



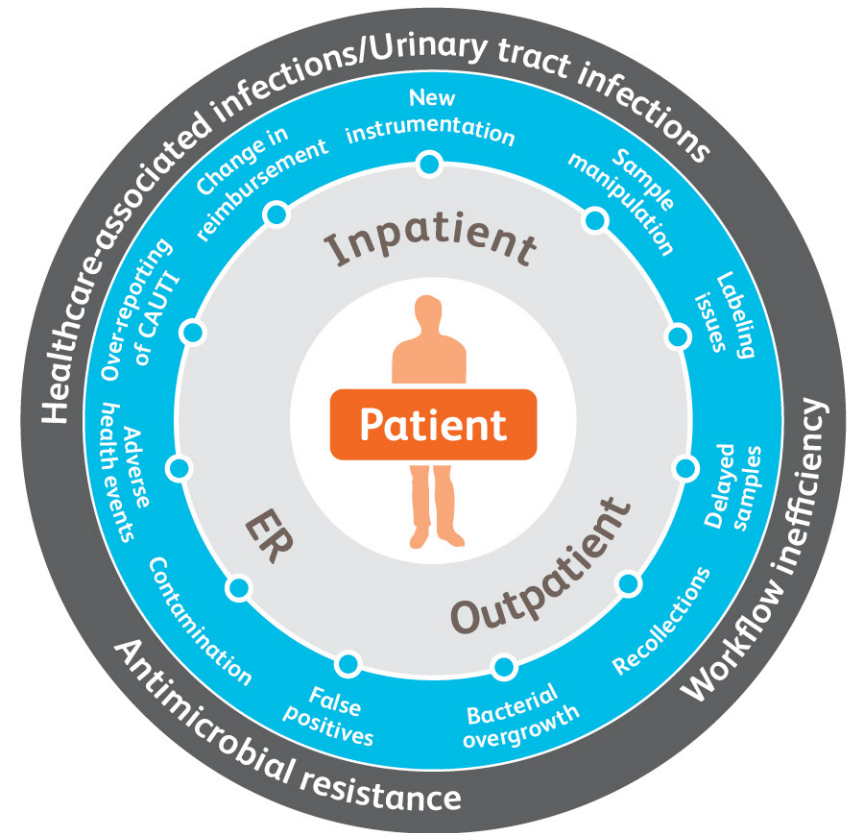
# Is it time to question urine testing?

BD Vacutainer® Urine Collection System



# What is the impact of improper urine specimen collection ?

- Bacteria count doubles every 20 minutes in an unpreserved urine specimen at room temperature.<sup>1</sup>
- Contaminated urine specimens may lead to erroneous results that impact treatment decisions.
- Improper urine collection and testing can disrupt workflow and increase turnaround time (TAT).





# How does unnecessary or improper urine collection and testing contribute to antimicrobial resistance



Contaminated specimens may lead to erroneous results that impact treatment decisions.

**44.3%** of patients were prescribed the wrong antibiotic due to contaminated urine cultures in one study.<sup>1</sup>

**20 minutes**

is the time it takes for bacteria to double in an unpreserved urine specimen at room temperature.<sup>2</sup>

**15%**

is the average rate of specimens that were contaminated in a CAP study.<sup>3\*</sup>

Unjustified ordering or improper collection of urine can lead to adverse health events:<sup>4</sup>



Overtreatment with antimicrobial agents



Selection of multi-drug resistant organisms



*C. difficile* infection

\* College of American Pathologists study of 14,739 urine specimens processed by 127 laboratories.

References: 1. Klausning BT, Tillan SD, Wright PW, Talbot TR. The influence of contaminated urine cultures in inpatient and emergency department settings. *Am J Infect Control.* 2016;44(10):1166–1167. 2. Bryan C. Microbiology and Immunology On-Line. Columbia, SC: University of South Carolina School of Medicine; 2017. Accessed April 17, 2017 at <http://microbiologybook.org/Infectious%20Disease/Urinary%20Tract%20Infections.htm>. 3. Bekeris LG, Jones BA, Walsh MK, Wagar EA. Urine culture contamination: a College of American Pathologists Q-Probes study of 127 laboratories. *Arch Pathol Lab Med.* 2008;132(6):913–917. 4. Garcia R, Spittler ED. Promoting appropriate urine culture management to improve health care outcomes and the accuracy of catheter-associated urinary tract infections. *Am J Infect Control.* 2017;45(10):1143–1153.



