Klinisyen Gözüyle Hızlı Tanı Testleri

Dr. Şiran Keske
Amerikan Hastanesi,
İnfeksiyon Hastalıkları ve Klinik Mikrobiyoloji

KLİMİK Ankara Günleri
28.11.2018

70 yaş kadın

05/01/2017

ateş

halsizlik

dispne

BMI: 37.0 kg/m^2

Ateş: 38.5 ∘C, SS: 26/dk, AKB: 135/80 mmHg

Akciğerde ronkus, alt bölgelerde azalmış solunum sesleri.

O_2 sat: 91%

01:00

70 yaş kadın

05/01/2017

ateş

halsizlik

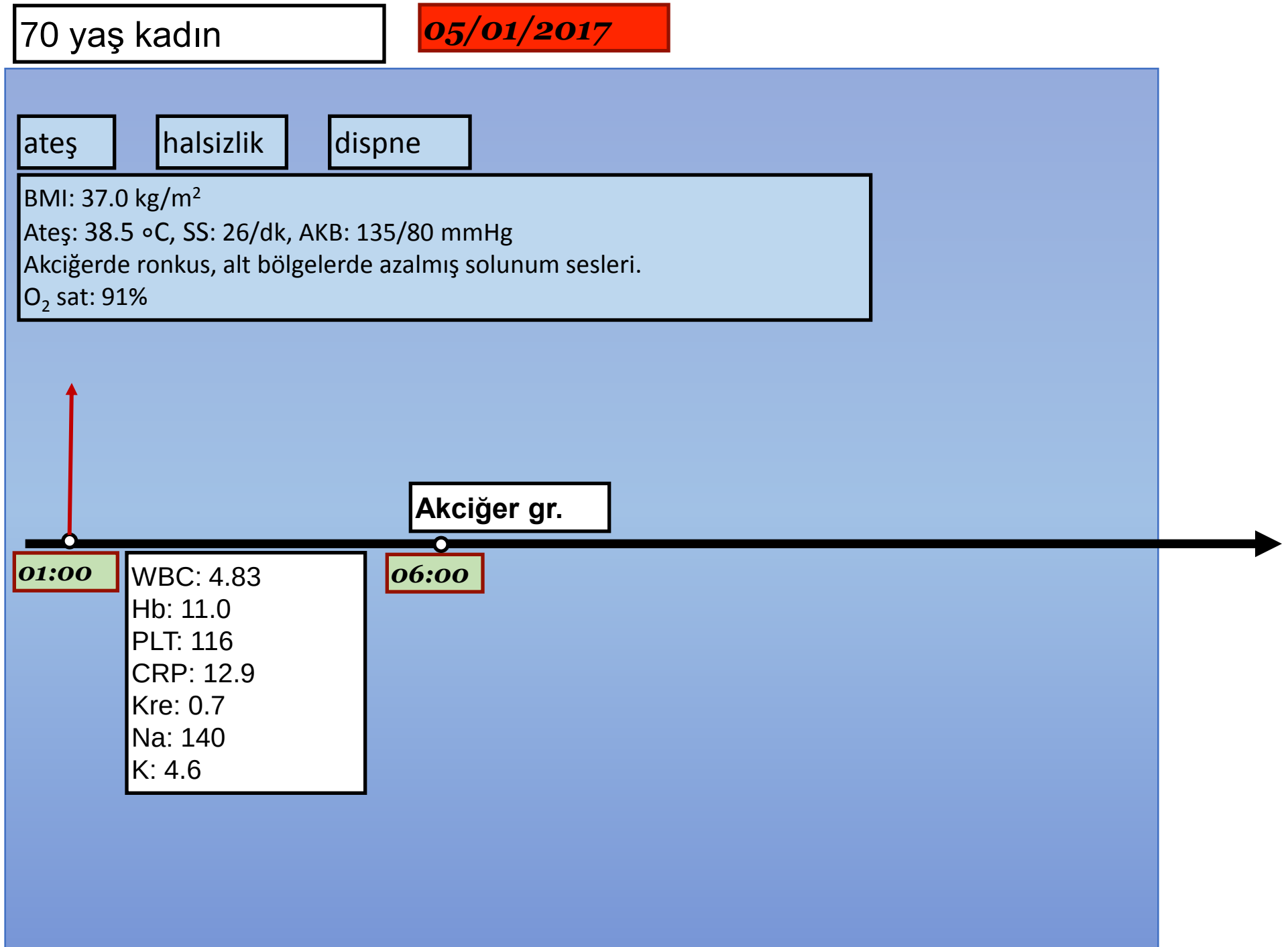
dispne

BMI: 37.0 kg/m^2
Ateş: 38.5 ∘C, SS: 26/dk, AKB: 135/80 mmHg
Akciğerde ronkus, alt bölgelerde azalmış solunum sesleri.
O_2 sat: 91%

01:00

WBC: 4.83
Hb: 11.0
PLT: 116
CRP: 12.9
Kre: 0.7
Na: 140
K: 4.6

06:00


70 yaş kadın
05/01/2017
ateş
halsizlik
dispne
BMI: 37.0 kg/m2
Ateş: 38.5 ∘C, SS: 26/dk, AKB: 135/80 mmHg
Akciğerde ronkus, alt bölgelerde azalmış solunum sesleri.
O2 sat: 91%
Akciğer gr.
01:00
WBC: 4.83
Hb: 11.0
PLT: 116
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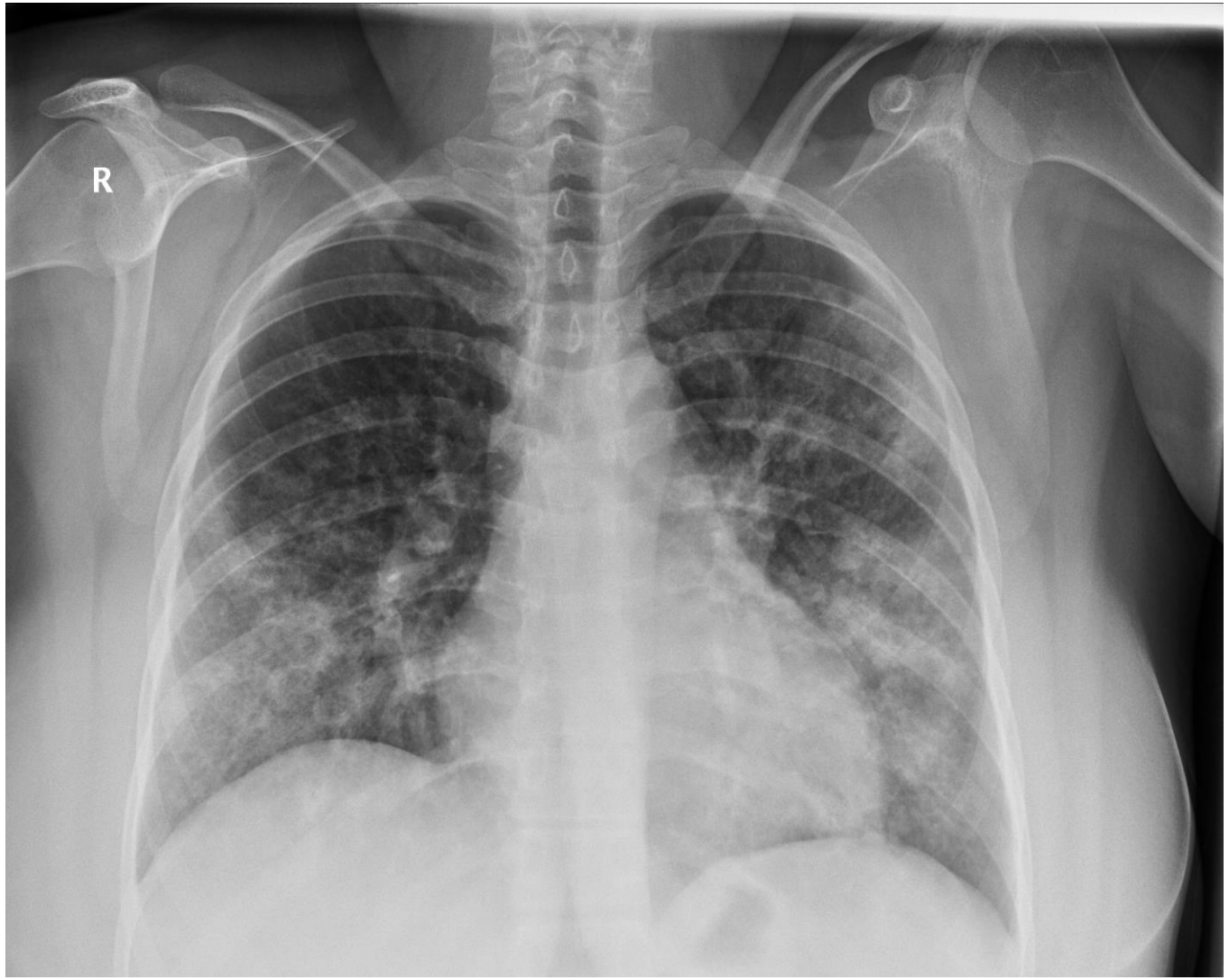
Kre: 0.7
Na: 140
K: 4.6
06:00


