

Additional file 7. Main statistics of random forest classification modeling of antibiotic prescribing for individual patients

Additional file 7a The importance coefficients of models with patient factors and antibiotics prescribing

Factors	RD	DD	SI	UD	OD	EI	IJ
Sex	0.029	0.033	0.011	0.018	0.012	0.011	0.088
Age	0.188	0.297	0.120	0.474	0.176	0.073	0.355
Symptom1	0.172	0.174	0.232	0.344	0.455	0.280	0.203
Symptom2	0.125	0.123	0.224	0.107	0.190	0.192	0.144
Symptom3	0.087	0.057	0.138	0.018	0.105	0.101	0.094
Symptom4	0.074	0.051	0.117	0.016	0.029	0.096	0.062
Symptom5	0.068	0.045	0.080	0.008	0.027	0.094	0.055
Symptom6	0.065	0.043	0.072	0.006	0.006	0.048	/
Symptom7	0.039	0.043	0.006	0.005	/	0.048	/
Symptom8	0.035	0.033	/	0.005	/	0.036	/
Symptom9	0.030	0.028	/	/	/	0.021	/
Symptom10	0.024	0.027	/	/	/	<0.001	/
Symptom11	0.013	0.027	/	/	/	/	/
Symptom12	0.010	0.019	/	/	/	/	/
Symptom13	0.007	/	/	/	/	/	/
Symptom14	0.002	/	/	/	/	/	/
Self-medication	0.034	/	/	/	/	/	/

Note: RD=respiratory diseases; DD=digestive diseases; SI=skin infections; UD=urogenital diseases; EI=eye infections; OD=oral and dental diseases; IJ=injuries; symptoms 1 to 14 for RD= coughing, sore throat, chest tightness, sputum, sneeze, headache, fever, chest pain, swollen throat, breath difficulty, systemic pain, purulent sputum, fever, sputum with blood; symptoms 1 to 12 for DD=abdominal pain, fever, abdominal distension, diarrhea, dysphagia, heart burn, appetite decrease, belching, nausea, vomiting, discomfort, gastritis history; symptoms 1 to 7 for SI= itching, pain, swelling, rash, pus discharge, fever, ulcer; symptom1 to 8 for UD= dysuria, hypogastric pain, dribbling urine, excessive secretions, hematuria, pyuria, red urethral meatus, odor; symptoms 1 to 6 for OD= swelling, ulcer, pain, cavity, fever, pus discharge; symptoms 1 to 5 for IJ= pain, bleeding, swelling, infection, open wound; symptoms 1 to 5 for EI= irritating, eye discharge, swelling, blurred vision, tearing, photophobia, dry eyes, itching, pain, corneal ulcer.

Additional file 7. Main statistics of random forest classification modeling of antibiotic prescribing for individual patients

Additional file 7b The importance coefficients of models with clinician factors and antibiotics prescribing

Factors	RD	DD	SI	UD	OD	EI	IJ
Types of TCM prescribed for the current case	0.365	0.306	0.300	0.331	0.243	0.188	0.260
Annual non-antibiotics prescribing rate for the current diagnose	0.142	0.172	0.179	0.148	0.113	0.175	0.242
Annual antibiotics prescribing rate for the current diagnose	0.140	0.169	0.178	0.154	0.126	0.161	0.223
Annual medicine prescribing rate for the current diagnose	0.106	0.094	0.075	0.066	0.202	0.033	0.049
Service volume	0.053	0.058	0.052	0.062	0.069	0.206	0.041
Annual medicine prescribing rate for all diagnoses	0.054	0.061	0.066	0.072	0.079	0.065	0.057
Annual TCM prescribing rate for the current diagnose	0.053	0.047	0.063	0.047	0.087	0.072	0.034
Types of non-antibiotics medicine prescribed for the current case	0.065	0.057	0.054	0.082	0.050	0.024	0.071
Grouping by service volume	0.012	0.021	0.023	0.023	0.021	0.069	0.014
Type of affiliation	0.012	0.014	0.010	0.013	0.009	0.008	0.009

Note: RD=respiratory diseases; DD=digestive diseases; SI=skin infections; UD=urogenital diseases; EI=eye infections; OD=oral and dental diseases; IJ=injuries; TCM=traditional Chinese medicine.