# Can we prevent over-prescription of key antibiotics ?

**30%** The Centers for Disease Control estimate **at least 30%** of antibiotic prescriptions are unnecessary.<sup>1</sup>



Studies have shown that treatment indication, choice of agent or duration of antibiotic therapy is **incorrect in 30–50% of cases.**<sup>2</sup>

**↑ 8x**

Unnecessary antibiotic treatment is associated with an **eight-fold increase** in risk of developing a *C. difficile* infection.<sup>3</sup>



# What is the impact of antimicrobial resistance ?

More than

**2 million**  
people

in the United States become infected with antibiotic-resistant bacteria each year.

And at least

**23,000 of them die**  
as a direct result.<sup>1</sup>

Up to

**\$20 billion**

in total economic cost of antibiotic resistance to the U.S. economy, in excess of direct healthcare costs.<sup>1</sup>

**20%**  
reduction

in antibiotic-resistant infections could save **\$3.2–5.2 billion** in healthcare costs/year.<sup>2</sup>



# Why not treat urine like blood ?

Improper urine collection and testing can disrupt workflow, increase turnaround time (TAT) and affect diagnostic accuracy.



Urine testing is one of the three most commonly ordered diagnostic screening tests.<sup>1</sup>



Leakage, spills and clean-up disrupt laboratory workflow, and increase TAT and costs.



A 10-minute reduction in laboratory test TAT can lead to a six-minute reduction in emergency department TAT.<sup>2</sup>



Failure to preserve samples jeopardizes sample quality and can affect diagnostic accuracy and patient outcomes.



# How can a poor urine collection process lead to operational and financial inefficiencies?

Unpreserved and improperly stored samples run the risk of contamination and/or overgrowth, which may lead to:



Slower reporting of results.



Recollection, relabeling and retesting.



Compromised patient identification.



Unnecessary treatment, such as antibiotics.



Financial inefficiencies.

And studies show that specimen contamination, deterioration and overgrowth are widespread.<sup>1,2</sup>



Why implement automation but not receive an automation-ready specimen for analysis







# What is the impact of reported catheter-associated urinary tract infections (CAUTI) ?



Each CAUTI is associated with a medical cost of about **\$760**.



UTIs impact reimbursement, and are the most common type of healthcare-associated infection (HAI) reported to the National Healthcare Safety Network.<sup>1</sup>



In 2010, the average length of stay was 21.9 days for patients with an HAI and 5 days for patients without an HAI.<sup>2</sup>

While rates of other HAIs\* decreased from 2009 to 2014, rates of CAUTIs remained the same.<sup>3</sup>

\* Central line-associated bloodstream infections (CLABSI) and surgical site infections (SSI) from abdominal hysterectomy.

References: 1. Centers for Disease Control and Infection. Catheter-associated Urinary Tract Infections (CAUTI). Accessed December 1, 2017 at [https://www.cdc.gov/hai/ca\\_uti/uti.html](https://www.cdc.gov/hai/ca_uti/uti.html). 2. Pennsylvania Health Care Cost Containment Council. The Impact of Healthcare-associated Infections in Pennsylvania 2010. 2012. 3. Centers for Disease Control and Infection. National and state healthcare associated infections: progress report, 2016. Accessed October 23, 2017 at <https://www.cdc.gov/HAI/pdfs/progress-report/hai-progress-report.pdf>.

# How can a urine collection system impact reported rates of catheter-associated urinary tract infections (CAUTI)



Contaminated urine specimens can lead to over-reporting of CAUTI events.<sup>1</sup>

- Urine testing results are used in the diagnosis of urinary tract infections.



- Unpreserved and improperly stored samples run the risk of contamination and/or overgrowth.



- Contamination and overgrowth can lead to false positives, and unnecessary testing and treatment.

# What do urinalysis guidelines recommend ?

The Clinical and Laboratory Sciences Institute, College of American Pathologists and World Health Organization Urinalysis Guidelines stipulate that:<sup>1,2,3</sup>



Urine samples must be processed by the lab within two hours of collection and kept refrigerated.



Or urine samples must be immediately preserved using an appropriate chemical preservative.