R

70 yaş kadın

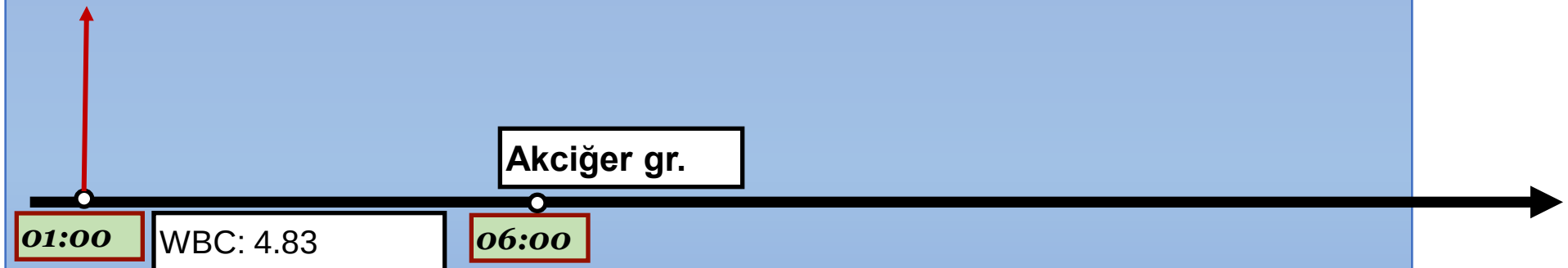
05/01/2017

ateş

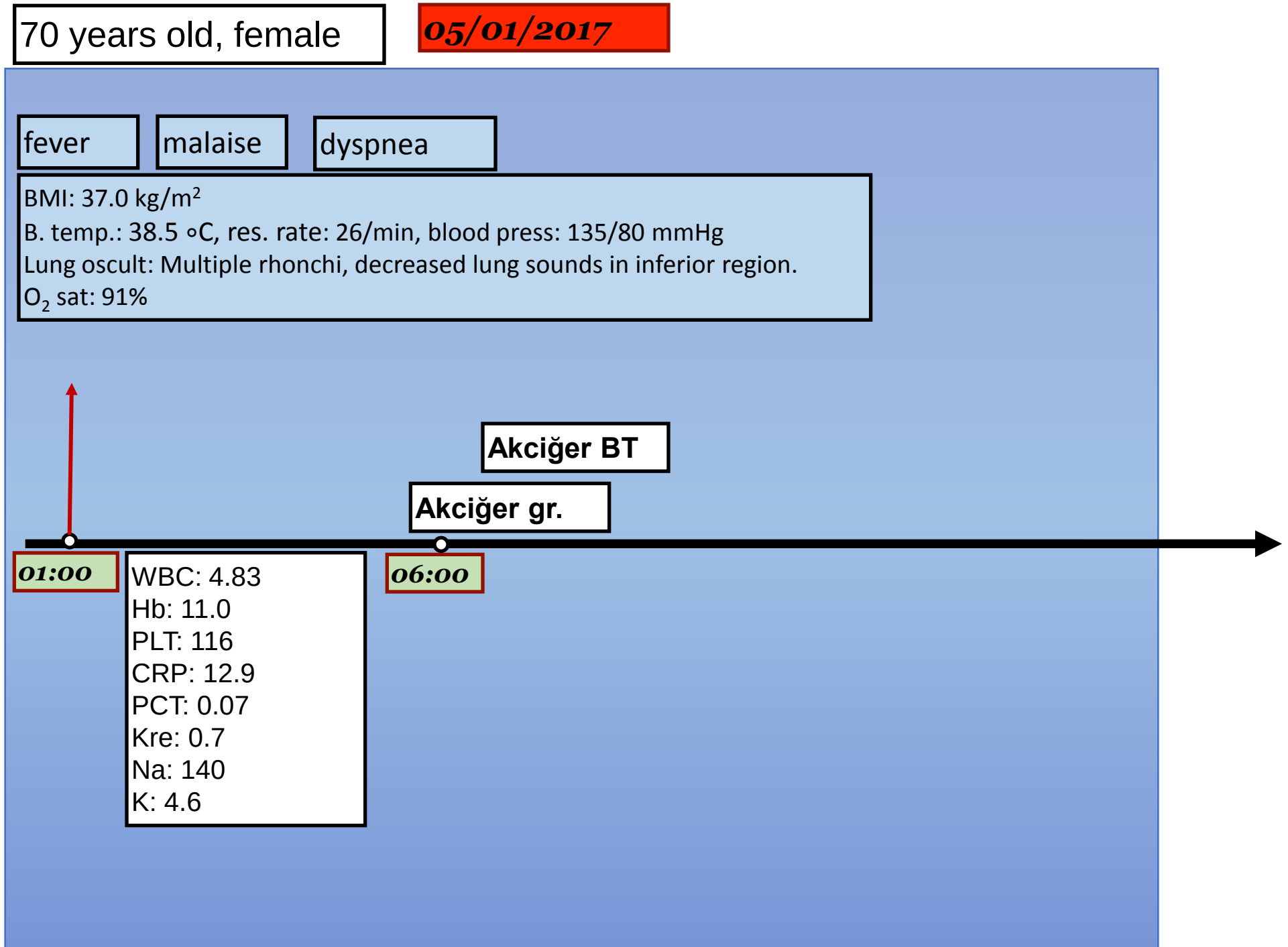
halsizlik

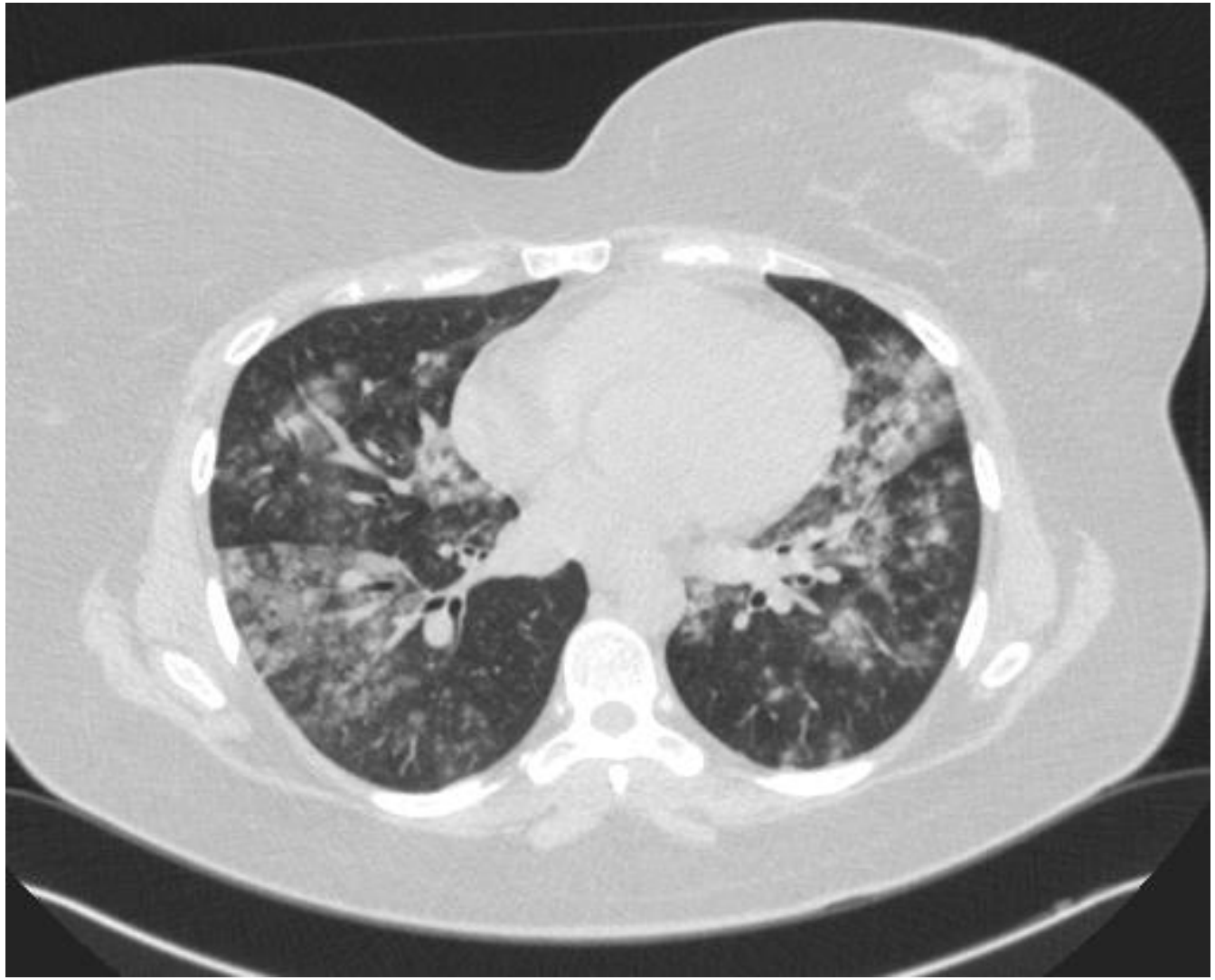
dispne

BMI: 37.0 kg/m^2
Ateş: 38.5 ∘C, SS: 26/dk, AKB: 135/80 mmHg
Akciğerde ronkus, alt bölgelerde azalmış solunum sesleri.
O_2 sat: 91%



WBC: 4.83
Hb: 11.0
PLT: 116
CRP: 12.9
PCT: 0.07
Kre: 0.7
Na: 140
K: 4.6


70 years old, female
05/01/2017
fever
malaise
dyspnea
BMI: 37.0 kg/m2
B. temp.: 38.5 ∘C, res. rate: 26/min, blood press: 135/80 mmHg
Lung oscult: Multiple rhonchi, decreased lung sounds in inferior region.
O2 sat: 91%
Akciğer BT
Akciğer gr.
01:00
06:00
WBC: 4.83
Hb: 11.0
PLT: 116
CRP: 12.9
PCT: 0.07
Kre: 0.7
Na: 140
K: 4.6



70 yaş kadın

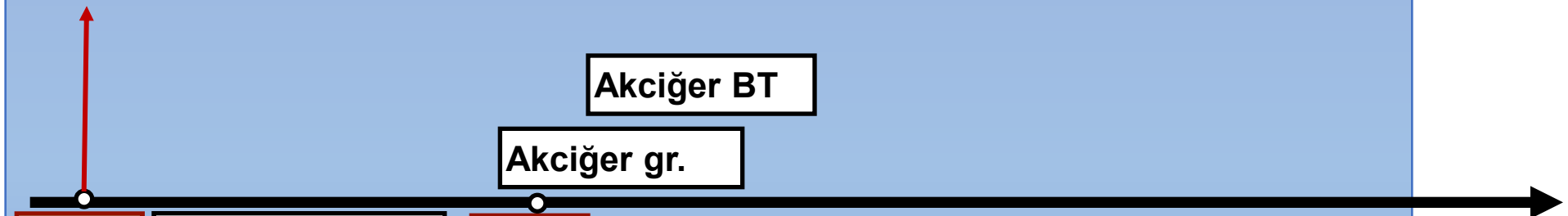
05/01/2017

ateş

halsizlik

dispne

BMI: 37.0 kg/m^2
Ateş: 38.5 ∘C, SS: 26/dk, AKB: 135/80 mmHg
Akciğerde ronkus, alt bölgelerde azalmış solunum sesleri.
O_2 sat: 91%



WBC: 4.83
Hb: 11.0
PLT: 116
CRP: 12.9
PCT: 0.07
Kre: 0.7
Na: 140
K: 4.6

PNÖMONİ

70 yaş kadın

05/01/2017

ateş

halsizlik

dispne

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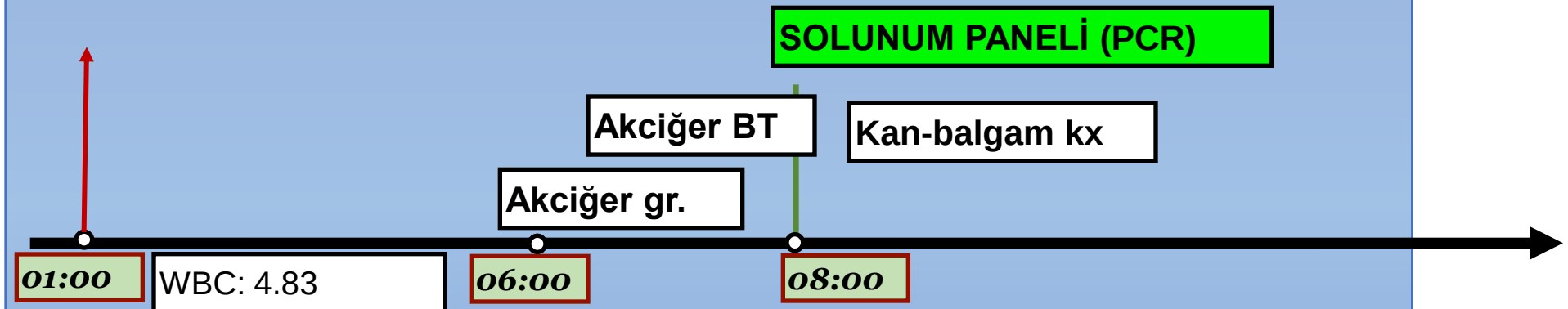
Ateş: 38.5 ∘C, SS: 26/dk, AKB: 135/80 mmHg
Akciğerde ronkus, alt bölgelerde azalmış solunum sesleri.
O_2 sat: 91%



WBC: 4.83
Hb: 11.0
PLT: 116
CRP: 12.9
PCT: 0.07
Kre: 0.7
Na: 140
K: 4.6

70 yaş kadın

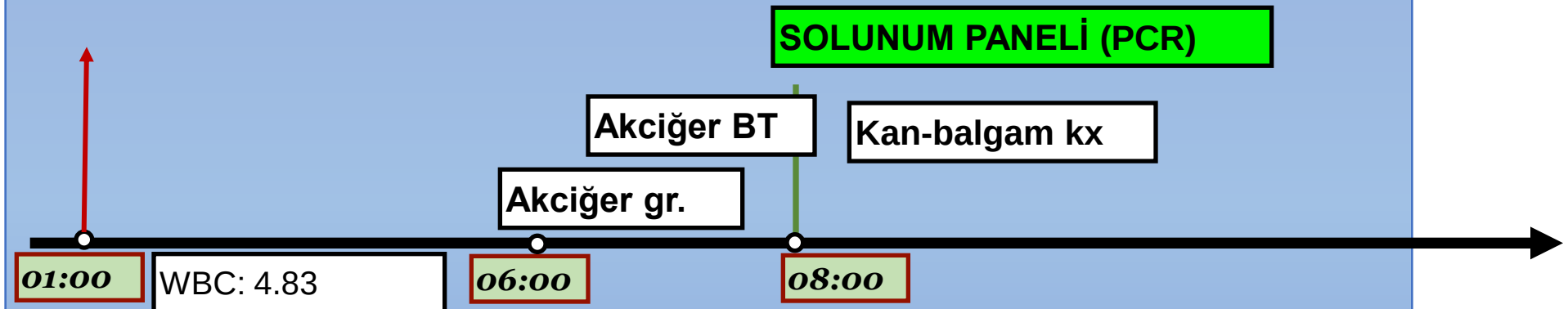
05/01/2017

ateş

halsizlik

dispne

BMI: 37.0 kg/m^2
Ateş: 38.5 ∘C, SS: 26/dk, AKB: 135/80 mmHg
Akciğerde ronkus, alt bölgelerde azalmış solunum sesleri.
O_2 sat: 91%



WBC: 4.83
Hb: 11.0
PLT: 116
CRP: 12.9
PCT: 0.07
Kre: 0.7
Na: 140
K: 4.6

Influenza A (+)

70 yaş kadın

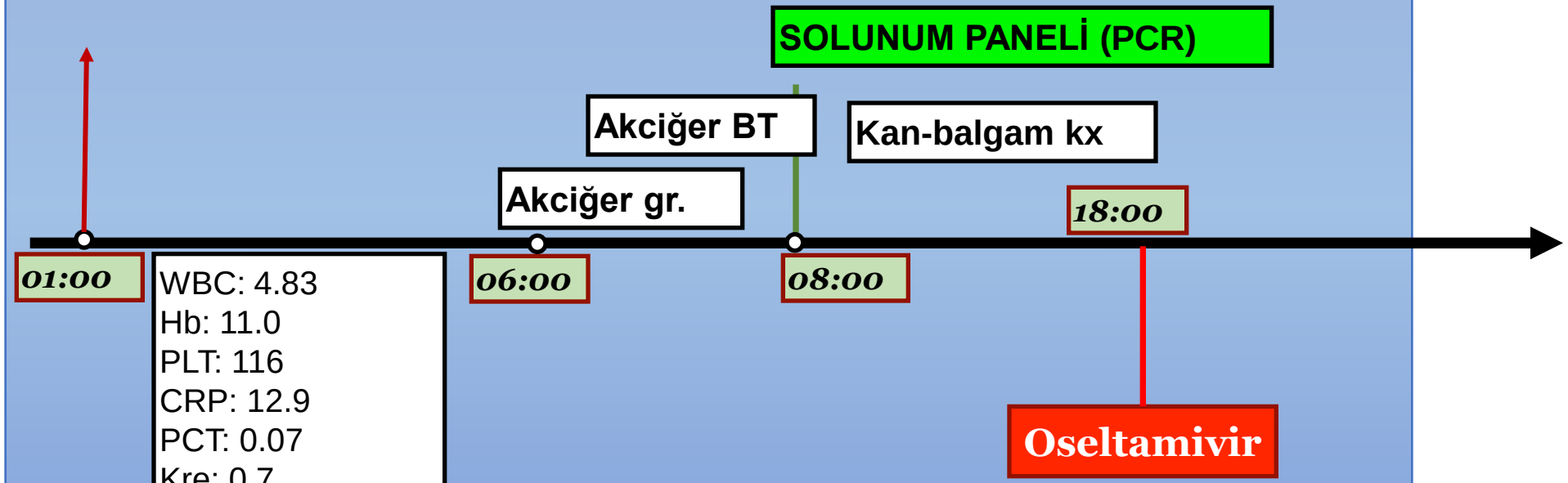
05/01/2017

ateş

halsizlik

dispne

BMI: 37.0 kg/m^2
Ateş: 38.5 ∘C, SS: 26/dk, AKB: 135/80 mmHg
Akciğerde ronkus, alt bölgelerde azalmış solunum sesleri.
O_2 sat: 91%



