

!" #&/

4;O <548G=>3> 70AB>AC20==O ;V:0@AL:>3> 70A>1C

-/

!;:04:

4VNG0 @5G>28=0: loperamid5;  
1 B01;5B:0 ?5@0E;>@84C 2 <3;  
4>?>28=8: ;0:B>78 <=>3V4@0B, :@>E<0;L :0@B>?;O=89, <03=VN AB50@0B.

V:0@AL:0 D>@<0. "01;5B:8.

A=>2=V DV78:>-EVABV: B01;5B:8 1V;>3> :>;L>@C, ?;>A:>F8;V=4@8G=>W D>@<8, 7 D0A:>N.

\$0@<0:>B5@0?52B8G=0 3@C?0. 0A>18, I> ?@83=VGCNBL ?5@8AB0;LB8:C (0=B8?5@8AB0;LB8G=V).  
>4 "% 07D A03.

\$0@<0:>;>3VG=V 2;0AB82>ABV.

\$0@<0:>48=0!8;L=>4VNG89 ?@>B84V0@59=89 ?@5?0@0B B@820;>W 4VW.

>?5@0E;>@84 72O7CTBLAO 7 >?V0B=8<8 @5F5?B>@0<8 :8H:>2>W ABV=:8. =0A;V4>: FL>3>  
?@83=VGCTBLAO 282V;L=5==O 0F5B8;E>;V=C V ?@>AB03;0=48=V2, 7=86CNG8 C B0:89 A?>AV1  
?@>?C;LA82=C ?5@8AB0;LB8:C V 71V;LHCNG8 G0A ?@>E>465==O 26 740B=VABL ABV=:8  
:8H5G=8:C 4> 01A>@1FVW @V48=8. >?5@0E;>@84 71V;LHCT B>=CA 0=0;L=>3> ADV=:B5@0,  
7=86CNG8 B8< A0<8< =5B@8<0==O :0;>28E <0A V ?>7828 4> 45D5:0FVW.

0240:8 7=0G=V9 A?>@V4=5=>ABV 7V ABV=:>N :8H5G=8:C B0 28A>:E>465==V ?@5?0@0B  
?@0:B8G=> =5 ?>B@0?;OT 4> A8AB5<=>3> :@>2>B>:C V ?@0:B8G=> =5 ?@>=8:0T :@V7L 35  
<0B>5=F5D0;VG=89 10@T@. >@V3 F5=B@0;L=>W 4VW =01030B> ?5@528ICT 4>7C, I> <0T <0:A8  
<0;L=89 5D5:B ?@>B8 4V0@5W.

\$0@<0:>:V=5B8:0. □>?5@0E;>@84 ;53:> 01A>@1CTBLAO 7 :8H5G=8:C, 0;5 <0965 ?>2=VABN  
5:AB@03CTBLAO V <5B01>;V7CTBLAO ?5GV=:>N, 45 2V= :>=N3CTBLAO V 284V;OTBLAO 7 6>2GN.  
5@V>4 =0?V2282545==O ?@5?0@0BC C ;N48=8 C A5@54=L>28BL 11 3>48= (9-14 3>48=). ;V< >:8A=>3>  
N-45<5B8;N20==O, O:5 T >A=>2=8< H;OE<< <5B01>;VG=8E ?5@5B2>@5=L ;>?5@0B5W=0<8 ?;07<8  
:@>2V AB0=>28BL 95 %, ?5@5206=> 7 0;L1C?5@0

;V=VG=V E0@0:B5@8AB8:8.

>:070==O. !8<0B8G=5 ;V:C20==O 3>AB@>W V E@>=VG=>W 4V0@5W.

@5?0@0B <6=0 @5:><5=4C20B8 C 28?04:C 28=8=:5==O 4V0@5W <0=4@V2=8:0 (BC@8AB0). @8  
=0O2=>ABV FL>3> ?>:070==O 4>AB0B=V9 ?5@V>4 ;V:C20==O <0T AB0=>28B8 2 4>18. "V;L:8 C  
28?04:C ?>O28 :@>2V C 28?>@>6=5==OE 70AB>AC20==O ?>B@V1=> 2V4;;0AB8 4> 7OAC20==O  
?@8G8=8 FL>3> O28I0.

@>B8?>:070==O. V428I5=0 GCB;82VABL 4> :>5=BV2 ?@5?0@0BC.

@5?0@0B =5 70AB>A>2C20B8 4;O ?5@28==>W B5@0?VW ?0FVT=BV2 7:  
- 3>AB@>N 4875=B5@VTN, I> E0@0:B5@87CTBLAO =0O2=VABN :@>2V C 28?>@>6=5==OE V  
30@OG:>N;  
- 3>AB@8< 28@07:>28< :>;VB<<;  
- 10:B5@V0;L=8< 5=B5@>:>;VB<<, A?@8G8=5=8< >@30=V7<0<8 @>48= Salmonella, Shigella V  
Campylobacter;  
- ?A524><5<1@0=>7=8< :>;VB<<, ?>2O70=8< V7 70AB>AC20==O< 0=B81V>B8:V2 H8@>:>3> A?5:B@0  
4VW.

