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MAJOR ARTICLE

Optimizing the Management of Uncomplicated Gram-Negative Bloodstream Infections: Consensus Guidance Using a Modified Delphi Process

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Background. Guidance on the recommended durations of antibiotic therapy, the use of oral antibiotic therapy, and the need for repeat blood cultures remain incomplete for gram-negative bloodstream infections. We convened a panel of infectious diseases specialists to develop a consensus definition of uncomplicated gram-negative bloodstream infections to assist clinicians with management decisions.

Methods. Panelists, who were all blinded to the identity of other members of the panel, used a modified Delphi technique to develop a list of statements describing preferred management approaches for uncomplicated gram-negative bloodstream infections. Panelists provided level of agreement and feedback on consensus statements generated and refined them from the first round of open-ended questions through 3 subsequent rounds.

Results. Thirteen infectious diseases specialists (7 physicians and 6 pharmacists) from across the United States participated in the consensus process. A definition of uncomplicated gram-negative bloodstream infection was developed. Considerations cited by panelists in determining if a bloodstream infection was uncomplicated included host immune status, response to therapy, organism identified, source of the bacteremia, and source control measures. For patients meeting this definition, panelists largely agreed that a duration of therapy of ~7 days, transitioning to oral antibiotic therapy, and forgoing repeat blood cultures, was reasonable.

Conclusions. In the absence of professional guidelines for the management of uncomplicated gram-negative bloodstream infections, the consensus statements developed by a panel of infectious diseases specialists can provide guidance to practitioners for a common clinical scenario.

Keywords. bacteremia; blood cultures; duration of therapy; oral step-down therapy.

A growing number of observational studies and clinical trials indicate that shorter durations of antibiotic therapy than traditionally prescribed are equally effective for uncomplicated gram-negative bloodstream infections (GN-BSIs) [1–5]. Shorter courses of antibiotic therapy (eg, 7 days) have been shown to have similar clinical response and microbiological cure rates compared with longer courses (eg, 14 days), primarily in patients with BSI due to Enterobacterales from a urinary source. To briefly highlight the 2 randomized controlled trials that were adequately powered to investigate this question: Yahav and colleagues conducted a randomized, multicenter clinical trial including 604 patients in Israel or Italy with GN-BSI randomized to 7 days vs 14 days of antibiotic therapy and found no difference in 90-day outcomes which included a composite of all-cause mortality; relapse, suppurative, or distant complications; or readmission or extended hospitalization [1]. Von Dach and colleagues also conducted a randomized controlled trial including 504 patients randomized to C-reactive protein–guided duration, a 7-day duration, and a 14-day duration in 3 Swiss hospitals and found no difference in clinical outcomes at day 30 when comparing the 3 management approaches [4].

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Despite the availability of these data, short-course therapy has not been routinely adopted into clinical practice [6, 7]. These delays are in part due to lags in the translation of scientific evidence into clinical practice. It can take an average of 17 years for new data to achieve widespread acceptance [8].

Another important contributor to the lack of standardization in GN-BSI management is the underrepresentation or exclusion of various subpopulations (eg, severe immunocompromise), sources of infection (eg, pneumonia), or organism and microbial resistance phenotypes (eg, *Pseudomonas aeruginosa* or highly drug-resistant gram-negative organisms) from comparative effectiveness studies for GN-BSI. Incomplete evidence for GN-BSI management for a broad range of host factors, infectious sources, and microbial characteristics promotes heterogeneity in clinical practice. For example, in the aforementioned Yahav et al. study, <10% of infections were caused by glucose-nonfermenting organisms; <5% of GN-BSI were the result of a primary respiratory infection; and patients with neutropenia, HIV infection, or a previous hematopoietic stem cell transplantation were excluded [1]. Similarly, in the von Dach study, patients who were febrile on day 5 or severely immunosuppressed could not be enrolled, no patients were infected with *P. aeruginosa*, and <10% of patients were infected with an isolate with a drug-resistant phenotype [4]. Further guidance on the duration of therapy, the efficacy of oral antibiotic therapy, and the utility of repeat blood cultures for all of these subpopulations would be beneficial [9]. We sought to fill existing gaps in guidance for the treatment of GN-BSI by engaging a panel of infectious diseases experts from across the United States tasked with using a rigorous consensus development process to address these questions.