WBC: 4.83
Hb: 11.0
PLT: 116
CRP: 12.9
PCT: 0.07
Kre: 0.7
Na: 140
K: 4.6

HIZLI TANI TESTLERİ

Antimikrobiyal Yönetimde

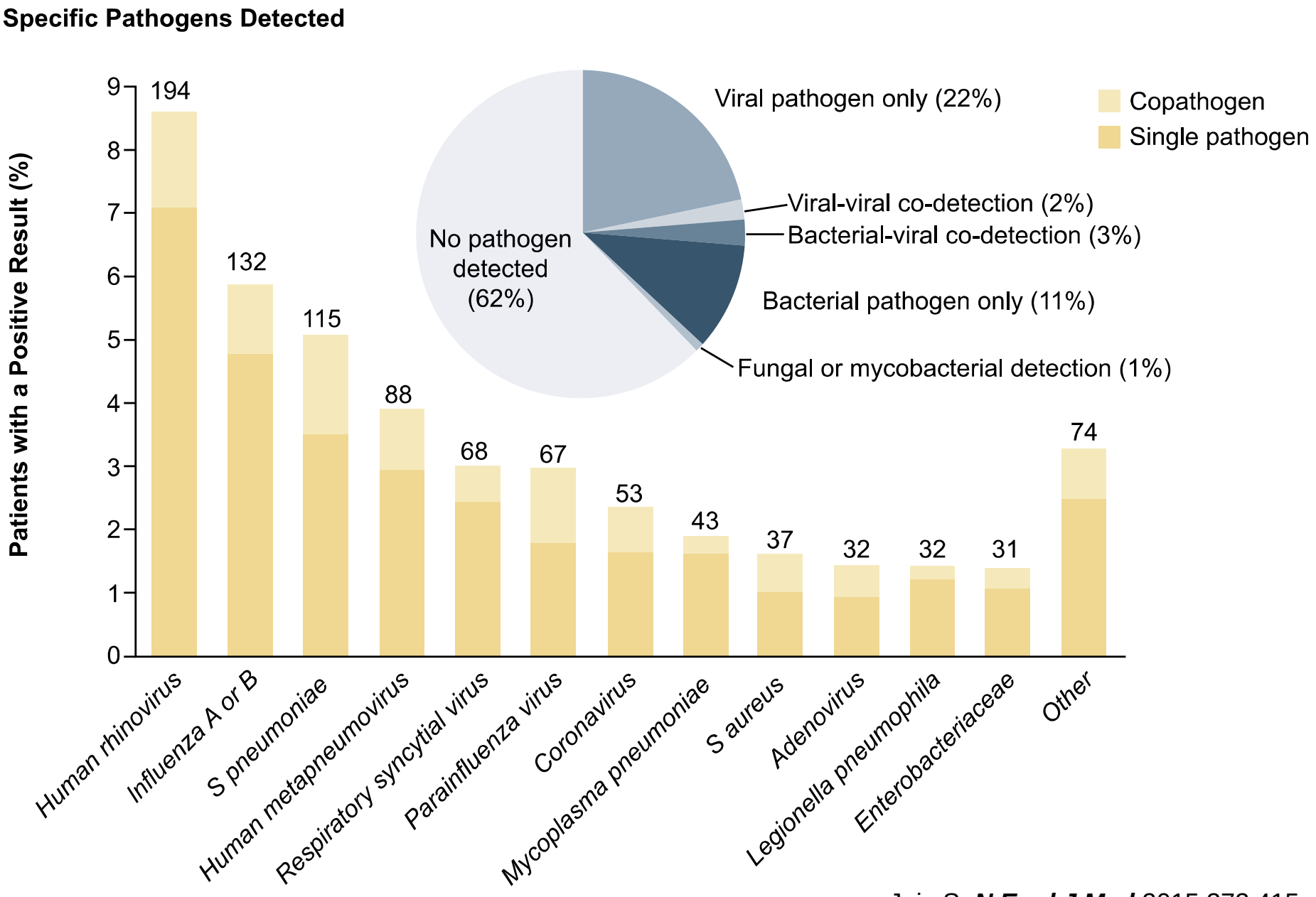
- PCR bazlı testler
  - Solunum sistemi paneli testi
  - Gastrointestinal patojen testi
  - Menenjit/ensefalit paneli
  - Kanda PCR testi
  - Hızlı antibiyotik direnç testleri
- Hızlı antijen testleri

İnfeksiyon Kontrolünde

- Kaynak saptanmasında
- SBİE tanısında

Solunum Yolu Hızlı Tanı Testlerinin “Antimikrobiyal Yönetim”e Katkısı

- Solunum yolu enfeksiyonları (SYE) hastaneye en sık başvuru ve en önemli hospitalizasyon nedenlerinden
- Moleküler yöntemlerin gelişmesiyle beraber virüslerin etyolojideki rolü daha anlaşılır hale geldi..
- Ancak viral etyolojiye rağmen antibiyotik kullanım oranı hala yüksek (%60)



Jain S. ***N Engl J Med*** 2015;373:415–27.

European Journal of Clinical Microbiology & Infectious Diseases
https://doi.org/10.1007/s10096-017-3174-6

ORIGINAL ARTICLE

The rapid diagnosis of viral respiratory tract infections and its impact on antimicrobial stewardship programs

Şiran Keske[1] &Önder Ergönül[1,2] &Faik Tutucu[2] &Doruk Karaaslan[2] &Erhan Palaoğlu[3] &Füsun Can[4]

Received: 1 November 2017 / Accepted: 21 December 2017

FDA onaylı Multiplex PCR testi

- Adenovirus,
- Coronavirus HKU1,
- Coronavirus NL63,
- Coronavirus 229E,
- Coronavirus OC43,
- hMPV,
- Rhinovirus/ Enterovirus,
- RSV

Influenza A,

Influenza A/H1,

Influenza A/H1-2009 ,

Influenza A/H3,

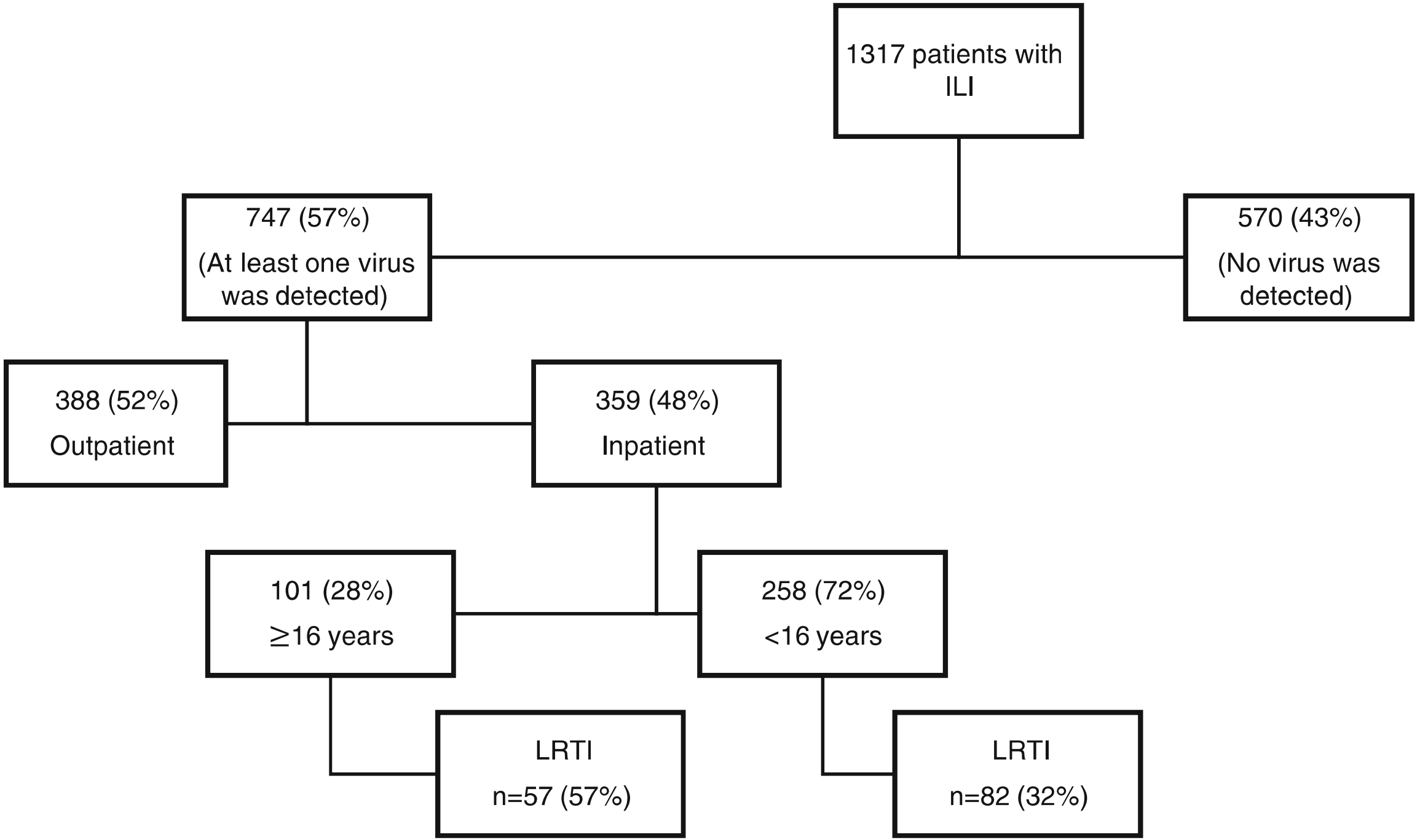
Influenza B,

Parainfluenza 1,

Parainfluenza 2,

Parainfluenza 3,

Parainfluenza 4,


1317 patients with ILI
747 (57%)
(At least one virus was detected)
570 (43%)
(No virus was detected)
388 (52%)
Outpatient
359 (48%)
Inpatient
101 (28%)
≥16 years
258 (72%)
<16 years
LRTI
n=57 (57%)
LRTI
n=82 (32%)

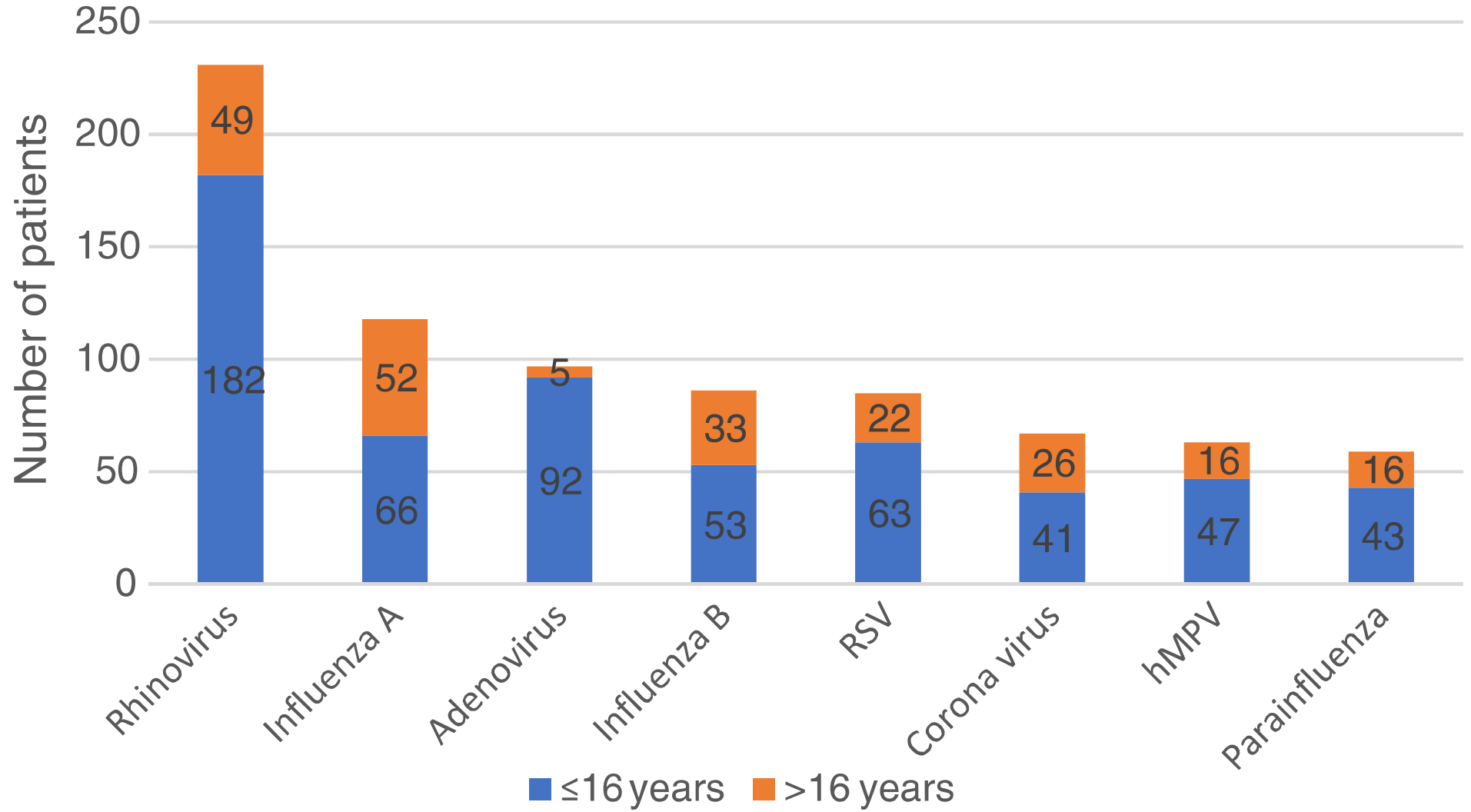


Fig. 2 The most commonly detected viruses among all patients in whom at least one virus was detected. RSV: respiratory syncytial virus; hMPV: human metapneumovirus

Table 2 Antibiotic continuation details of inpatients with positive molecular respiratory tests (MRT)

Sonuç olarak;

Hızlı PCR testiyle uygunsuz antibiyotik kullanım oranı ve süresi azaldı.

Pnömonide viral etyoloji farkındalığı

Panel testlerinin klinikteki yeri net değil ancak AMY'in bir parçası olabilir.