Adherence to specimen transport and storage must be documented for quality assurance.



And studies show that awareness and adherence are a problem.<sup>4</sup>

References: 1. Clinical and Laboratory Sciences Institute. *Urinalysis; Approved Guideline—3<sup>rd</sup> edition*. CLSI document GP16-A3. Wayne, PA: Clinical and Laboratory Sciences Institute; 2009. 2. World Health Organization. Basic practices in clinical bacteriology, 2<sup>nd</sup> Ed. 2003. Accessed October 13, 2017 at <http://whqlibdoc.who.int/publications/2003/9241545453.pdf>. 3. College of American Pathologists. Urinalysis Checklist. CAP Accreditation Program; 2016. 4. Garcia R, Spitzer ED. Promoting appropriate urine culture management to improve health care outcomes and the accuracy of catheter-associated urinary tract infections. *Am J Infect Control*. 2017;45(10):1143–1153.

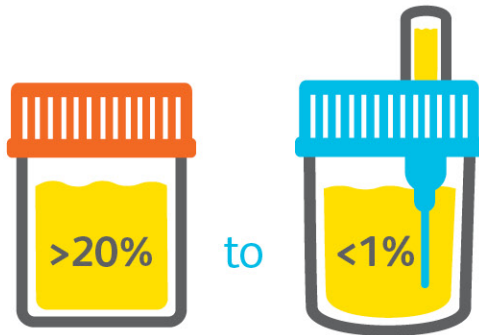


# The BD Vacutainer® Urine Collection System helps reduce urine sample contamination

*In one case study:*\*

By implementing the BD Vacutainer® urine collection system and Lean Process Improvements:<sup>1</sup>

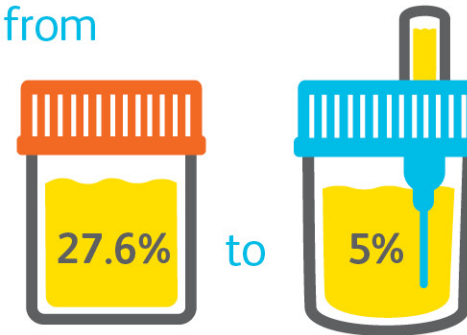
Urine sample contamination rates were reduced from



*In one case study:*†

By implementing standardized use of the BD Vacutainer urine collection system and a comprehensive performance improvement plan:<sup>2</sup>

Urine sample contamination rates across eight hospitals were reduced from



\* A study at Nyack Hospital.

† A study by the Baylor Health Care System.

References: 1. BD VS8955. Nyack Hospital Urine Culture Case Study. Data on file at BD. Results may vary by customer. 2. Baker J. Attacking urine contamination. System-wide engagement and standard work drives a 20% average rate to a sustained 5% goal. Baylor Health Care System. Accessed October 12, 2017 at <http://www.labqualityconfab.com/wp-content/uploads/BAker.Urine-Contamination-BHCS.pdf>.



# Identify the right treatment, even if it's no treatment at all

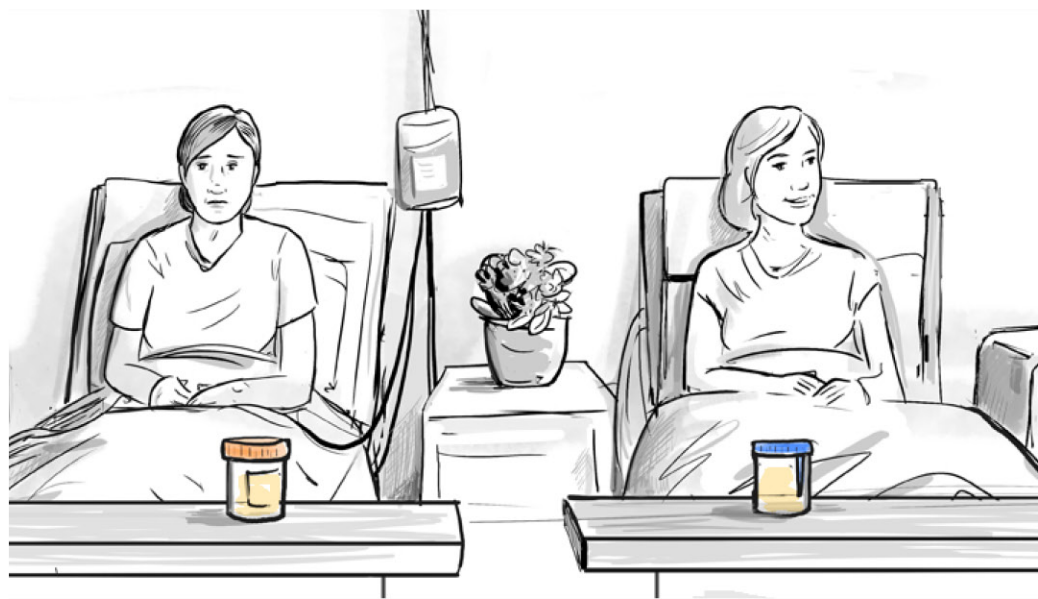
High-quality, preserved samples provide improved diagnostic accuracy.