@5?0@0B 27030;V =5 A;V4 70AB>A>2C20B8, O:I> B@510 C=8:=CB8 ?@83=VG5==O ?5@8AB0;LB8:8  
G5@57 <>6;8289 @878: 28=8:=5==O 7=0G=8E CA:;04=5=L, 2;:NG0NG8 :8H:>2C =5?@>EV4=VABL,  
<530:;>= V B>:A8G=89 <530:;>=. 5>1EV4=> =5309=> ?@8?8=8B8 ?@89>< ?@5?0@0BC, O:I>  
>72820TBLAO 70?>@, 74CBBO 682>B0 01> G0AB:>20 :8H:>20 =5?@>EV4=VABL.

**70T<>4VO 7 V=H8<8 ;V:0@AL:8<8 70A>10<8 B0 V=HV 2848 270T<>4V9.** >2V4><;O;>AO ?@> 28?04:8  
270T<>4VW 7 ?@5?0@0B0<8, I> <0NBL ?>4V1=V D0@<0:;>;3VG=V 2;0AB82>ABV. @5?0@0B8, I>  
?@83=VGCNBL &!, =5 A;V4 70AB>A>2C20B8 >4=>G0A=> 7 ;>?5@0< 4VBO  
A=CNBL 4>;:V=VG=V 40=V, I> ;>?5@0< -3;V:>?@>B5W=C. 4=>G0A=5 ?@87=0G5==O ;>?5@07V 16 <3>  
@07>< 7 V=3V1VB>@0<8 -3;V:>?@>B5W=C (EV=V48=, @8B>=02V@) ?@872>48;> 4> ?V428I5==O  
@V2=O ;>?5@02V C 2-3 @078. ;V=VG=0 7=0GCIVABL 707=0G5=>W D0@<0:;>:V=5B8G=>W 270T  
<>4VW ?@8 70AB>AC20==V ;>?5@0<5=4>20=8E 4>70E (2V4 2 <3 4> 16 <3>) =52V4><0.  
!C?CB=T 70AB>AC20==O ;>?5@02V. =3V1VB>@ CYP2C8 3578; ?V428IC202 2?5@0 C 2 @078. >  
<1V=>20=5 70AB>AC20==O VB@0:;>=07>;C V 3578;C ?@872>48;> 4> 4-@07>2>3> 71V;LH5==O <0:A8  
<0;L=>3> 2?5@02V V 13-@07>2>3> 71V;LH5==O 7030;L=>W 5:A?>78FVW C ?;072V. &5 ?V428I5==O =5  
1C;> ?>2070=5 7 2?;82>< =0 &!, I> 287=0G02AO 70 4>?><3>N ?A8E><B>@=8E B5ABV2 (B>1B>,  
AC1T:B82=0 A>;82VABL V B5AB =0 7Q8E A8<2>;V2).  
!C?CB=T 70AB>AC20==O ;>?5@02V. &5 ?V428I5==O =5 1C;> ?>2070=5 7V 71V;LH5==O< D0@<0:;>48=0  
287=0G0;>AO 70 4>?><3>N ?C?V;<5B@VW.  
!C?CB=T ;V:C20==O 45A<>?@5A8=>< 4;O ?5@>@0;L=>3> 70AB>AC20==O ?@872>48;> 4> 3-@07>2>3>  
?V428I5==O :>=F5=B@0FVW 45A<>?@5A8=C C ?;072V, 2V@>3V4=> 2=0A;V4>: 1V;LH ?>2V;L=>W  
<B>@8:8 H;C=:>2>-.8H:>2>3> B@0:BC.  
GV:CTBLAO, I> ;V:0@AL:V 70A>18 7 0=0;>3VG=8<8 D0@<0:;>;3VG=8<8 2;0AB82>ABO<8 <>6CBL  
?V4A8;N20B8 4VN ;>?5@018, O:V ?@8A:>@NNBL B@0=78B W6V ?> H;C=:>2>-.8H:>2>