Inappropriate antibiotic use (%)	28/39 (72)	39/62 (63)	0.36
Mean duration of inappropriate antibiotic use (days)	9.7 (SD 7.3)	6.2 (SD 3.7)	0.007

Serum Procalcitonin Measurement and Viral Testing to Guide Antibiotic Use for Respiratory Infections in Hospitalized Adults: A Randomized Controlled Trial

Angela R. Branche,[1] Edward E. Walsh,[1,3] Roberto Vargas,[4] Barbara Hulbert,[4] Maria A. Formica,[3] Andrea Baran,[2] Derick R. Peterson,[2] and Ann R. Falsey[1,3]

Table 2. Comparison of Antibiotic Use Between the Intervention Group/Subgroups or Historical Controls and the Nonintervention Group

Characteristic	Intervention Group	Nonintervention Group	*P* Value
Subjects, no.	151	149	
Antibiotic use for ≤48 h	69 (46)	61 (41)	.42
Discharged receiving oral antibiotics	51 (35)[a]	64 (44)[b]	.09
Total antibiotic-days	3.0 (1.0–7.0)	4.0 (0.0–8.0)	.71
	Intervention Subgroup Positive for Virus With Low PCT Values	Nonintervention Group	
Subjects, no.	49	149	
Antibiotic use for ≤48 h	28 (57)	61 (41)	.07
Discharged receiving oral antibiotics	10 (20)	64 (45)[b]	.002
Total antibiotic-days	2.0 (1.0–6.0)	4.0 (0.0–8.0)	.11
	Intervention Subgroup Adherent to Algorithm	Nonintervention Group	
Subjects, no.	96	149	
Antibiotic use for ≤48 h	63 (65)	61 (41)	.002
Discharged receiving oral antibiotics	19 (20)[c]	64 (45)[b]	.002
Total antibiotic-days	2.0 (0.0–3.0)	4.0 (0.0–8.0)	.004

Branche AR. J Infect Dis. 2015;212(11):1692-700.

Table 1 Patient characteristics

	PCT <0.25 µg/L (*n* = 219)	**Positive viral RP (*n* = 601)**	**PCT <0.25 µg/L and positive viral RP (*n* = 31)**
Median age, years (IQR)	58 (44–69)	47 (33–60)	55 (41–67)
Male sex, *n* (%)	94 (42.0)	256 (42.6)	15 (48.4)
Charlson Score, median (IQR)	1 (1–2)	1 (0–1)	1 (1–2)
ICU admission during hospitalization, *n* (%)	89 (40.6)	53 (8.8)	13 (41.9)
Median length of stay, days (IQR)	4 (2–6)	1 (0–3)	3 (2–6)
Antibiotic prescribed within first 72 h	156 (71.2)	170 (28.2)	19 (61.3)

ICU intensive care unit, *IQR* interquartile range, *PCT* procalcitonin, *RP* respiratory panel

Table 2 Antibiotics discontinued within 48 h of PCT and RP results

	PCT <0.25 µg/mL (*n* = 156)	Positive viral RP (*n* = 170)	PCT <0.25 µg/mL and positive viral RP (*n* = 31)
Antibiotics discontinued, *n* (%)	32 (20.5)	30 (17.6)	2 (10.5)
Median length of stay, days (IQR)	4 (3–7)	4 (2–6)	5 (3–7)

IQR interquartile range, *PCT* procalcitonin, *RP* respiratory panel

Düşük PCT ve viral panel pozitifliğine rağmen antibiyotik nadiren kesilmiş. Doğrudan klinisyenlerle görüşmek ve müdahalede bulunmak daha etkili olabilir.

Timbrook T. Infect Dis Ther (2015) 4:297–306

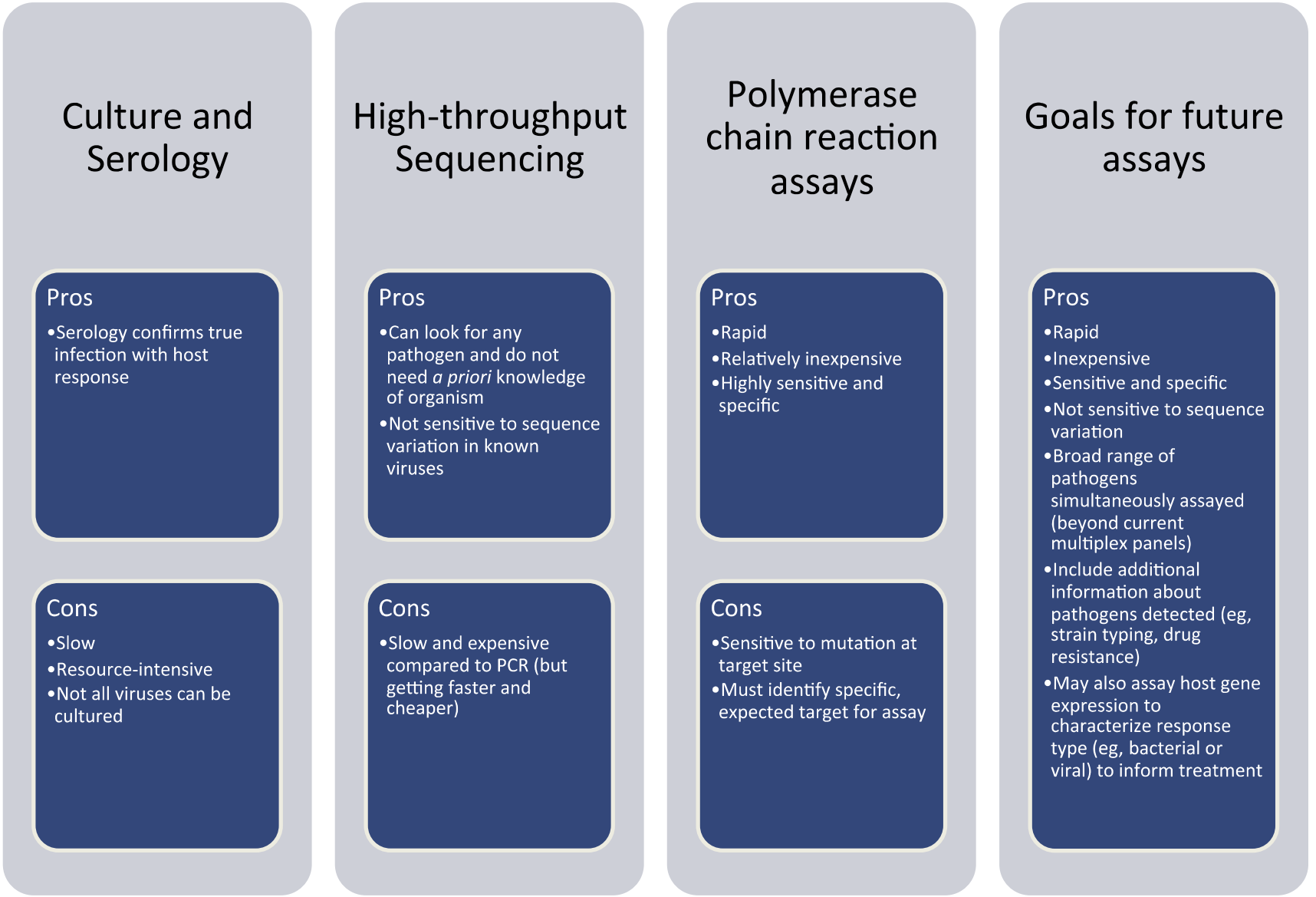


Fig. 1. Methods for characterizing viruses in the respiratory tract. Current molecular methods, such as PCR and HTS, have clear advantages over older methods (culture and serology) in terms of cost, speed, and sensitivity. Future assays for research and diagnostics will be aimed at capturing and improving on the best features of the current methods.

Wylie KM. *Clin Chest Med.* 2017;38(1):11-19.

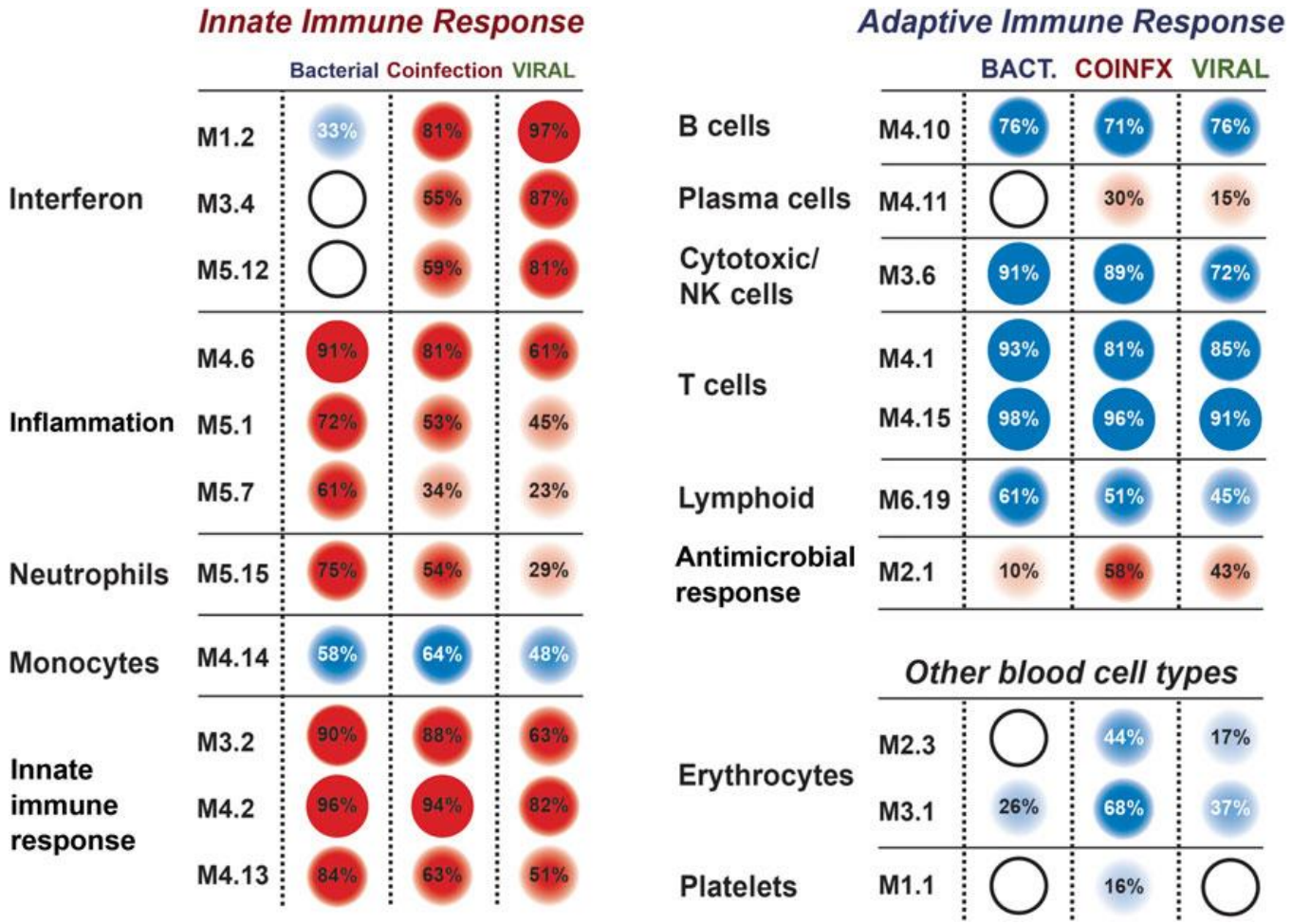
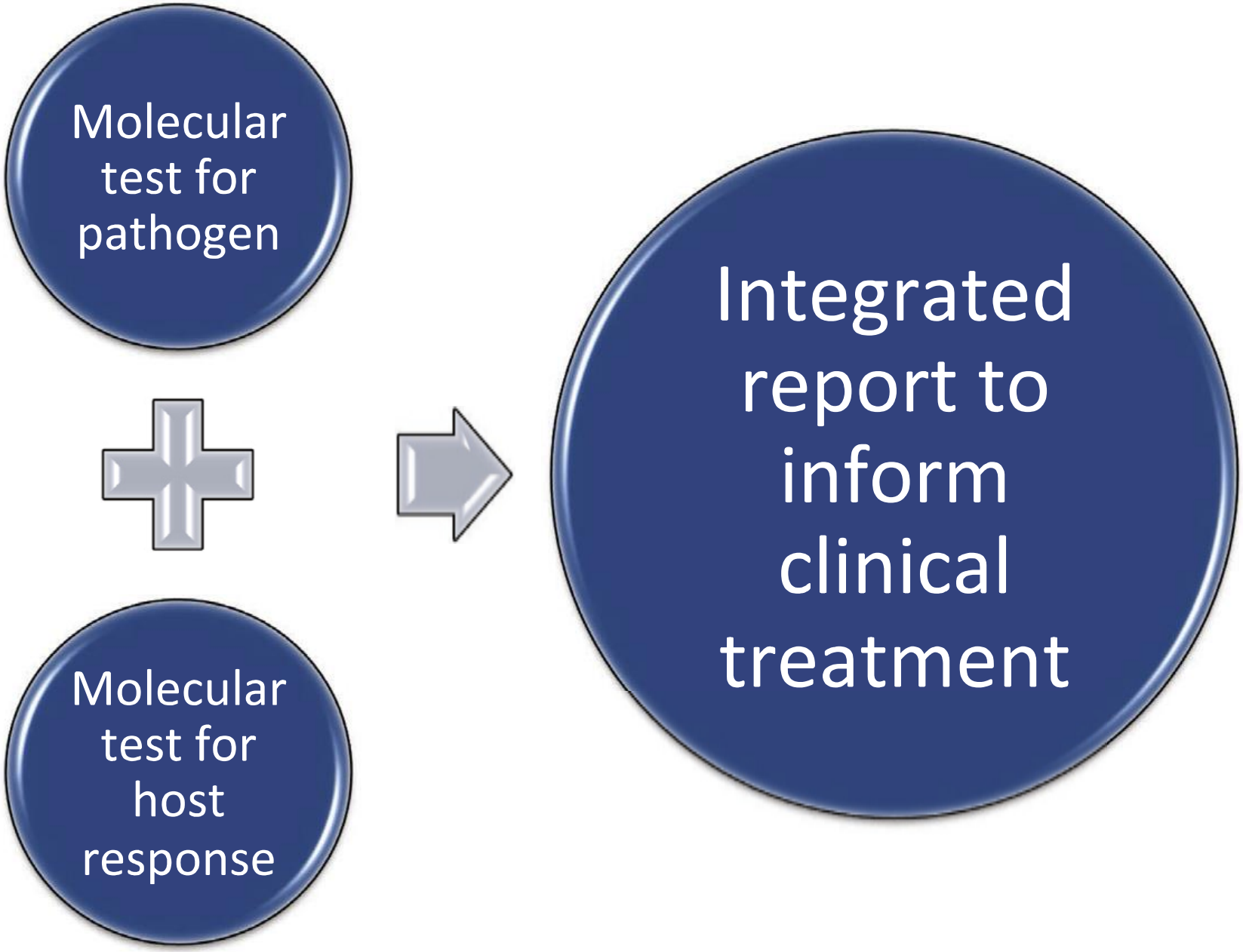


Figure 3. Modular transcriptional fingerprint comparison among the 3 lower respiratory tract infection groups. Mean modular transcriptional fingerprint for bacterial (22 patients and 18 matched controls), viral (25 patients and 18 matched controls), and bacterial-viral coinfection (25 patients and 18 matched controls). Modules are organized based on its relation to the innate and adaptive immune response. Abbreviation: NK, natural killer.