By implementing the BD Vacutainer urine collection system and changing the urine culture ordering process:<sup>1\*</sup>

**Antimicrobial prescriptions**  
for urinary indications  
among admitted patients  
were **decreased by almost**

# 50%

without any cases of  
untreated UTIs identified.



Adoption of the BD Vacutainer urine collection system has shown to contribute to a reduction in antimicrobial prescriptions for urinary indications among admitted patients.<sup>1</sup>

\* A study published in BMJ.

Reference: 1. Stagg A, Lutz H, Kirpalaney S, et al. Impact of two-step urine culture ordering in the emergency department: a time series analysis. *BMJ Qual Saf*. 2017;0:1–8. doi: 10.1136/bmjqs-2016-006250 [Epub ahead of print].



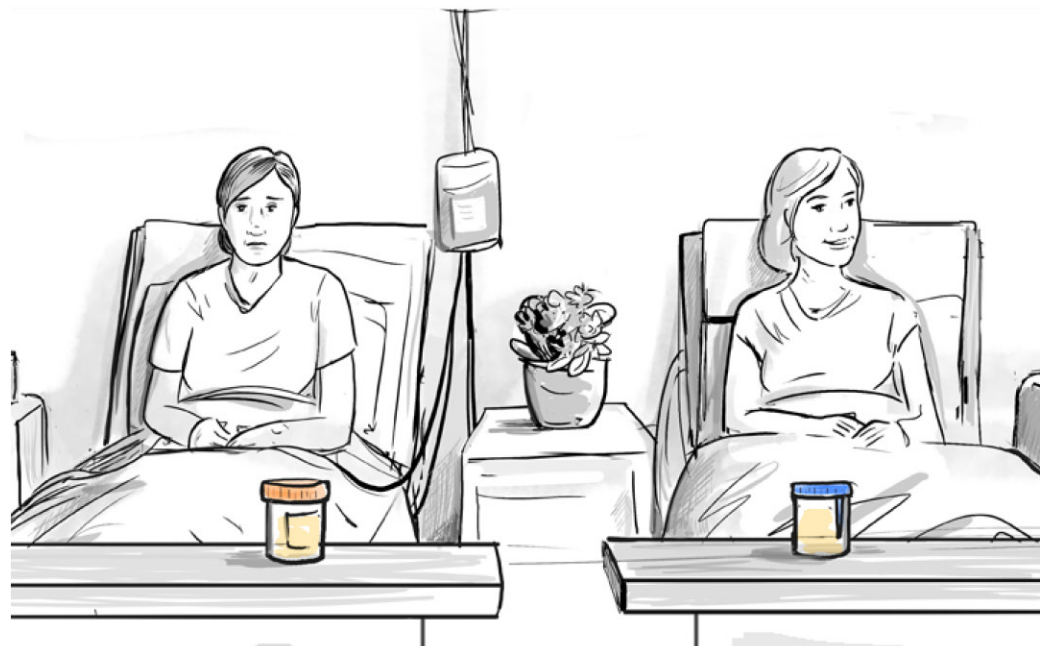
# Identify the right treatment, even if it's no treatment at all

High-quality, preserved samples can help reduce the reported rates of catheter-associated urinary tract infections (CAUTI).

By implementing the BD solution for Foley catheter urine collection, among other interventions:<sup>1\*</sup>

## CAUTI rates were reduced.

Adoption of the BD Vacutainer urine collection system has shown to contribute to a reduction in antimicrobial prescriptions for urinary indications among admitted patients.<sup>2</sup>



\* A study in the American Journal of Nursing.