METHODS

Delphi Technique

We employed a Delphi technique to develop a list of statements describing optimal management approaches for GN-BSI. The Delphi technique is a structured process to develop consensus on a topic with gaps in data-driven guidance [10]. Expert panelists were surveyed for their clinical opinions based on their previous experiences and interpretation of the available literature by deploying several rounds of questionnaires. The Delphi method was conducted asynchronously, and panel members were unaware of the identity and opinions of other panelists so as to not be influenced by others during the process [11, 12]. Panelists remained unaware of each other's identity until final manuscript approval.

Panelists

A goal panel size of 12–15 infectious diseases physicians and pharmacists was targeted. Panelists were identified based on a combination of clinical experience with managing GN-BSIs, relevant peer-reviewed publications, and active engagement in professional society meetings or listservs (as a proxy for remaining up to date with literature in this field). A diverse group of panelists were intentionally selected based on differences in regions of practice, faculty in academic vs community hospitals, representation from transplant infectious diseases, and representation from antibiotic stewardship programs. Qualtrics (Provo, UT, USA) was used to collect responses for each round. The research team (E.L.H., J.T.B., P.D.T.) did not participate in the Delphi process and was aware of the identity of the participants but was blinded to the identity of their responses. The protocol was approved by the University of Maryland's institutional review board.

Delphi Round 1

In round 1, panelists described their knowledge and experience with the treatment of GN-BSI in response to 11 open-ended questions (Supplementary Data). Panelists described the role of host factors, sources of infections, and microbial characteristics when determining durations of antibiotic therapy, use of oral antibiotic therapy, and the decision to repeat blood cultures. The investigators aggregated the responses, identified common themes, and crafted statements reflecting these themes using wording from panelist responses.

Delphi Round 2

In round 2, the panel was provided with the list of crafted statements based on responses from the first round. Panelists provided their level of agreement with each statement based on a 7-point Likert scale (Supplementary Data). They also provided open-ended feedback that would strengthen their level of agreement with each statement. At the conclusion of the second round, the investigators calculated the percentage of panelists who generally agreed (strongly agree, agree, somewhat agree) or were neutral (neither agree nor disagree) and removed any statements with which the majority of panelists disagreed (somewhat disagree, disagree, strongly disagree). Statements were modified by the investigators based on the feedback.

Delphi Round 3

In the third round, panelists were presented with the modified statements and instructed to provide their level of agreement with each statement on a 5-point Likert scale. A more restrictive scale was used in round 3 to further understand their confidence in each statement. Panelists rated their level of confidence with each statement. At the conclusion of the third round, the investigators calculated the percentage of panelists who agreed (strongly agree, agree) or were neutral or disagreed (neither agree nor disagree, disagree, strongly disagree) and removed any statements with which the majority of panelists disagreed or reported being neutral.

Delphi Round 4

During the final round, respondents were provided with the statements where consensus was reached in round 3 and asked to affirm that the statements represented best practices in the treatment of GN-BSI. Panelists were given a final opportunity to reconsider the statements on which consensus was not achieved in round 3.

RESULTS

Characteristics of Panel Members

Thirteen potential panelists were contacted, and all agreed to participate, including 7 infectious diseases physicians and 6 infectious diseases pharmacists. Eleven (85%) panelists practice in academic medical centers, and 2 (15%) practice in community hospitals.

During the 4 rounds, panelists developed a consensus definition of uncomplicated GN-BSIs to describe the population for which all recommendations would be based (Table 1). Considerations cited by panelists in determining if a BSI was uncomplicated included host immune status, response to therapy, organism identified, source of the GN-BSI, and source control measures.

Defining Uncomplicated Gram-Negative Bloodstream Infections

Role of Host Immune Status in Defining Uncomplicated GN-BSI

Controversy existed among panelists when defining "immunocompromise" and determining its importance in managing GN-BSI. This was because of the recognition that "immunocompromise" is a broad category including both underlying disease states and therapeutics that weaken a patient's immune system and is a population frequently excluded from GN-BSI studies. There was an acknowledgment that not all of these disease states or immunomodulatory agents uniformly influence treatment outcomes. For example, panelists noted that for patients with solid organ transplants, the transplanted organ(s), time since transplantation, level of immunosuppression, and more aggressive treatment needed for organ rejection all factor into their decision-making. In early Delphi rounds, some panelists argued that receipt of an organ transplant or HIV with a CD4 count <200 cells/mL does not significantly impact decisions on the duration of treatment for GN-BSI. Ultimately, panelists settled on a definition of "immunocompromise" that was limited to patients at risk for opportunistic infections (ie, recent solid organ transplant recipients; expected prolonged neutropenia with absolute neutrophil count <500 cells/mL during the GN-BSI treatment course; CD4 cell count <200 cells/mL; chronic corticosteroids and/or immunomodulator therapy where opportunistic infection prophylaxis would be considered).