Wylie KM. *Clin Chest Med.* 2017;38(1):11-19.

Klinik pratikte hangi patojenleri araştıralım

***S. pyogenes* ag**
Legionella ag
İnfluenza PCR
İnfluenza Ag
RSV,
PIV,
hMPV

	Time to result	Type of technology	Targets	Sensitivity	Specificity
Cepheid Xpert MRSA/SA SSTI[62]	1 h	Automated sample preparation of respiratory specimen, real-time PCR and detection using molecular beacon technology	MSSA and MRSA	99·0% compared with quantitative culture of endotracheal aspirates	72·2% compared with quantitative culture of endotracheal aspirates
Curetis Unyvero Pneumonia P50 Test[63]	4 h	Multiplex endpoint PCR and amplicon detection by hybridisation to oligo probes spotted on membrane arrays direct from respiratory samples	Detection of 17 bacterial and fungal pathogens in addition to 22 antibiotic resistance genes	80·9% overall; target specific values 50–100%	99·0% overall, target specific values 72·3–100%
Biofire Filmarray Respiratory Panel[64,65]	1 h	Pouch format comprising nucleic acid extraction, and nested PCR from nasopharyngeal swabs	20 targets including respiratory viruses, *Bordetella pertussis, Mycoplasma pneumoniae* and *Chlamydophila pneumoniae*	84–100%	98–100%

MSSA=methicillin-sensitive *Staphylococcus aureus*. MRSA=methicillin-resistant *S aureus*. SSTI=skin and soft tissue infection.

***Table 3*: Rapid molecular platforms and tests available for the diagnosis of bacterial respiratory tract infections**

Zumla A et al. Lancet Infect Dis. 2014;14(11):1123-1135

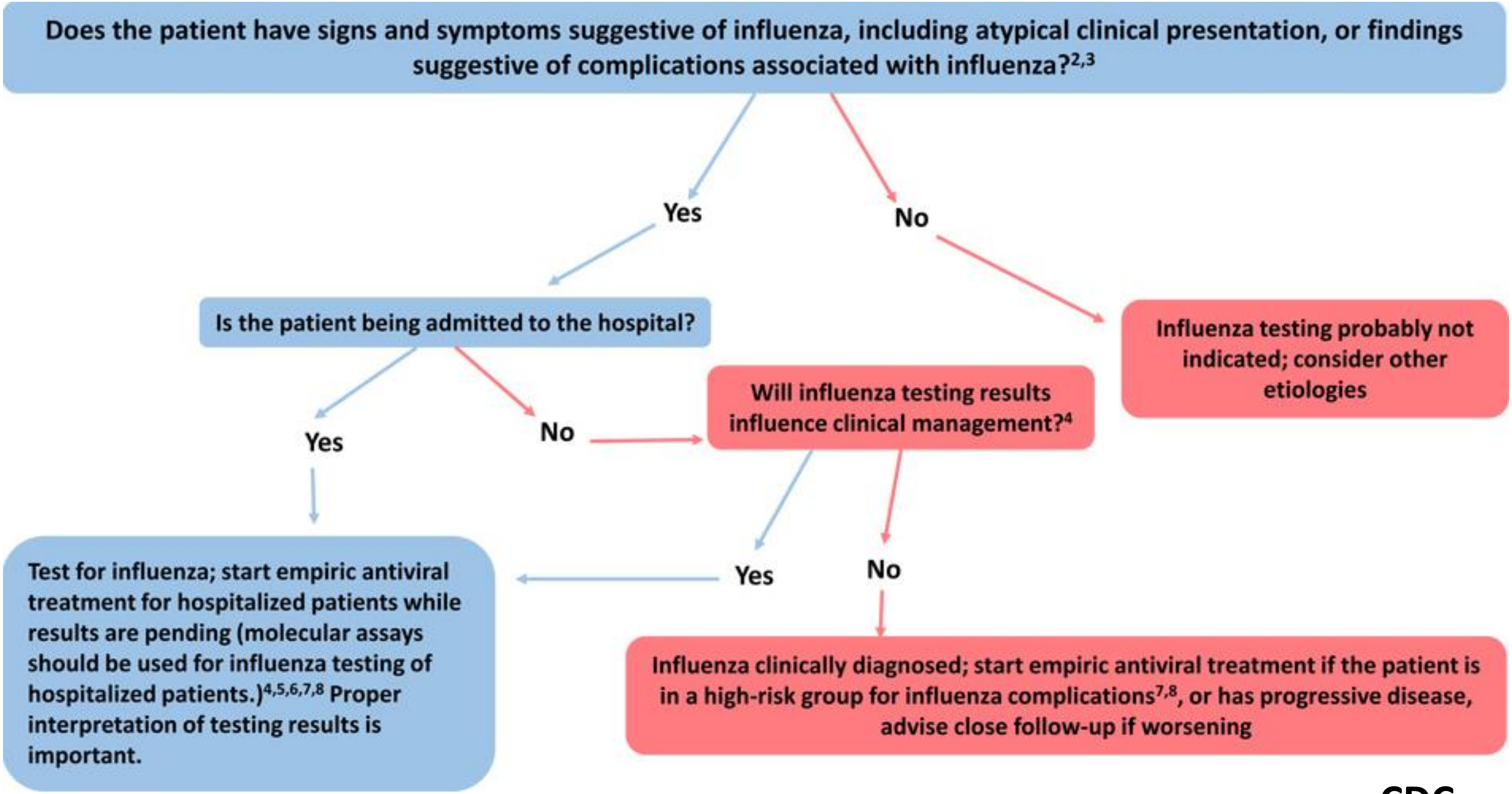
	Technology requirements	Purpose	Desired characteristics	Technological innovation and current stage of development
Viral respiratory infections	Point-of-care (eg, primary care office, outpatient clinics, accident and emergency)	To distinguish viral and bacterial infections and inform antiviral therapy. Infection control and bed management allowing patients with diferent viruses to be separated; outbreak tracing	Rapid <1 h Able to be operated by front-line clinical staff (eg, nurse or family practitioner) Ability to process multiple samples simultaneously Low cost	Multiplexed NAAT based tests for high-throughput test platforms requring minimum user skill and hands-on time (currently available in low-thoughput format) Breath-based tests for key viral pathogens such as influenza (in development) Simple tests on a non-invasive sample able to distinguish viral and bacterial infections (conceptual)
Community acquired pneumonia	Near-patient, rapid response (eg, in larger outpatient clinic or laboratory adjacent to accident and emergency)	To diagnose cause of infection and recommend effective and proportionate antimicrobial therapy, to asses whether patient should be admitted	Rapid <1 h Ability to detect pathogen and distinguish pathogen from colonisers Ability to detect drug resistance Low to medium cost, operation by front-line staff Adaptation for resource limited settings	Multiplex NAAT based tests for a variety of pathogens and resistance determinants requiring minimal user skill and hands-on time (already available but with minimal data regarding performance and clinical utility) Quantitative NAAT-based tests allowing pathogens and colonisers to be distinguished (in concept) Simple tests on a non-invasive sample able to distinguish viral and bacterial infections (conceptual)
Hospital acquired pneumonia and ventilator associated pneumonia	Rapid response (near intensive care unit/in clinical microbiology laboratory with good transport and communication systems)	To diagnose cause of infection and recommend effective and proportionate antimicrobial therapy	Rapid <2 h, round-the-clock service Ability to detect pathogens and distinguish them from colonisers. Ability to detect drug resistance Low to medium cost, operation by trained personnel capable of complex interpretation of results	Rapid, highly multiplexed NAAT based tests and platforms incorporating a wide variety of pahogens and resisance deteminants requiring minimum user skill and hands-on time (currently in development) Quantitative NAAT-based tests allowing pathogens and colonisers to be distinguished (in concept) Next-generation sequencing based diagnostics allowing the identification of rare and unusual pathogens and the rapid generation of antibiotic suscpetibility profiles (in concept)
Tuberculosis	Point of care (eg, doctors office, tuberculosis clinic)	To identify those with acute tuberculosis and needing therapy	Rapid <1 h Reliable detection of drug-resistance Suitable for resource limited setting (eg, requiring minimum operator training, low cost, limited power requirements, room temperature storage)	NAAT based tests for "sample-in answer out" platforms (already available) Hand-held NAAT based tests that can be operated by battery or solar power (in development) Breath–based tests

NAAT= nucleic acid amplification techniques.

***Table 1*: Clinical needs for rapid point-of-care diagnostics for respiratory tract infections**

Zumla A et al. Lancet Infect Dis. 2014;14(11):1123-1135

Method[1]	**Types Detected**	**Acceptable Specimens**[2]	**Test Time**
Rapid Influenza Diagnostic Tests[4] **(antigen detection)**	A and B	NP[5] swab, aspirate or wash, nasal swab, aspirate or wash, throat swab	<15 min.
Rapid Molecular Assay [influenza viral RNA or nucleic acid detection]	A and B	NP[5] swab, nasal swab	15-30 minutes[6]
Immunofluorescence, Direct (DFA) or Indirect (IFA) Florescent Antibody Staining [antigen detection]	A and B	NP[4] swab or wash, bronchial wash, nasal or endotracheal aspirate	1-4 hours
RT-PCR[7] **(singleplex and multiplex; real-time and other RNA-based) and other molecular assays [influenza viral RNA or nucleic acid detection]**	A and B	NP[5] swab, throat swab, NP[5] or bronchial wash, nasal or endotracheal aspirate, sputum	Varies (1 to 8 hours, varies by the assay)
Rapid cell culture (shell vials; cell mixtures; yields live virus)	A and B	NP[5] swab, throat swab, NP[5] or bronchial wash, nasal or endotracheal aspirate, sputum; (specimens placed in VTM[8])	1-3 days
Viral tissue cell culture (conventional; yields live virus)	A and B	NP[5] swab, throat swab, NP[5] or bronchial wash, nasal or endotracheal aspirate, sputum (specimens placed in VTM8)	3-10 days


Does the patient have signs and symptoms suggestive of influenza, including atypical clinical presentation, or findings suggestive of complications associated with influenza?[2,3]
Yes
No
Is the patient being admitted to the hospital?
Influenza testing probably not indicated; consider other etiologies
Yes
No
Will influenza testing results influence clinical management?[4]
Test for influenza; start empiric antiviral treatment for hospitalized patients while results are pending (molecular assays should be used for influenza testing of hospitalized patients.)[4,5,6,7,8] Proper interpretation of testing results is important.
Yes
No
Influenza clinically diagnosed; start empiric antiviral treatment if the patient is in a high-risk group for influenza complications[7,8], or has progressive disease, advise close follow-up if worsening

CDC

Gastrointestinal Hızlı Moleküler Tanı Testlerinin "Antimikrobiyal Yönetim"e Katkısı

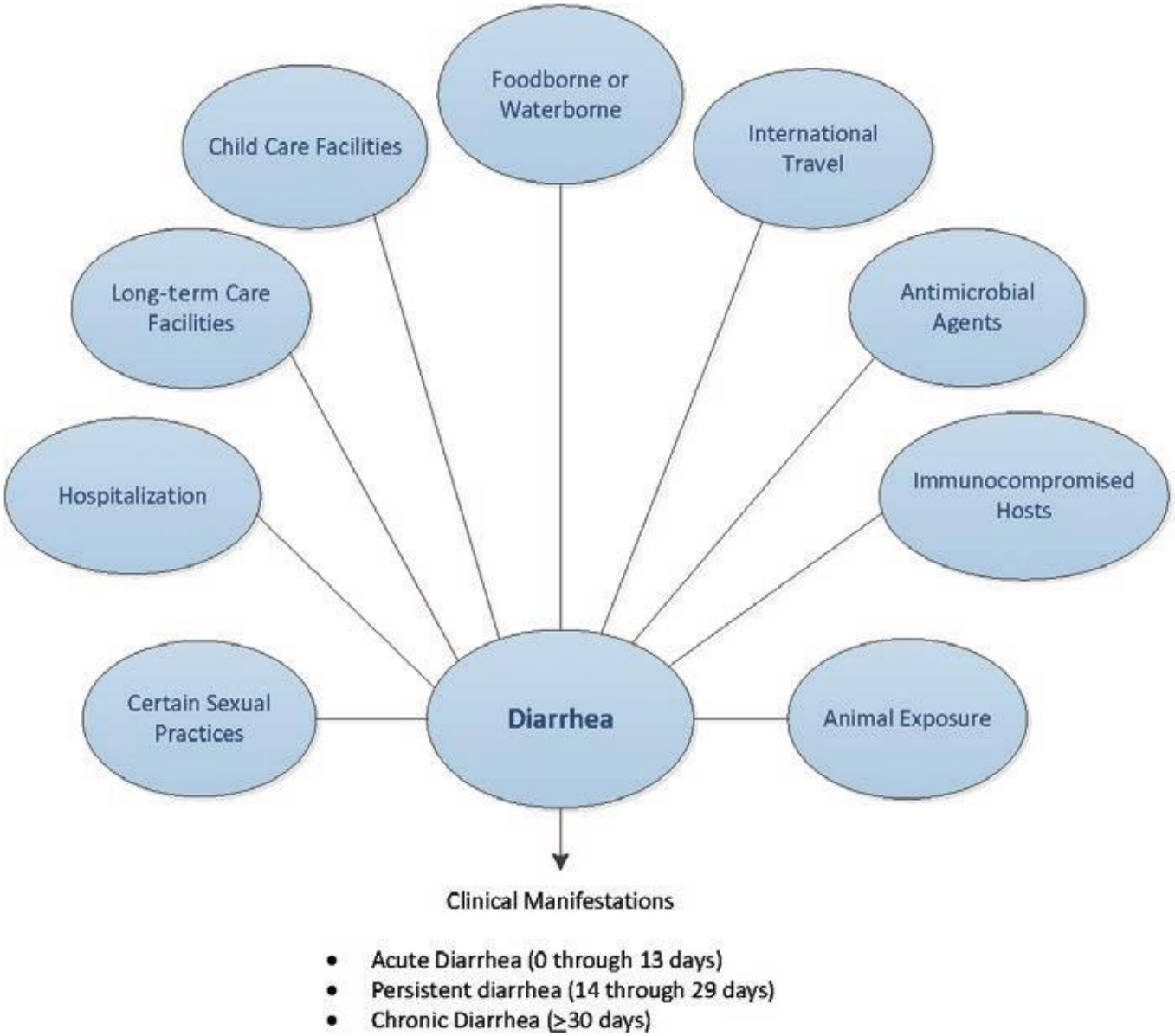


Figure 1. Considerations when evaluating people with infectious diarrhea. Modified from Long SS, Pickering LK, Pober CG, eds. P Infectious Diseases, 4th ed. New York: Elsevier Saunders, 2012.