References: 1. Wenger JE. Cultivating quality: reducing rates of catheter-associated urinary tract infection. *Am J Nurs.* 2010;110(8):40–45. 2. Stagg A, Lutz H, Kirpalaney S, et al. Impact of two-step urine culture ordering in the emergency department: a time series analysis. *BMJ Qual Saf.* 2017;0:1–8. doi: 10.1136/bmjqs-2016-006250 [Epub ahead of print].



# More efficient workload means more cost savings

Greater efficiency for improved healthcare outcomes.

In one study, by implementing the BD Vacutainer urine collection system and changing the urine culture ordering process:<sup>1\*</sup>



Urine culture workload was reduced.



Emergency department (ED) urinalysis turnaround time was reduced from 30 minutes to 12 minutes.



ED cost savings, from decreased patient call backs, of ~\$30/100 visits.



Unnecessary ED admissions were avoided.

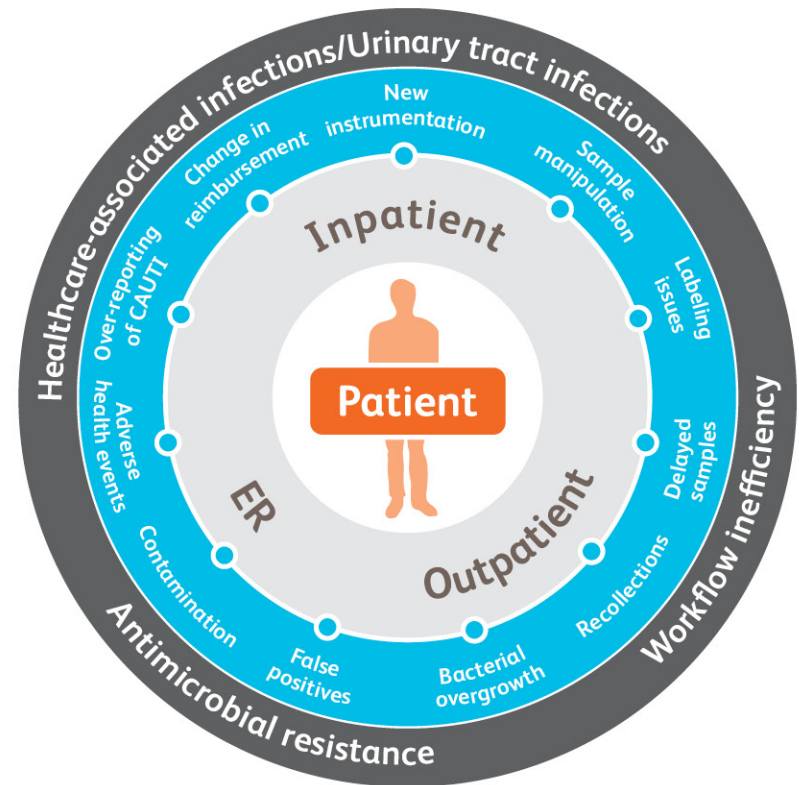
\* A study published in BMJ.

Reference: 1. Stagg A, Lutz H, Kirpalaney S, et al. Impact of two-step urine culture ordering in the emergency department: a time series analysis. *BMJ Qual Saf.* 2017;0:1–8. doi: 10.1136/bmjqs-2016-006250 [Epub ahead of print].

# At BD, we understand the challenges that surround you

The BD Vacutainer urine collection system can provide solutions for each part of the process:

- For collection, we have easy-to-use products for the patient and the healthcare worker.
- Our product offerings allow for leak-proof transportation that can be used with pneumatic tube systems.
- Accessioning through a closed system eliminates the need to pour off and provides the laboratory with a clean sample.
- Our products are analytically compatible with most commonly used automated platforms.





# Choosing the product that's right for you to help ensure diagnostic accuracy and improve patient outcomes

At BD, we recognize that each customer has a different process, so we offer a wide range of products and configurations from which to choose.



## BD bulk products

Each product sold separately.



## BD complete kits

A complete system (*cup and tubes*). In addition to the urine collection cup and evacuated tubes, a towelette is included for patient cleansing prior to collection.