Role of Response to Therapy in Defining Uncomplicated GN-BSI

Panelists agreed that a favorable response to effective therapy within 72 hours of initiation was an important determinant in categorizing GN-BSI as uncomplicated. There was general agreement that at a minimum, a response to therapy includes defervesence and hemodynamic stability. This did not imply that if defervescence or hemodynamic stability was achieved after 72 hours that those patients would *never* be reasonable candidates for 7 days of therapy, but the panel was tasked with defining who is "almost always" a reasonable candidate for short-course therapy (ie, has an uncomplicated GN-BSI).

Role of Bacterial Pathogen and Resistance Phenotype in Defining Uncomplicated GN-BSI

Controversy existed as to whether uncomplicated GN-BSI should be limited to Enterobacterales or also extend to include glucose-nonfermenting gram-negative rods (eg, *Pseudomonas aeruginosa*). This was primarily because existing data for short courses of treatment or oral therapy for GN-BSI are rooted in comparative effectiveness studies focusing on the Enterobacterales, with data significantly more limited for *P. aeruginosa* BSI [13], and virtually nonexistent for other nonfermenting gram-negative organisms such as *Acinetobacter baumannii* complex or *Stenotrophomonas maltophilia*. Furthermore, several panelists commented on the lack of data describing the management of GN-BSI with resistance phenotypes such as extended-spectrum beta-lactamase or carbapenemase-producing Enterobacterales. Ultimately, the consensus was to not distinguish the specific organism (eg, *E. coli* vs *P. aeruginosa*) or the resistance phenotype in the definition of uncomplicated GN-BSI as management would be based on the day effective therapy was initiated, even if that was not the same day that antibiotic therapy was initiated. To this latter point, the panel agreed that for GN-BSI with significant resistance phenotypes, empiric therapy would likely need to be adjusted once the organism and/or antibiotic susceptibility testing results became available and that the 7-day treatment course is based on 7 days of effective therapy and not 7 total days of antibiotic therapy—as there are often delays in initiating effective antibiotic therapy for drug-resistant infections. Moreover, it was agreed that management of a patient with an *E. coli* BSI or a *P. aeruginosa* BSI would not differ if both patients demonstrated an appropriate clinical response to therapy, were not immunocompromised, and underwent appropriate source control. Panelists agreed, however, that patients with GN-BSI due to Enterobacterales were more likely to meet these criteria compared with those with GN-BSI from nonfermenting organisms.

Role of Source and Source Control in Defining Uncomplicated GN-BSI

Panelist criteria for source control include the removal of any infected hardware, catheters, or devices, along with near complete drainage of infected fluid collections and, where relevant, imaging to confirm no residual or metastatic sites of infection. Panelists were in agreement that endovascular infections, bone

Table 1. Consensus Statements for Best Practices for the Management of Uncomplicated Gram-Negative Bloodstream Infections