Additional file 7 Main statistics of random forest classification modeling of antibiotic prescribing for individual patients

Additional file 7c The importance coefficients of models with spatiotemporal factors and antibiotics prescribing

Factors	RD	DD	SI	UD	OD	EI	IJ
Distance to nearest province-level city	0.125	0.225	0.129	0.058	0.148	0.008	0.147
Per capita income	0.274	0.143	0.086	0.097	0.028	0.118	0.065
Population density	0.044	0.147	0.077	0.101	0.216	0.029	0.067
Number of health workers per 1000 people	0.054	0.045	0.048	0.073	0.037	0.283	0.065
Distance to nearest prefecture-level city	0.122	0.044	0.071	0.078	0.017	0.182	0.029
Rural per capita income	0.041	0.083	0.115	0.146	0.015	0.020	0.115
Land area	0.061	0.058	0.051	0.055	0.039	0.079	0.095
Per capita GDP	0.018	0.038	0.075	0.076	0.106	0.022	0.095
Population size	0.048	0.034	0.043	0.051	0.107	0.079	0.060
Ratio of males to females	0.037	0.040	0.033	0.053	0.109	0.099	0.041
Distance to nearest county-level city	0.033	0.042	0.047	0.052	0.029	0.035	0.036
Average life expectancy	0.015	0.016	0.054	0.023	0.015	0.022	0.061
Early morning visit	0.018	0.017	0.031	0.030	0.029	0.004	0.020
Winter	0.025	0.012	0.018	0.029	0.022	0.001	0.019
Summer	0.021	0.010	0.020	0.020	0.020	0.004	0.018
Spring	0.015	0.013	0.021	0.016	0.017	0.008	0.010
Autumn	0.014	0.012	0.020	0.014	0.018	0.001	0.010
Night visit	0.014	0.010	0.024	0.014	0.010	0.001	0.008
Hilly land scape	0.007	0.004	0.018	0.006	0.006	0.002	0.023
Plain land scape	0.013	0.003	0.015	0.003	0.008	0.002	0.008
Mountain land scape	0.003	0.005	0.005	0.005	0.004	0.001	0.006

Note: RD=respiratory diseases; DD=digestive diseases; SI=skin infections; UD=urogenital diseases; EI=eye infections; OD=oral and dental diseases; IJ=injuries.

Additional file 7. Main statistics of random forest classification modeling of antibiotic prescribing for individual patients

Additional file 7d The importance coefficients of models with all factors and antibiotics prescribing