Clinical Infectious Diseases

IDSA GUIDELINE

2017 Infectious Diseases Society of America Clinical Practice Guidelines for the Diagnosis and Management of Infectious Diarrhea

Andi L. Shane, MD[1] Rajal K. Mody, MD[2] John A. Crump, MD[3] Phillip I. Tarr,[4] Theodore S. Steiner, MD[5] Karen Kotloff, MD[6] Joanne M. Langley, MD[7] Christine Wanke, MD[8] Cirle Alcantara Warren, MD[9] Allen C. Cheng, PhD[10] Joseph Cantey, MD[11] and Larry K. Pickering, MD[12]

Kültür dışı: Multipleks PCR (Dışkı ve kandan)
Kültür: Enterik ateş veya ishal + bakteremi şüphesinde alınmalıdır (güçlü, orta)

Ek olarak kemik iliği kx (antibiyotik almakta olanlarda etken saptanmak isteniyorsa), duodenal sıvı ve idrar kx (enterik ateş) alınabilir (zayıf, orta).

Enterik ateş tanısında serolojik testler uygulanmamalıdır (güçlü, orta).

FUTURE DIRECTIONS

A key challenge in the diagnosis and management of people

- Moleküler tanı testlerinin kullanımı ve yorumlanması infeksiyöz ishallerin yönetiminde önemli bir konudur.
- Kolonizasyonu infeksiyondan ayırmak, antimikrobiyal duyarlılıkları elde etmek, optimum tedaviyi sağlama noktasında kültür dışı tanısal testler için ileri araştırmalar yapılmalıdır.

enteric infections is essential in preserving public health.

Table 5. Laboratory Diagnostics for Organisms Associated With Infectious Diarrhea

Etiologic Agent	Diagnostic Procedures	Optimal Specimen
Clostridium difficile	NAAT GDH antigen with or without toxin detection followed by cytotoxin or *Clostridium difficile* toxin or toxigenic *C. difficile* strain	Stool
Salmonella enterica, *Shigella* spp, *Campylobacter* spp	Routine stool enteric pathogen culture[a] or NAAT	Stool
Salmonella enterica serovars Typhi and Paratyphi (enteric fever)	Routine culture	Stool, blood, bone marrow, and duodenal fluid
Shiga toxin–producing *Escherichia coli*	Culture for *E. coli* O157:H7[b] and Shiga toxin immunoassay or NAAT for Shiga toxin genes	Stool
Yersinia spp, *Plesiomonas* spp, *Edwardsiella tarda*, *Staphylococcus aureus*, *E. coli* (enterotoxigenic, enteroinvasive, enteropathogenic, enteroaggregative)	Specialized stool culture or molecular assays[c] or NAAT	Stool

2017 IDSA guideline

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Rapid Molecular Detection of Gastrointestinal Pathogens and Its Role in Antimicrobial Stewardship

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Tanı

FDA onaylı PCR testi

- *Campylobacter* species (*Campylobacter jejuni/Campylobacter coli/Campylobacter upsaliensis*)
- *Clostridium difficile* toxin A/B
- *Plesiomonas shigelloides*
- *Salmonella* species
- *Vibrio* species (*Vibrio parahaemolyticus, Vibrio vulnificus, Vibrio cholerae*), *Vibrio cholerae*
- *Yersinia species*
- Enteroaggregative *Escherichia coli* (EAEC)
- Enteropathogenic *E coli* (EPEC)
- Enterotoxigenic *E coli* (ETEC)
- Shiga toxin, *E coli* O157
- *Shigella*/Enteroinvasive *E coli* (EIEC)
- *Cryptosporidium* species
- *Cyclospora cayetanensis*
- *Entamoeba histolytica*
- *Giardia lamblia (G. intestinalis and G. duodenalis)*
- Adenovirus F 40/41
- Astrovirus
- Norovirus GI/GII
- Rotavirus A
- Sapovirus

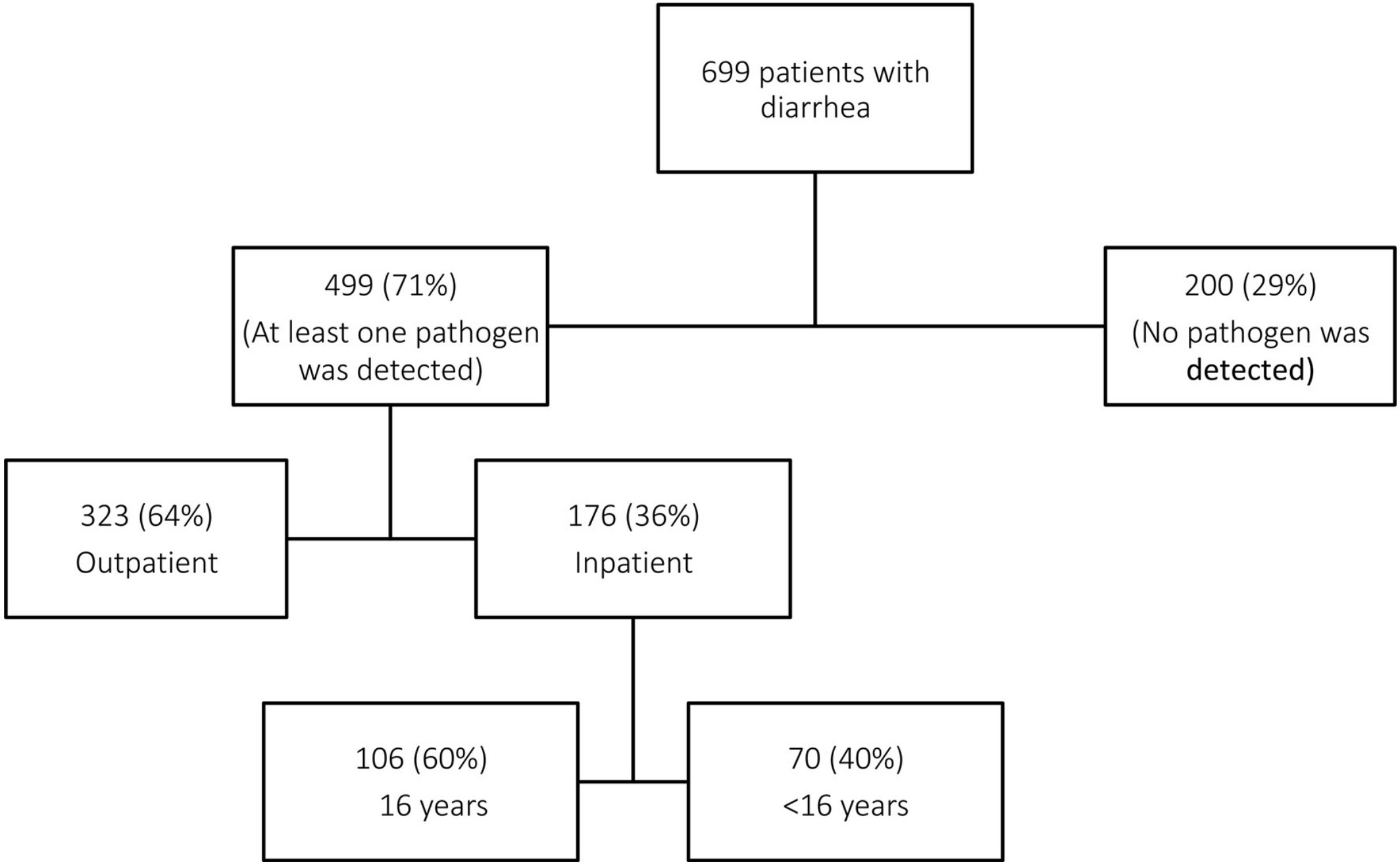


FIG 1 Study population.

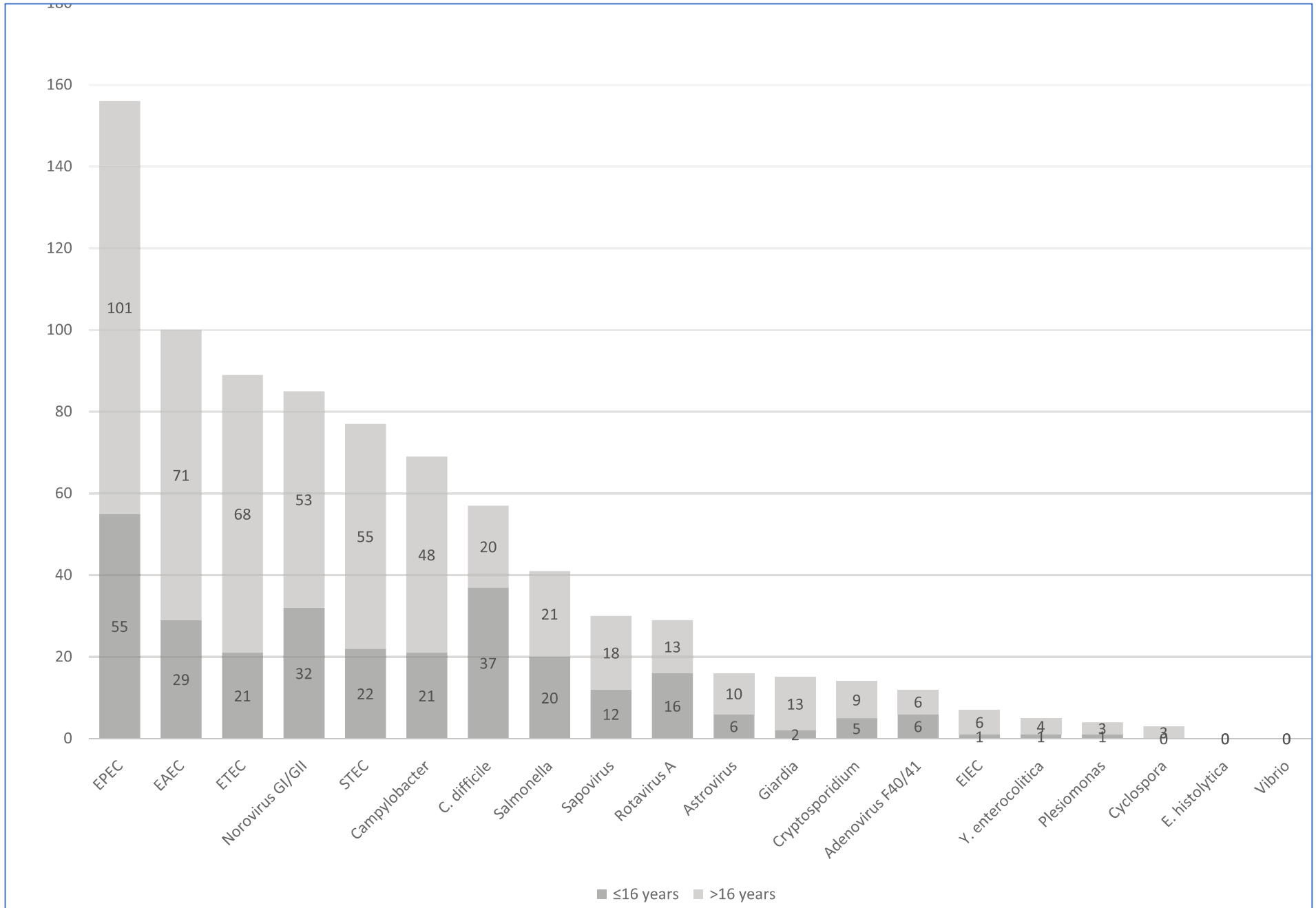


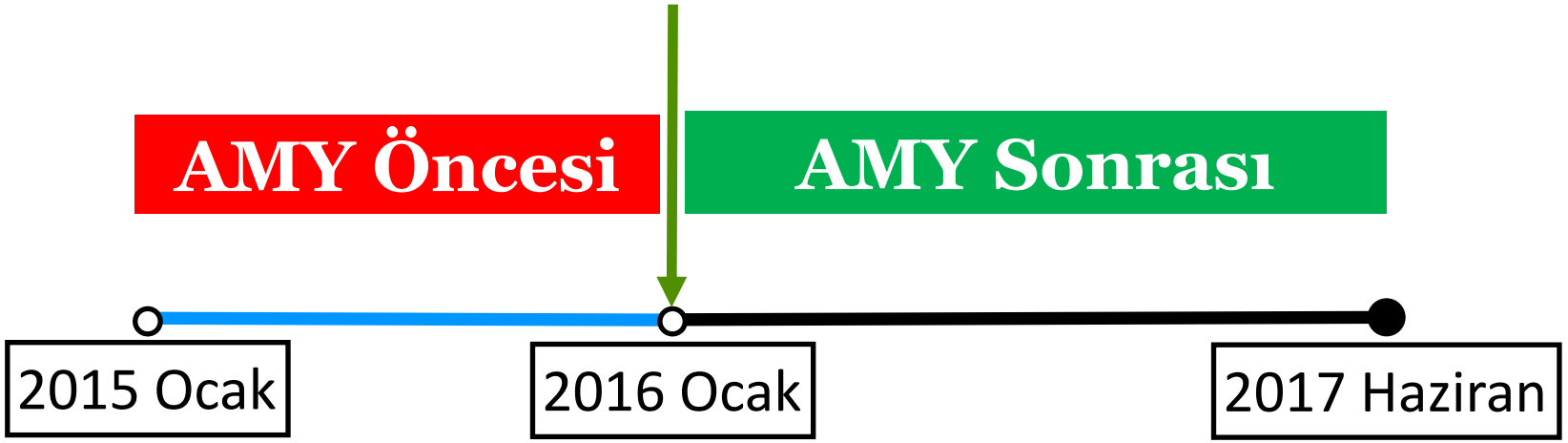
FIG 2 The most commonly detected pathogens among the patients with acute gastroenteritis. *y* axis represents number of each pathogen detected.