Statement	Rating[a]
1. Uncomplicated gram-negative bloodstream infections are defined as the following (the panel suggests all 4 conditions must be met):	10 strongly agree 3 agree
a. Bloodstream infection confirmed to be secondary to 1 of the following sources:	
i. Urinary tract infection	
ii. Intra-abdominal or biliary infections	
iii. Catheter-related bloodstream infection	
iv. Pneumonia (without structural lung disease, empyema/abscess, cystic fibrosis)	
v. Skin and soft tissue infection	
b. Source control (ie, removal of any infected hardware, catheters, or devices and near complete drainage of infected fluid collections, as well as imaging assurance [as needed] of no residual or metastatic sites of infection)	
c. Patients *without* immunocompromise and risk for opportunistic infections (eg, recent solid organ transplant recipients; expected prolonged neutropenia with ANC <500 cells/mL during the GN-BSI treatment course; recent CD4 cell count <200 cells/mL; chronic corticosteroids and/or immunomodulator therapy); select immunocompromised patients such as those on stable immunomodulatory therapy may be considered on a case-by-case basis	
d. Clinical improvement within 72 hours of effective antibiotic treatment—at a minimum includes defervescence and hemodynamic stability[b]	
2. Patients with uncomplicated gram-negative bloodstream infections, regardless of the gram-negative organism or resistance phenotype, can generally be treated with a 7-day course of effective therapy	9 strongly agree 4 agree
3. Repeat blood cultures to document clearance are generally not necessary in uncomplicated gram-negative bloodstream infections (as defined above) unless any of the following is true: (1) patients without an appropriate clinical response within 72 hours, (2) patients with clinical concern for an endovascular infection or endocarditis, and (3) situations where there is limited or no source control	10 strongly agree 2 agree 1 neither agree nor disagree
4. Patients with uncomplicated gram-negative bloodstream infections can be treated with oral antibiotics if all of the following criteria are all met:	10 strongly agree 3 agree
a. Clinical improvement observed on effective intravenous therapy	
i. If effective oral therapy was started initially and appropriate clinical response is achieved, oral therapy can continue for the duration of the treatment course	
b. Underlying source is confirmed	
c. Susceptibility testing confirms that oral antibiotic options are available	
d. The patient has an intact and functional gastrointestinal tract	
5. Antibiotics that have adequate pharmacokinetic–pharmacodynamic target attainment when administered orally can be used for IV-to-oral transitions for the treatment of gram-negative bloodstream infections when reported active against the cultured pathogen	6 strongly agree 5 agree 2 disagree
a. Preferred options include fluoroquinolones and trimethoprim-sulfamethoxazole	
b. Oral beta-lactams with high likelihood of PK/PD target attainment and direct or inferred susceptibility data are alternative treatment options	
c. Agents with limited systemic absorption or low serum levels (eg, fosfomycin, nitrofurantoin) should not be used	

Abbreviations: ANC, absolute neutrophil count; GN-BSI, gram-negative bloodstream infection; PK/PD, pharmacokinetic–pharmacodynamic.

[a]Ratings are based on the final round of review using a 5-option Likert scale (strongly agree, agree, neither agree nor disagree, disagree, strongly disagree).

[b]This does not imply that if defervescence or hemodynamic stability was achieved after 72 hours, those patients would never be reasonable candidates for being treated similarly to patients with uncomplicated GN-BSI, but the panel sought to define who is "almost always" a reasonable candidate for short-course therapy.

and joint infections, and central nervous system infections were considered complicated, regardless of source control, and would be excluded from this definition.

There was strong consensus that BSI associated with urinary tract infection (UTI) and intra-abdominal infection, both with source control, would be considered uncomplicated. Defining source control in these instances, however, remains nuanced. For example, most panelists considered urinary stones or ureteral stents a lack of source control for UTI if urinary flow remained obstructed (ie, the urinary stone or ureteral stent was not removed). Most panelists referred to the STOP-IT trial as influencing their decision-making for perceived source control for GN-BSI with an intra-abdominal source [14]. As described in the STOP-IT trial, the panelists agreed that source control for an intra-abdominal source includes any procedure that prevents ongoing contamination of the peritoneal cavity and removes the majority of contaminated intraperitoneal content to the extent that no further acute interventions are believed to be necessary to significantly reduce the bacterial burden [14, 15].

Inclusion of pneumonia as a potential source of uncomplicated GN-BSI was more controversial, as panelists believed "source control" can be more ambiguous for pneumonia. Several caveats as to what defines a BSI secondary to pneumonia caused by a gram-negative organism as uncomplicated were added. The panel limited the categorization of GN-BSIs from pulmonary sources as uncomplicated to instances where the patient had no underlying structural lung disease (eg, bronchiectasis, cystic fibrosis) or more complicated infection (eg, lung abscess or empyema).

Treatment of Uncomplicated Gram-Negative Bloodstream Infections

Duration of Therapy for Uncomplicated GN-BSI

For patients meeting all of the components of the uncomplicated GN-BSI definition (Table 1), panelists recommended a duration of therapy of 7 days. The selection of 7 days was based on available data, and potentially even shorter durations may be just as effective, pending support from future research. Panelists recognized that there was limited published evidence to support some subgroups of patient or pathogens. Panelists agreed that day 1 of therapy should include the first day of effective therapy; however, for patients with clinical improvement only after source control, day 1 should include the day of source control. For some subgroups not included in the uncomplicated GN-BSI definition (eg, patients with severe immunocompromise, those with delayed clinical response, or those "gray zone" situations such as a complicated UTI with chronic Foley catheters that were not removed/exchanged or intra-abdominal abscess that was partially drained), the panel generally preferred prescribing durations in the range of 10–14 days, assuming clinical stability and that no metastatic sites of infection were present. For other subgroups not meeting criteria for uncomplicated GN-BSI (eg, endovascular sources, endocarditis, osteomyelitis, complex intra-abdominal infections), durations of at least 2 weeks were considered appropriate, in agreement with existing indication-specific guidelines and clinical expertise [16–18].