Factors	RD	DD	SI	UD	OD	EI	IJ
Clinician factors							
Types of non-antibiotics medicine prescribed for the current case	0.211	0.185	0.201	0.183	0.172	0.156	0.193
Annual non-antibiotics prescribing rate for the current diagnose	0.091	0.110	0.124	0.094	0.075	0.035	0.182
Annual antibiotics prescribing rate for the current diagnose	0.087	0.118	0.128	0.090	0.073	0.036	0.171
Annual medicine prescribing rate for the current diagnose	0.049	0.054	0.039	0.033	0.082	0.010	0.027
Types of TCM prescribed for the current case	0.026	0.047	0.040	0.050	0.026	0.015	0.058
Annual medicine prescribing rate for all diagnoses	0.028	0.028	0.027	0.026	0.035	0.016	0.022
Service volume	0.028	0.025	0.023	0.023	0.029	0.011	0.018
Annual TCM prescribing rate for the current diagnose	0.028	0.025	0.029	0.019	0.031	0.008	0.016
Grouping by service volume	0.011	0.008	0.008	0.009	0.013	0.005	0.005
Type of affiliation	0.007	0.009	0.004	0.006	0.006	0.003	0.003
Spatiotemporal factors							
Number of health workers per 1000 people	0.011	0.009	0.009	0.012	0.012	0.323	0.007
Distance to nearest prefecture-level city	0.013	0.015	0.013	0.019	0.012	0.133	0.006
Per capita income	0.017	0.011	0.012	0.014	0.013	0.041	0.014
Distance to nearest province-level city	0.018	0.021	0.018	0.015	0.029	0.006	0.014
Rural per capita income	0.019	0.012	0.024	0.016	0.018	0.005	0.009
Population size	0.012	0.011	0.009	0.015	0.025	0.014	0.011
Land area	0.012	0.011	0.009	0.013	0.020	0.014	0.009
Population density	0.013	0.013	0.011	0.014	0.027	0.003	0.007
Ratio of males to females	0.012	0.012	0.008	0.010	0.014	0.018	0.010
Per capita GDP	0.013	0.012	0.012	0.011	0.018	0.007	0.011
Distance to nearest county-level city	0.013	0.011	0.011	0.012	0.013	0.012	0.006
Early morning visit	0.011	0.011	0.008	0.008	0.014	0.008	0.012
Winter	0.010	0.009	0.007	0.007	0.012	0.004	0.009
Average life expectancy	0.009	0.008	0.008	0.007	0.014	0.007	0.005
Autumn	0.009	0.009	0.006	0.006	0.012	0.004	0.009
Spring	0.007	0.009	0.006	0.006	0.011	0.007	0.009
Summer	0.008	0.009	0.006	0.006	0.011	0.005	0.009
Night visit	0.004	0.003	0.003	0.002	0.003	0.001	0.003
Plain land scape	0.002	0.001	0.001	0.002	0.002	0.007	0.001
Hilly land scape	0.002	0.001	0.001	0.001	0.002	0.003	0.001
Mountain land scape	0.001	0.001	0.001	0.001	0.002	0.000	0.001
Patient factors							
Sex	0.011	0.012	0.008	0.009	0.017	0.008	0.015
Age	0.059	0.072	0.040	0.136	0.077	0.037	0.066
Symptom1	0.039	0.025	0.067	0.090	0.033	0.005	0.016
Symptom2	0.022	0.011	0.024	0.025	0.021	0.004	0.026
Symptom3	0.016	0.012	0.018	0.004	0.017	0.009	0.012
Symptom4	0.015	0.009	0.024	0.003	0.002	0.002	0.003
Symptom5	0.012	0.001	0.006	0.001	0.008	0.002	0.003
Symptom6	0.014	0.011	0.006	0.002	0.002	0.005	/
Symptom7	0.008	0.010	0.001	<0.001	/	0.004	/
Symptom8	0.005	0.008	/	0.001	/	0.002	/
Symptom9	0.004	0.006	/	/	/	0.006	/
Symptom10	0.005	0.006	/	/	/	<0.001	/
Symptom11	0.001	0.008	/	/	/	/	/
Symptom12	0.002	0.003	/	/	/	/	/
Symptom13	0.001	/	/	/	/	/	/
Symptom14	<0.001	/	/	/	/	/	/
Self-medication	0.005	/	/	/	/	/	/

Note: RD=respiratory diseases; DD=digestive diseases; SI=skin infections; UD=urogenital diseases; EI=eye infections; OD=oral and dental diseases; IJ=injuries; TCM=traditional Chinese medicine; symptoms 1 to 14 for RD= coughing, sore throat, chest tightness, sputum, sneeze, headache, fever, chest pain, swollen throat, breath difficulty, systemic pain, purulent sputum, fever, sputum with blood; symptoms 1 to 12 for DD=abdominal pain, fever, abdominal distension, diarrhea, dysphagia, heart burn, appetite decrease, belching, nausea, vomiting, discomfort, gastritis history; symptoms 1 to 7 for SI= itching, pain, swelling, rash, pus discharge, fever, ulcer; symptom1 to 8 for UD= dysuria, hypogastric pain, dribbling urine, excessive secretions, hematuria, pyuria, red urethral meatus, odor; symptoms 1 to 6 for OD= swelling, ulcer, pain, cavity, fever, pus discharge; symptoms 1 to 5 for IJ= pain, bleeding, swelling, infection, open wound; symptoms 1 to 5 for EI= irritating, eye discharge, swelling, blurred vision, tearing, photophobia, dry eyes, itching, pain, corneal ulcer.