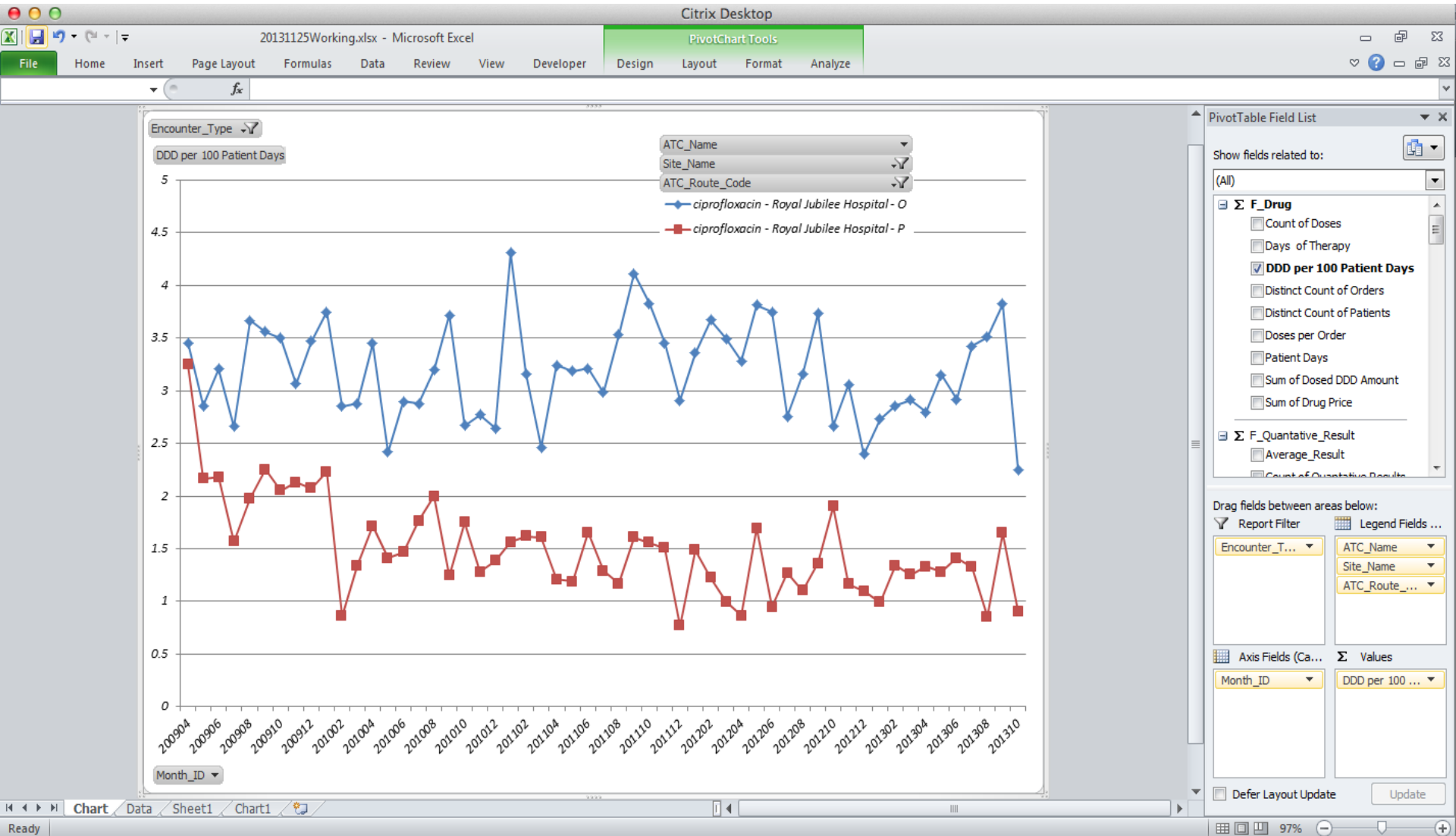
**Unit\_Name**

- Intensive Care Unit-RJH
- Kenning 2 - Geriatric P...
- Post Anaesthetic Reco...
- Post Anaesthetic Reco...
- Post Op Openheart Su...
- Psychiatric Intensive C...
- Richmond Pavilion 1 - ...
- Richmond Pavilion 2 - ...
- Richmond Pavilion 3 - ...
- Royal 1 - ALC Unit
- Royal 1 - Short Stay
- Royal 2 - Complex Wo...
- Royal 2 Short Stay
- Royal 3 - Abdominal/T...

