

ONLINE SUPPLEMENTARY MATERIAL

Supplementary File 1. The original protocol for the study

Data were searched through Electronic Medical Record System of the Second Affiliated Hospital, Zhejiang University School of Medicine (Hangzhou, China). Data extraction was performed in September 2021 by IT department.

Inclusion criteria:

1. time frame (from January 1st 2017 to December 31st 2020)
2. diagnosed with *H. pylori* infection
3. received initial PPI-bismuth-containing quadruple treatments
4. with the results of urea breath test at least 4 weeks after eradication therapy

Exclusion criteria:

1. had *H. pylori* eradication treatments before
2. changed the regimen during therapy
3. clinical data were incomplete

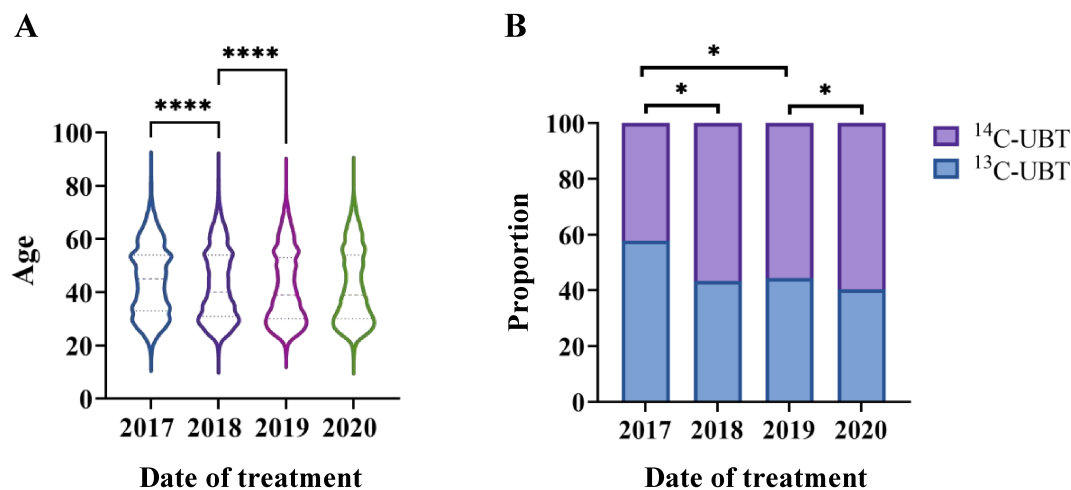
Patients' data were deidentified and two researchers checked the data independently. Variables included age, sex, year, prescribed treatment and outcomes.

Supplementary File 2. First-line Bismuth-containing quadruple therapy for *H.*

***pylori* infection category pools and Proton pump inhibitor categories**

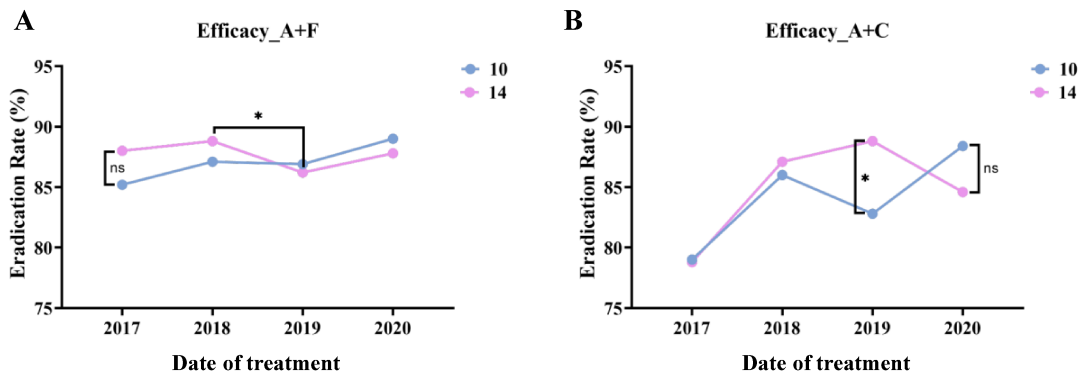
1. PPI + bismuth + A + F
2. PPI + bismuth + A + C
3. PPI + bismuth + F + C
4. PPI + bismuth + A + L
5. PPI + bismuth + F + L
6. PPI + bismuth + C + L
7. Other regimens (including different first-line therapies with frequencies lower than 0.5%)