IV-to-PO Conversion for Uncomplicated GN-BSI

Panelists agreed that patients with uncomplicated GN-BSI can be treated with oral therapy if they demonstrate clinical improvement on IV therapy. Similarly, panelists agreed that oral antibiotics can be continued if prescribed initially assuming that an appropriate clinical response is observed. The panel cited that oral therapy should be limited to situations where antibiotic susceptibility testing confirms that active oral options are available and for patients with intact and functional gastrointestinal tracts. Of note, panelists did not indicate that the decision to remain on IV therapy vs transition to oral therapy should be influenced solely by the patient's immune status. In terms of choice of agent, panelists did not always default to fluoroquinolones or trimethoprim-sulfamethoxazole (TMP-SMX) because of their bioavailability, and rather selected between agents based on risk for toxicity (eg, avoid fluoroquinolones in patients with a history of *Clostridioides difficile* infection [19, 20]; avoid TMP-SMX in patients with acute kidney injury [21]). Given some data suggesting higher rates of treatment failure with shorter courses of oral beta-lactams [22], most panelists agreed that caution is warranted and use should be reserved for scenarios where, based on the drug selection, source of infection (primarily urine), infecting pathogen, and patient factors, the likelihood of pharmacokinetic–pharmacodynamic target attainment is high [23]. Most panelists felt comfortable with using oral beta-lactams to complete treatment courses only after several days of initial IV therapy.

Panelists agreed that adequate pharmacokinetic–pharmacodynamic target attainment may not be achieved with all oral beta-lactams [22]. Absorption of oral antibiotics is most commonly described in the context of absolute bioavailability; however, focusing on bioavailability alone can be misleading. Rather, panelists believed adequate drug exposure should be prioritized. For example, doxycycline, a drug with 100% bioavailability, has a serum Cmax (maximum serum concentration achieved) of ~2 mcg/mL. The Clinical and Laboratory Standards Institute (CLSI) breakpoint for doxycycline and Enterobacterales is ≤4 mcg/mL, leading to potential suboptimal drug exposure for treatment of BSI despite reported susceptibility. Oral beta-lactams are usually considered to have low bioavailability, although certain agents (ie, cephalexin, amoxicillin, amoxicillin/clavulanate) have high absolute bioavailability but are generally not prescribed at equivalent doses to their intravenous counterparts, in part because the higher doses are associated with gastrointestinal intolerance. Additionally, many oral beta-lactam agents do not have established breakpoints for gram-negative BSIs. As an example, amoxicillin, a drug with ~70% bioavailability, is unable to achieve the time above minimum inhibitory concentration targets at the CLSI breakpoint for Enterobacterales (≤ 8 mcg/mL), leading to potential suboptimal drug exposure for treatment of BSI, despite reported susceptibility [24]. Utilizing higher doses such as 1000 mg given every 8 hours can only target an organism with an MIC of ≤2 mcg/mL with around 90% confidence [25]. Susceptibility data from IV agents cannot necessarily be extrapolated to their oral counterparts. There was acknowledgement that dosing ranges for TMP-SMX and oral beta-lactams are wider than for fluoroquinolones, which may influence some of the unfavorable outcomes reported in observational studies [22]. Suggested dosing for select oral antibiotic options developed based on consensus from the pharmacists on the panel is described in Table 2, although data for optimal dosing are extremely limited.

Repeat Blood Cultures for Uncomplicated GN-BSI

Panelists agreed that repeat blood cultures after the first positive blood culture are not necessary to demonstrate bacterial clearance in blood cultures in the vast majority of GN-BSI cases meeting the definition of uncomplicated GN-BSI. Situations where panelists agreed that repeat cultures would be beneficial included the following: (1) patients without an appropriate clinical response within 72 hours, (2) patients with clinical concern for an endovascular infection or endocarditis, and (3) situations where there is limited or no source control [32–35].