Tablo 1. Dışkı mikroskobisi bulguları

	İnflamatuar ishal (%)	Non-inflamatuar ishal (%)
Lökosit	73	49
Eritrosit	51	14

	Panel Salmonella (+)	Panel Salmonella (-)
Kültürde Salmonella (+)	7	0
Kültürde Salmonella (-)	19	98

Antimikrobiyal Yönetim Programı



Uygunsuz antibiyotik kullanımı;
müdahale öncesi dönemde %42.9
müdahale sonrası dönemde %25.8
(p=0.023).

Sonuç olarak;

Uygunsuz antibiyotik kullanım azaldı.

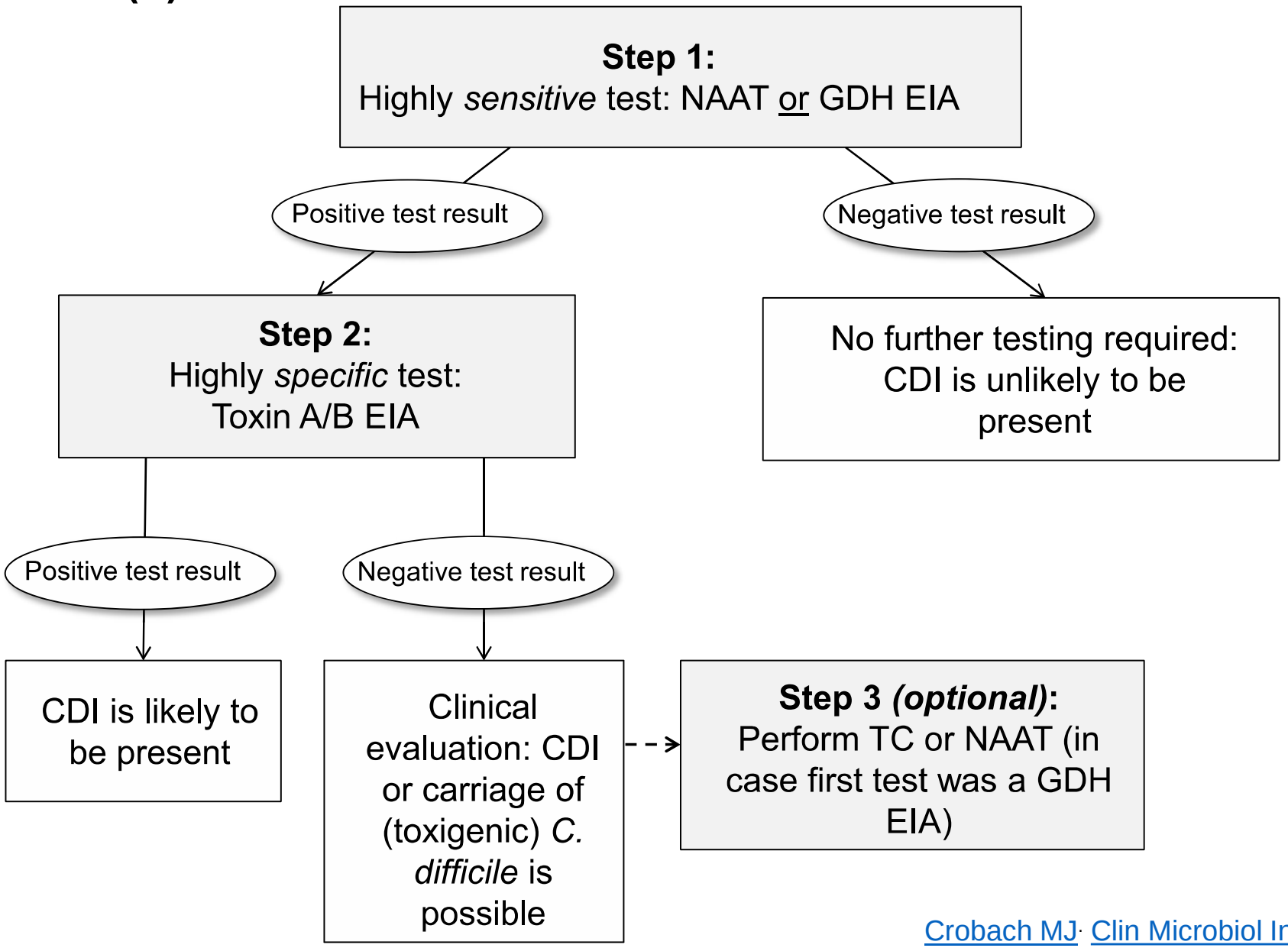
Çocuklarda C. difficile yüksek.

Salmonalle spp yüksek.

Kültürde zor üreyen Campylobacter

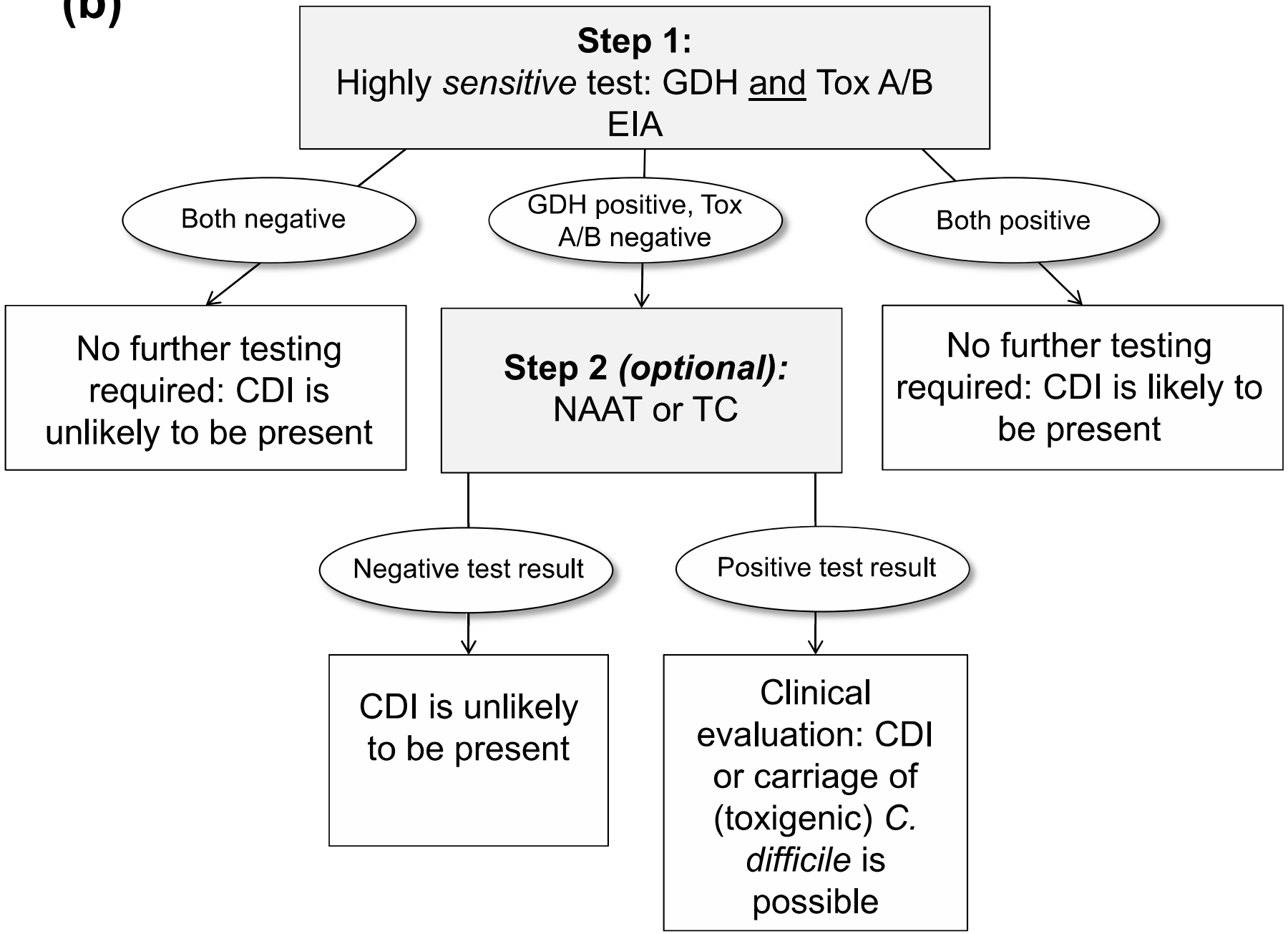
(a)

C. difficile



Crobach MJ· Clin Microbiol Infect. 2016;22 Suppl 4:S63-81.

(b)



Crobach MJ· Clin Microbiol Infect. 2016;22 Suppl 4:S63-81.

85 yaş, erkek

31/07/2018

ateş

bilinç değ

nöbet

Bilinç kapalı
Ateş: 38.1 ∘C. SS: 20/dk, TA. 146/95 mmHg
Geçirilmiş SVO. Xarelto kullanıyor.

MENENJİT PANELİ (PCR)

Beyin MR

Lomber P.

09:00

WBC: 9.75
Hb: 11.7
PLT: 301
CRP: 50
PCT: 0.11
Kre: 1.6
Na: 141
K: 3.7

11:00

14:00

Bulanık
Glc: 63 (103)
Protein 260 mg/dL
Eritrosit: 60
WBC: 272
%80 lenfosit
%18 monosit
%2 nötrofil.

Cinsiyet / D. T.	**E / 01.07.1933**	**Bölüm**	**GENEL YOĞUN BAKIM (GYB)**
Protokol No	**1151861**	**Rapor Tarihi**	**31.07.2018 17:23**
Örnek Tarihi / No	**31.07.2018 / 5405120**		

Kod	Test Adı	Sonuç	Referans Aralığı
35883	**Menenjit / Ensefalit (ME) Paneli (multiplex-PCR)**		
	Escherichia coli KL1	Negatif	
	Haemophilus influenzae	Negatif	
	Listeria monocytogenes	Negatif	
	Neisseria meningitidis	Negatif	
	Streptococcus agalactiae	Negatif	
	Streptococcus pneumoniae	Negatif	
	Cytomegalovirus	Negatif	
	Enterovirus	Negatif	
	Herpes simplex virus 1	Negatif	
	Herpes simplex virus 2	Negatif	
	Human herpesvirus 6	Negatif	
	Human parechovirus	Negatif	
	Varicella zoster virus	POZİTİF	
	Cryptococcus neoformans/gattii	Negatif	

Moleküler Testlerin “İnfeksiyon Kontrolü”ndeki Yeri

Elimination of Health care related *Acinetobacter baumannii* infection: Lessons from an endemic region

Onder Ergonul[1], Gizem Tokca[2], Ebru Donmez[2], Azize Kömür[2], Bahar Madran[2], Şiran Keske[2], Mehmet Gönen[3], Fusun Can[1]

[1] Department of Infectious Diseases, School of Medicine, Koç University, Istanbul, Turkey

[2] American Hospital, Istanbul, Turkey

The AB suşlarının tanımlanması ve antibiyotik direnci için Vitek™ kullanıldı.

Multiplex PCR ile blaOXA-51-like, blaOXA-23-like, blaOXA-24-like ve blaOXA-58-like carbapenemases ve metallo-beta-lactamases blaIMP ve blaVIM, primerleri kullanıldı.

Tür benzerliği (clonality) için rep PCR teknik (Diversilab™, BioMérieux) kullanıldı ve >%95 benzerlik varsa benzer suş olduğu kabul edildi.