Standard dose PPI including rabeprazole 10 mg (or 20 mg), pantoprazole 40 mg, esomeprazole 20 mg, omeprazole 20 mg and lansoprazole 30mg. Bismuth-containing quadruple therapy is defined as a PPI together with two antibiotics and bismuth salts given in the standard way. A, amoxicillin; C, clarithromycin; F, furazolidone; L, levofloxacin.



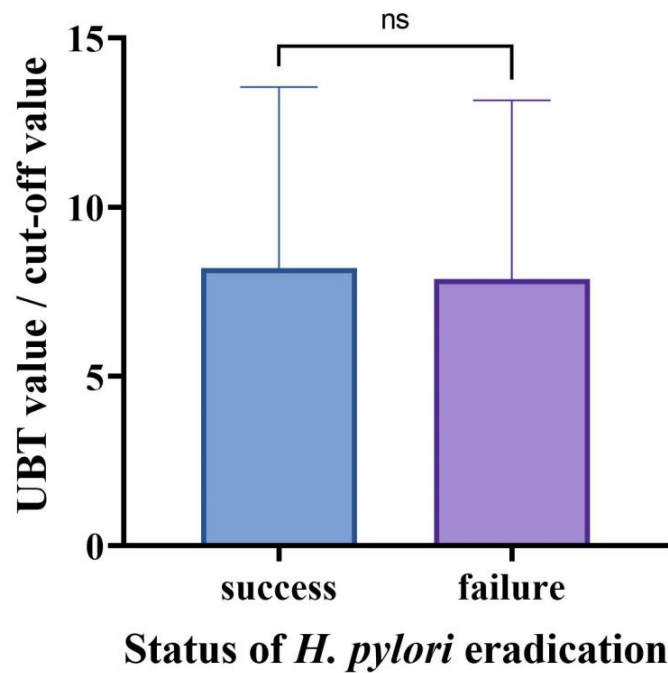
Supplement Figure 1. Temporal trend analysis (2017–2020).

(A) Trends in the age of patients. (B) Trends in the assessments after treatments.



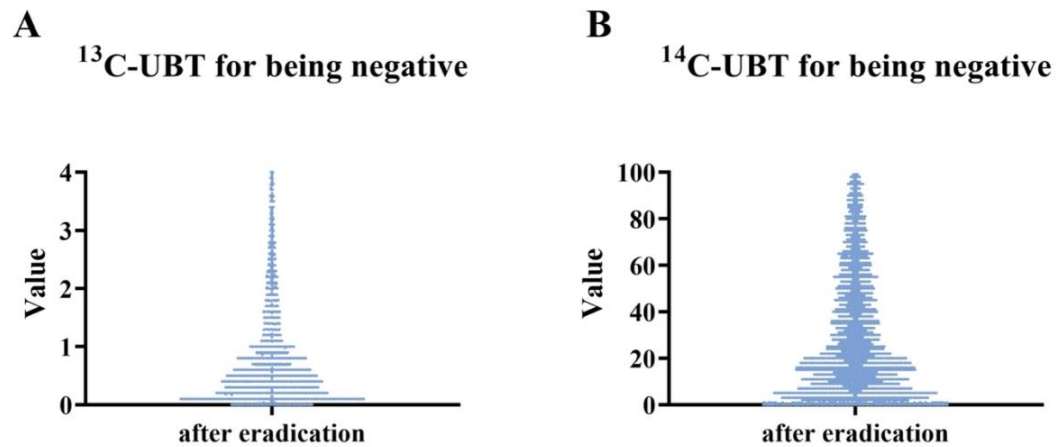
Supplement Figure 2. Efficacy Results by treatment duration.