CONCLUSIONS

Using a modified Delphi Approach, our panel of infectious diseases specialists formulated a definition for uncomplicated GN-BSI and identified patient, infection, and microbial factors

Table 2. Recommended Doses of Select Oral Antibiotic Agents for the Management of Uncomplicated Gram-Negative Bloodstream Infections, Assuming Normal Renal Function [26]

Agent	Bioavailability	PK/PD Target for Gram-Negative Infections	Suggested Dosing	CLSI Breakpoint for Enterobacterales [31]	Target Attainment
Ciprofloxacin	70%	$fAUC_{24}$/MIC ≥72 [28, 29, 30]	750 mg PO every 12 h	≤0.25	High likelihood of target attainment for MIC values up to 0.25 mcg/mL
Levofloxacin	99%	$fAUC_{24}$/MIC ≥72 [28, 29]	750 mg PO every 24 h	≤0.5	High likelihood of target attainment for MIC values up to 0.5 mcg/mL
Trimethoprim/sulfamethoxazole	Near 100%	Not well described, possibly AUC/MIC and *fT* > MIC	5 mg/kg PO every 12 h (eg, ~2 DS tablets q12h for a 70 kg patient)	≤2/38	Not well described, regardless of route of administration (eg, IV or PO)
Amoxicillin [24, 25]	70%–80%	40% *fT* > MIC	1000 mg PO every 8 h	≤8	High likelihood of target attainment for MIC values up to 2 mcg/mL
Amoxicillin/clavulanic acid [24, 25]	70%–80% (amoxicillin)	40% *fT* > MIC	875–1000 mg PO every 8 h	≤8/4	High likelihood of target attainment for MIC values up to 2 mcg/mL
Cephalexin [27]	95%	60% *fT* > MIC	1000 mg PO every 6 h	N/A (≤16 cefazolin surrogate test for uncomplicated cystitis, inappropriate to apply to systemic infection)	High likelihood of target attainment for MIC values up to 2 mcg/mL
Cannot be routinely recommended					
Cefadroxil	90%	60% *fT* > MIC	1000 mg PO q12h	N/A	Robust PK analyses have not been performed. Peak 28 mcg/mL after a single 1000-mg dose, half-life 1.6 hours. Unable to determine likelihood of target attainment but PK concerns, cannot be routinely recommended.
Cefpodoxime	46%	60% *fT* > MIC	400 mg PO q12h	≤2	Robust PK analyses have not been performed. Peak 2.2 mcg/mL after a single 200-mg dose, half-life 2.7 hours. Unable to determine likelihood of target attainment but PK concerns, cannot be routinely recommended.
Cefdinir	25%	60% *fT* > MIC	300 mg PO q12h	≤1	Robust PK analyses have not been performed. Peak 1.6 mcg/mL after a single 300-mg dose, half-life 1.7 hours. Unable to determine likelihood of target attainment but PK concerns, cannot be routinely recommended.

Abbreviations: AUC, area under the curve; CLSI, Clinical and Laboratory Standards Institute; DS, double strength; MIC, minimum inhibitory concentration; PK/PD, pharmacokinetic–pharmacodynamic; PO, per os (oral).

that influence management decisions regarding optimal duration of therapy, IV-to-oral therapy, and the need for repeat blood cultures. Although several observational studies and even clinical trial data addressing some of the questions are available, the translation of evidence into clinical practice is often delayed, and key subpopulations are often excluded from both observational and interventional trial data [1–4, 36]. As Professional Society guidelines for the management of GN-BSI are not available, we utilized a rigorous modified Delphi approach to develop potential strategies in the interim. However, limitations to the process exist, including variation in reliability scales, which can lead to bias in consensus studies [37]. Additionally, as data in this field are limited, it should be noted that the guidance in this document reflects the opinion of a small group of experts in the field. Moreover, panelists were limited to infectious diseases specialists, as we anticipated that they would have extensive experience managing GN-BSI, but other specialists are also involved in the care of patients with GN-BSI such as intensivists, surgeons, hospitalists, gastroenterologists—and their perspectives were not included in the Delphi process. Further research is needed to investigate the association between suggestions made by the panel and clinical outcomes, particularly related to immunocompromised patients, infections with gram-negative organisms other than Enterobacterales, and the role of oral beta-lactam therapy.

Supplementary Data

Supplementary materials are available at *Open Forum Infectious Diseases* online. Consisting of data provided by the authors to benefit the reader, the posted materials are not copyedited and are the sole responsibility of the authors, so questions or comments should be addressed to the corresponding author.

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Patient consent. The protocol was approved by the University of Maryland's institutional review board. All Delphi panel participants consented to participate.

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