**ATC\_Rout...**

- O
- P
- (undefi...
- Inhal.s...
- SL





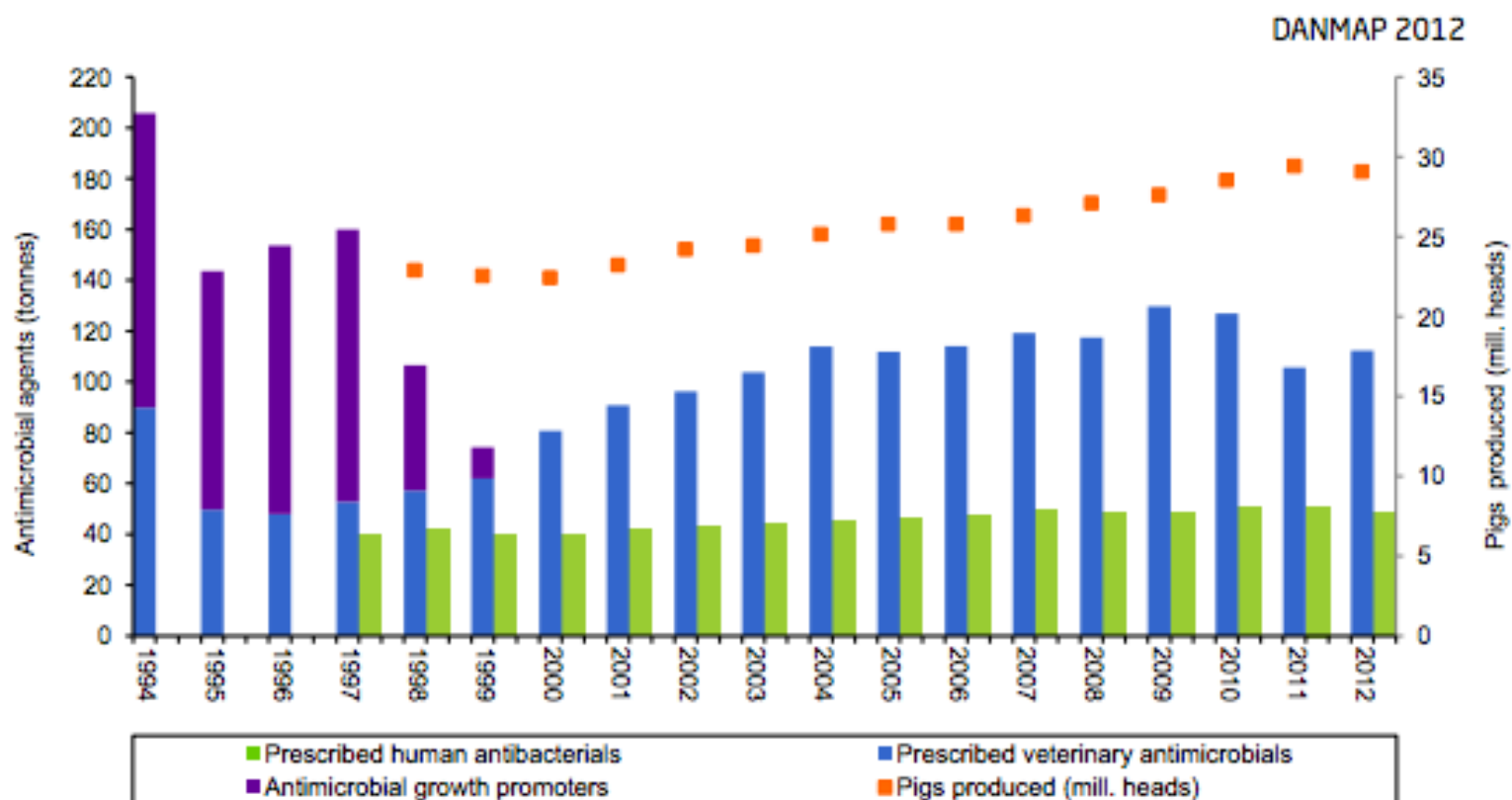
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# DANMAP 2012

DANMAP 2012 - Use of antimicrobial agents and occurrence  
of antimicrobial resistance in bacteria from food animals,  
food and humans in Denmark



Figure 4.1. Prescribed antimicrobial agents for humans and for animals compared to the number of pigs produced, Denmark



**Table 3.1. Production of food animals and the production of meat and milk, Denmark**

DANMAP 2012

Year	Broilers		Turkeys		Cattle (slaughtered)		Dairy cows		Pigs			Farmed fish <sup>(a)</sup>	
	1,000 heads	mill. kg <sup>(b)</sup>	1,000 heads	mill. kg	1,000 heads	mill. kg	1,000 heads	mill. kg milk	1,000 heads	Export 1,000 heads <sup>(c)</sup>	mill. kg	Fresh water	Marine
												mill. kg	mill. kg
2003	129861	197	777	11.2	625	161	596	4540	24434	-	1898	34	8
2004	130674	198	1086	19.6	632	165	569	4434	25141	1712	1967	34	9
2005	122179	183	1237	17.4	549	145	559	4449	25758	2720	1988	31	8
2006	106182	161	785	11.3	509	140	556	4492	25763	3204	1957	29	8
2007	107952	163	1009	14.4	512	141	545	4515	26311	3522	2046	31	10
2008	107595	163	1068	12.3	509	138	559	4585	27078	4943	1985	30	10
2009	108851	165	1175	11,1	507	137	569	4734	27603	6642	1898	29	11
2010	117653	178	1184	14,0	519	142	574	4830	28505	7074	1974	28	10
2011	115454	175	960	9,4	551	145	575	4801	29399	7632	2008	28	11
2012	111080	168	1103	12,4	539	138	580	4928	29047	8794	1902	-	-
Increase <sup>(d)</sup>	-4%	-4%	15%	31%	-2%	-5%	1%	3%	-1%	15%	-5%	-	-


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