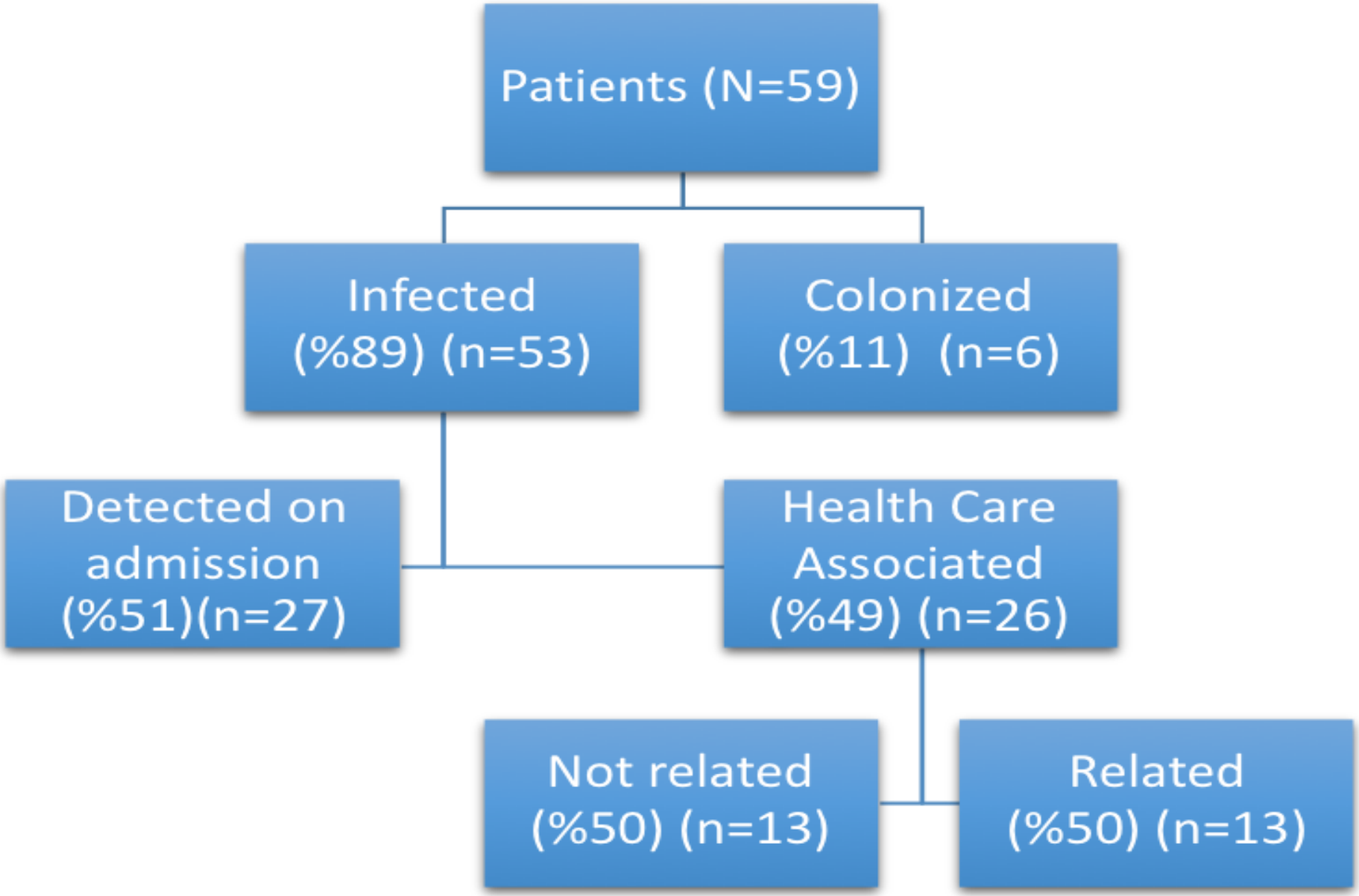


Figure 1. Colonization, infection and their relatedness after admission

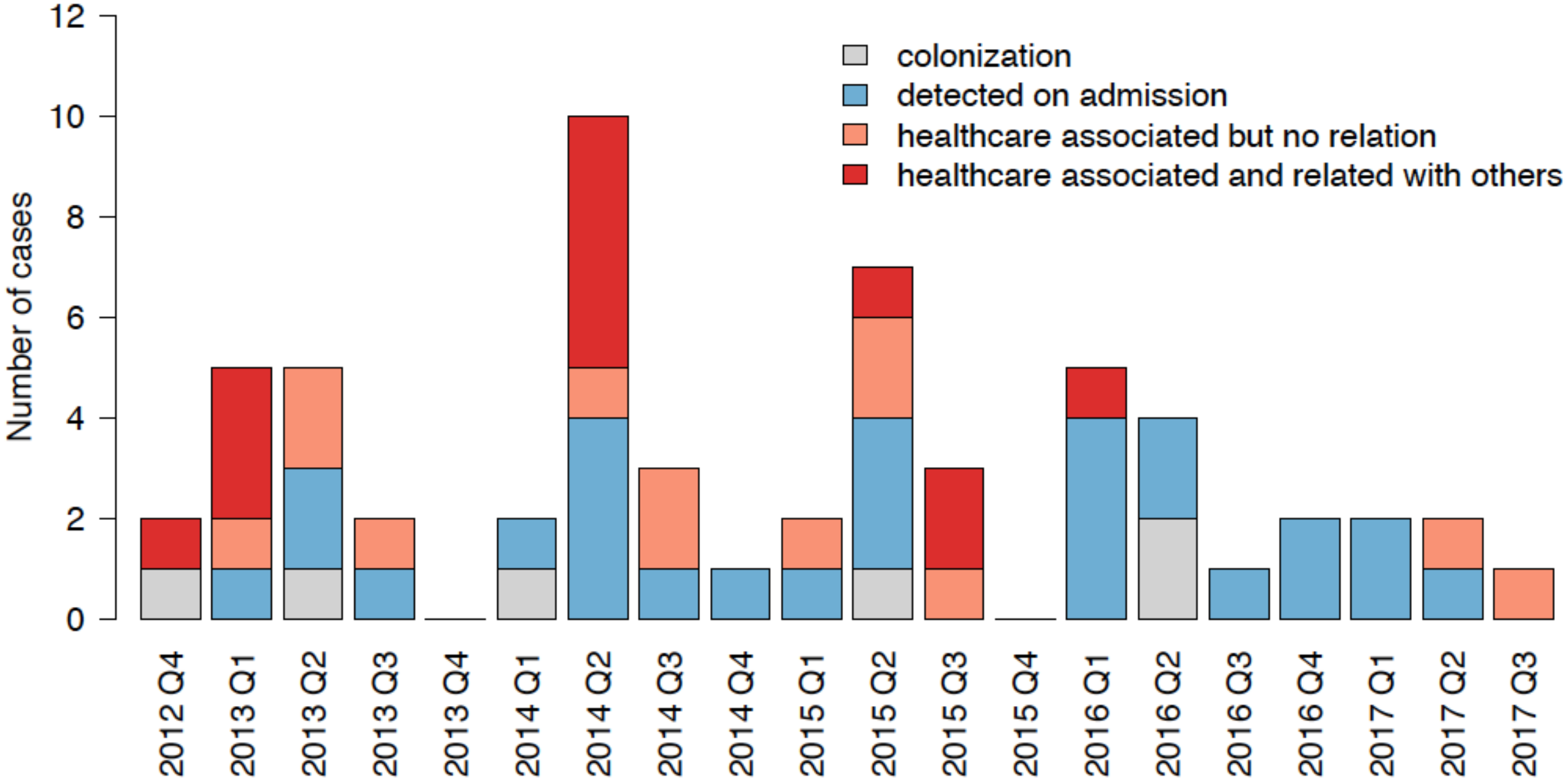


Figure 2. Development of healthcare related infections between the end of 2012 and the end of 2017

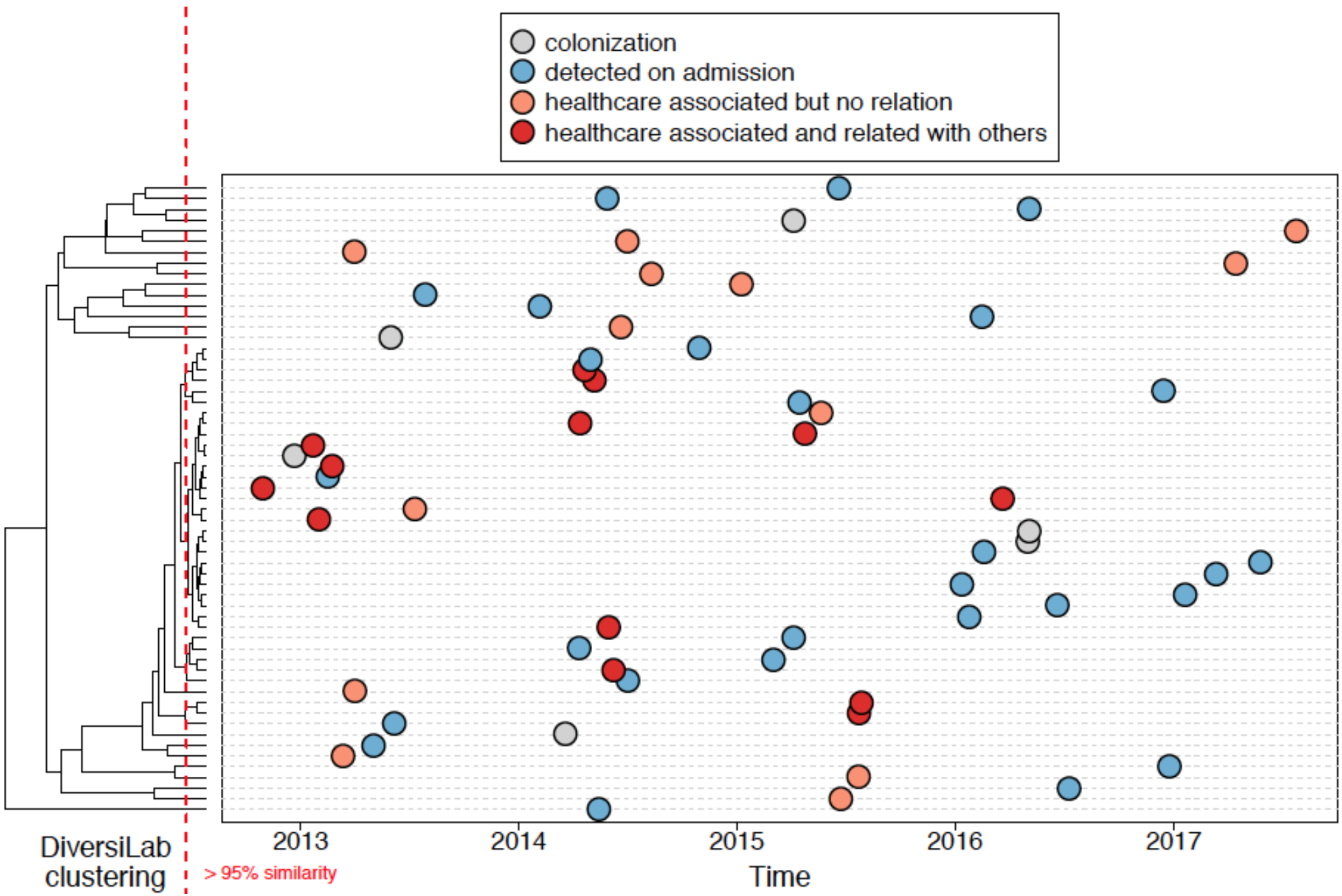


Figure 3. Relatedness of healthcare associated infections among colonized and infected patients.

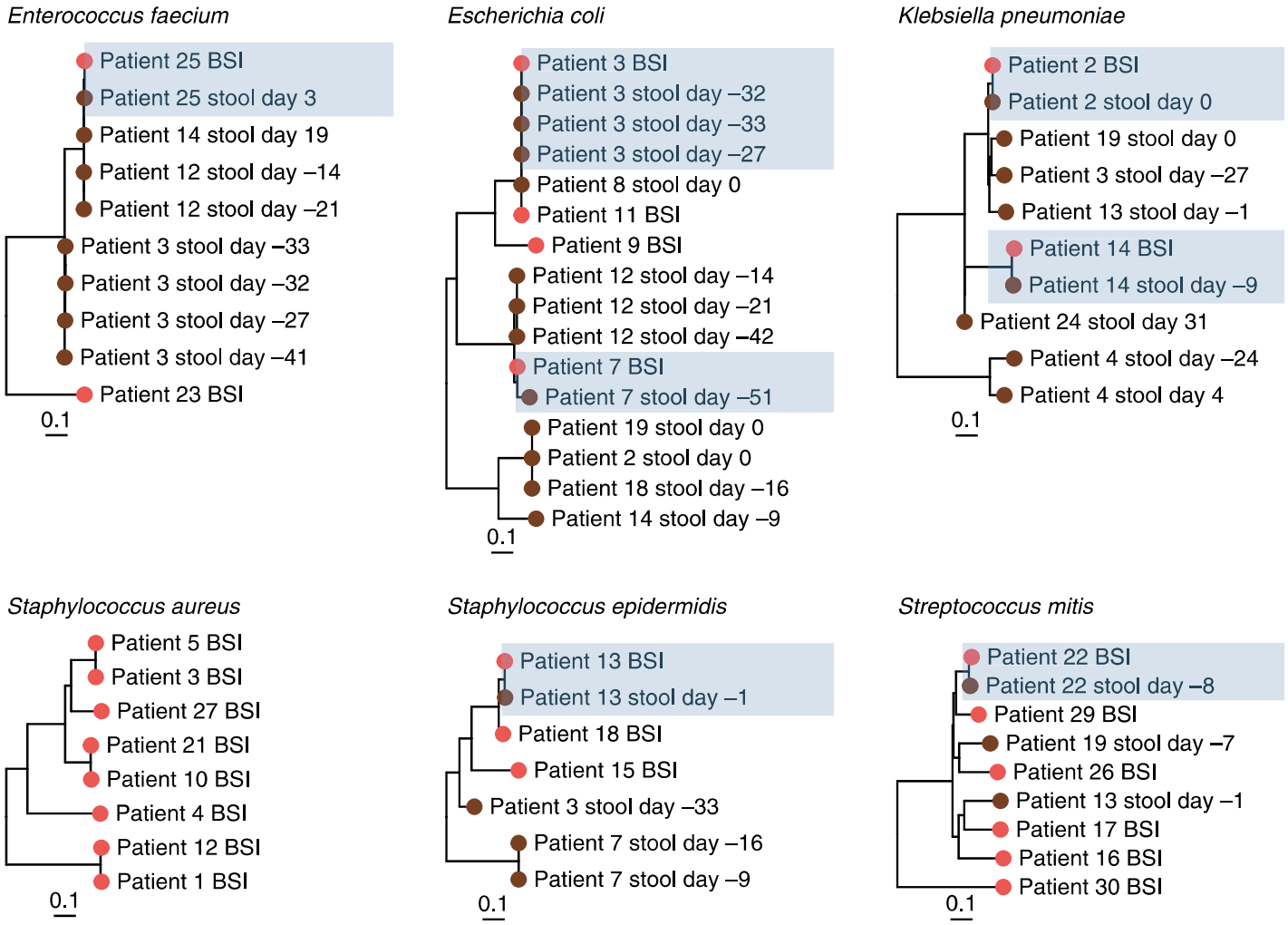


Fig. 2 | Gut and BSI strains from the same patient are more closely related than strains from different patients. Phylogenetic relatedness between bacterial strains as assessed by StrainSifter. Branch tip colors indicate stool (brown) and BSI (red) samples. Samples from the same patient are more closely phylogenetically related to each other (blue highlight) than to samples from other patients. The days given are relative to BSIs. The phylogenetic trees for *P. aeruginosa* and *E. cloacae* are not shown, as these species are not observed with sufficient abundance in more than one gut metagenome. Of note, although the BSI in patient 20 is classified as *S. epidermidis*, this strain does not meet the coverage requirements for inclusion in the *S. epidermidis* phylogenetic tree.

Tamburini FB. Nat Med. 2018 Oct 15.

Özetle

Hızlı testlerin klinik kullanımı ile ilgili çalışmalar hızla artmaktadır.

En önemli sorun neden-sonuç ilişkisi kurmak ve testlerin maliyeti.

Antimikrobiyal direnç artışı ve AMY'in ön plana çıkması ile hızlı testlerin önemi daha da artmıştır.