(A) The eradication rate of regimens with amoxicillin and furazolidone. (B) The eradication rate of regimens with amoxicillin and clarithromycin.



Supplement Figure 3. The association between UBT value before treatments and the outcomes.

Data is standardized by dividing the UBT value by the cut-off value in different tests. The cut-off value of ^{13}C -UBT was 4.0‰ (delta over baseline, DOB), and that of ^{14}C -UBT was 100 (disintegrations per minute, DPM).



Supplement Figure 4. Results of UBT for being negative after *H. pylori* eradication.

(A) The scatter plot of ^{13}C -UBT after *H. pylori* eradication. (B) The scatter plot of ^{14}C -UBT after *H. pylori* eradication. The cut-off value of ^{13}C -UBT was 4.0‰ (delta over baseline, DOB), and that of ^{14}C -UBT was 100 (disintegrations per minute, DPM).

Supplement Table 1. Effectiveness of first-line treatments per year.

Year	N	Success	Eradication rate (%)
2017	3957	3317	83.8%
2018	6486	5605	86.4%*
2019	7568	6506	86.0%*
2020	5459	4736	86.8%*

* $P < 0.05$ vs 2017.

Supplement Table 2. Effectiveness of different first-line treatments per year.

Year	Regimen	N	Success	Eradication rate (%)
2017	A + F	2785	2424 _a	87.0%
	A + C	639	504 _b	78.9%
	F + C	279	176 _c	63.1%
	A + L	97	83 _{a, b}	85.6%
	F + L	109	95 _{a, b}	87.2%
	C + L	28	15 _c	53.6%
	Others	20	20 _{a, b}	100.0%
2018	A + F	4830	4275 _a	88.5%
	A + C	863	750 _a	86.9%
	F + C	498	330 _{b, c}	66.3%
	A + L	110	96 _a	87.3%
	F + L	122	107 _a	87.7%
	C + L	22	11 _c	50.0%
	Others	41	36 _{a, b}	87.8%
2019	A + F	5009	4344 _a	86.7%
	A + C	1853	1611 _a	86.9%
	F + C	495	373 _b	75.4%
	A + L	81	67 _{a, b}	82.7%
	F + L	93	86 _a	92.5%
	C + L	27	17 _b	63.0%
	Others	10	8 _{a, b}	80.0%
2020	A + F	4160	3664 _a	88.1%
	A + C	827	712 _a	86.1%
	F + C	397	298 _b	75.1%
	A + L	21	18 _{a, b}	85.7%
	F + L	34	30 _{a, b}	88.2%
	C + L	18	13 _{a, b}	72.2%
	Others	2	1 _{a, b}	50.0%

Each subscript letter (a or b) denotes a subset of year categories whose column proportions do not differ significantly from each other at the .05 level. A, amoxicillin; C, clarithromycin; F, furazolidone; L, levofloxacin.

Supplement Table 3. Recurrence after confirmation of *H. pylori* eradication with stricter criteria.

	Test	N	Standardized positivity	Recurrence rate
overall	overall	1457	32	2.2%
	¹³ C-UBT	843	16	
	¹⁴ C-UBT	751	16	
A+F	overall	1192	21	1.8%
	¹³ C-UBT	636	9	
	¹⁴ C-UBT	556	12	
A+C	overall	242	5	2.1%
	¹³ C-UBT	126	4	
	¹⁴ C-UBT	116	1	

Standardized positivity was defined by over 10‰ in ¹³C-UBT and over 250 in ¹⁴C-UBT. A, amoxicillin; C, clarithromycin; F, furazolidone.