## BD transfer straw kits

For collection devices (*a cup or bag*) that do not have a transfer device. These kits contain transfer straws and urine tube combinations.



## BD cup kits

A complete kit system (*cup and tubes*). Identify the proper tube combination that best fits your process.

# BD solutions for urinalysis

Treat urine like blood.

With our proprietary formulation, samples can be preserved for up to 72 hours<sup>1</sup> without refrigeration. This allows you to maintain sample integrity and helps minimize preanalytical errors and unnecessary cultures due to bacterial contamination or overgrowth.

## BD Vacutainer® urinalysis tubes



### Ref 366408

- 6.0 mL
- BD Hemogard™
- No additive

### Ref 364979

- 10.0 mL
- Conventional stopper
- No additive

### Ref 364980

- 8.0 mL
- Conventional stopper
- No additive

### Ref 364992

- 8.0 mL
- Conventional stopper
- Ethyl paraben, sodium propionate and chlorhexidine preservative

### Ref 365017

- 8.0 mL
- BD Hemogard™
- Ethyl paraben, sodium propionate and chlorhexidine preservative

# BD solutions for microbiology

Treat urine like blood.

The BD Vacutainer® C&S preservative tube offers a specific tube for microbiology, providing independence to each area of your facility. In addition, this will help you gain efficiency by avoiding unnecessary recollections due to contaminated samples.

## BD Vacutainer C&S preservative tubes



Samples can be preserved for up to

**48 hours**  
without refrigeration.<sup>1</sup>

### Ref 364951

- 4.0 mL
- Conventional stopper
- Boric acid, sodium formate and sodium borate preservative

### Ref 364958

- 4.0 mL
- BD Hemogard™
- Boric acid, sodium formate and sodium borate preservative

# BD solutions for urine collection from a Foley catheter

Treat urine like blood.

By using the BD Vacutainer® Luer-Lok™ access device, the sample can be transferred directly from the Foley catheter to the tube. This means fewer steps, less sample manipulation and reduced risk of contamination.

BD Vacutainer urine products for Foley catheter collection



## Ref 364902

- BD Vacutainer Luer-Lok access device



## Ref 364951

- 4.0 mL
- Conventional stopper
- C&S preservative tube



## Ref 364992

- 8.0 mL
- Conventional stopper
- Urinalysis preservative tube

# BD solutions for mid-stream urine collection

Treat urine like blood.

The use of an evacuated closed system ensures a proper urine-to-preservative ratio. In addition, the sterile interior cup with screw-cap minimizes the risk of leakage and sample contamination.

BD Vacutainer® urine products for mid-stream collection



**BD Vacutainer urine collection cup**

**Ref 364975**

Graduated to indicate  
volume 4.05 oz/120 mL



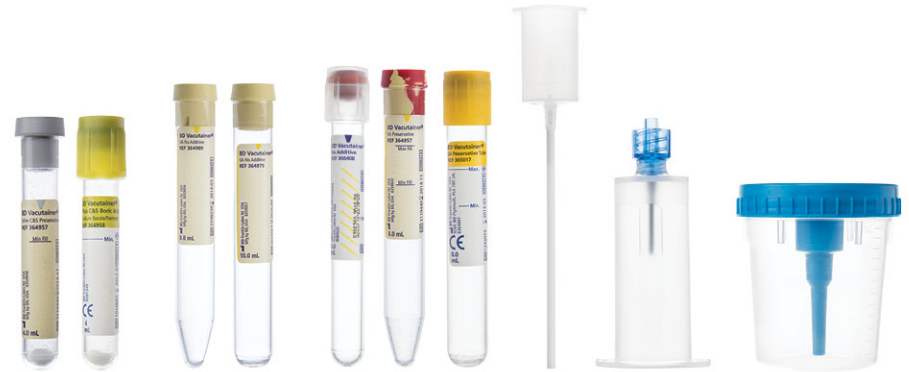
**BD Vacutainer urine transfer straw**

**Ref 364966**

# Let's turn the questions into confidence



- Preserve to ensure specimen integrity.
- Protect against exposure and contamination.
- Improve accuracy and prevent potential false positives.
- Work toward reducing falsely reported urinary tract infections and the impact it can have on antimicrobial resistance.



Partner with BD to make the difference in urine specimen management.

# Thank you

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