**A>1;82>ABV 70AB>AC20==O.** V:C20==O 4V0@5W =>A8BL A8<0B8G=89 E0@0:B5@. /:I> <>6=0  
287=0G8B8 5BV>;>3VN 70E2>@N20==O (01> 707=0G5=>, I> ?>B@V1=> F5 7@>18B8), B> C @07V  
<>6;82>ABV A;V4 ?@>2>48B8 A?5F8DVG=5 ;V:C20==O.  
# E2>@8E 7 4V0@5TN, >A>1;82> C 4VB59, <>65 28=8:=CB8 453V4@0B0FVO V 48A10;0=A  
5;5:B@>;VBV2. # B0:8E 28?04:0E =09206;82VH8< 70E>4>< T 70AB>AC20==O 70W B5@0?VW 4;O  
?>?>2=5==O @V48=8 B0 5;5:B@>;VBV2.  
0FVT=B8 V7 A8=4@><< =01CB>3> V45DVF8BC, O:V ?@89<0NBL ?@5?0@0B ?@8 4V0@5W, ?>28==V  
=5309=> ?@8?8=8B8 ;V:C20==O ?@8 ?>O2V ?5@H8E >7=0: 74CBBO 682>B0. A=CNBL >:@52V4>  
<;5==O ?@> 28?04:8 :8H:>2>W =5?@>EV4=>ABV 7 ?V428I5=8< @878:>< ?>O28 B>:A8G=>3>  
<530:;>=C C ?0FVT=V2, E2>@8E =0 !, 7 V=D5:FV9=8<8 :>;VB0<8 O: 2V@CA=>3>, B0: V  
10:B5@V0;L=>3> ?>E>465==O, ?@8 ;V:C20==V ;>?5@0  
%>G0 D0@<0:;>:V=5B8G=V 40=V 4;O ?0FVT=V2 7 ?>@CH5==O< DC=:FVW ?5GV=:8 2V4ACB=V, B0:8  
< ?0FVT=B0< ?@5?0@0B A;V4 70AB>A>2C20B8 7 >15@56=VABN G5@57 C?>2V;L=5==O<5B01>;V73>  
?@>E>465==O. # ?0FVT=V2 7 ?>@CH5==O< DC=:FVW ?5GV=:8 ?@5?0@0B <>65 ?@8725AB8 4>  
2V4=>A=>3> ?5@54>7C20==O, B>28==V 7=0E>48B8AO ?V4 @5B5;L=8< =03;O4>< 7 <5B>N  
A2>TG0A=>3> 28O2;5==O >7=0: B>:A8G=>3> C@065==O &!.  
2060NG8 =0 B5, I> ;>?5@01@5 <5B01>;V7CTBLAO V ;>?5@0 9>3> <5B01>;VB8 282>4OBLAO 7  
D5:0;VO<8, 70728G09 =5 ?>B@V1=> :>@83C20B8 4>7C ;>?5@0  
>15@56=VABN A;V4 70AB>A>2C20B8 ?@5?0@0B ?0FVT=B0< C 28?04:0E 703>AB@5==O 28@07:>2>3>  
>;VBC. @5?0@0B8, I> ?>4>26CNBL G0A ?@>E>465==O, <>6CBL A?@8G8=8B8 @>728B>: B>:A8G=>3>  
<530:;>=C C ?0FVT=V2 FVTW 3@C?8.  
@5?0@0B 7C, I> A;V4 2@0E>2C20B8 ?0FVT=B0< V7 @V4:VA=8<8 A?04:>28<8 D>@<0<8 =5?5@5=>A8  
<>ABV 30;0:B>78, =54>AB0B=VABN ;0:B078, A8=4@><< 3;N:>7>-30;0:B>7=>W <0;L01A>@1FVW.

**0AB>AC20==O C ?5@V>4 203VB=>ABV 01> 3>4C20==O 3@C44N.** 5 @5:><5=4CTBLAO ?@89<0B8  
?@5?0@0B C ?5@V>4 203VB=>ABV. # 7207:C 7 F8< 203VB=8< 6V=:0< V 6V=:0<, O:V 3>4CNBL 48B8=C  
3@C44N, A;V4 ?>@5:><5=4C20B8 725@=CB8AO 4> A2>3> ;V:0@O 4;O >45@60==O 2V4?>2V4=>3>  
;V:C20==O.

40B=VABL 2?;820B8 =0 H284:VABL @50:FVW ?@8 :5@C20==V 02B>B@0=A?>@B< 01> V=H8<8  
<5E0=V7<0<8. >?5@04=0: ?@8 28=8:=5==V 2B><8, A>=;82>ABV 01> 70?0<>@>G5==O =5 @5:>  
<5=4CTBLAO :5@C20B8 02B>B@0=A?>@B< 01> V=H8<8 <5E0=V7<0<8.

!>AV1 70AB>AC20==O V 4>78. @89<0B8 2=CB@VH=L> 4>@>A;8< V 4VBO< 2V:<< 2V4 6 @>:V2.  
@5?0@0B =5 ?@87=0G5=89 4;O ?>G0B:>2>W B5@0?VW BO6:>W 4V0@5W, I> AC?@>2>46CTBLAO  
7=865==O< @V2=V2 @V48=8 V 5;5:B@>;VBV2. >:@5<0 C 4VB59 FN 2B@0BC 1060=> :>W B5@0?VW  
?0@5=B5@0;L=> 01> ?5@>@0;L=>.

>AB@0 4V0@5O: ?>G0B:>20 4>70 2 B01;5B:8 (4 <3) 4;O 4>@>A;8E V 1 B01;5B:0 (2 <3) 4;O 4VB59; C  
>40;LH>  
%@>=VG=0 4V0@5O: ?>G0B:>20 4>70 4;O 4>@>A;8E 2 B01;5B:8 (4 <3) I>45==>, 4;O 4VB59 1 B01;5B:0  
(2 <3) I>45==>; FO 4>70 :>@83CTBLAO 40;V B0:, I>1 G0AB>B0 B25@48E 28?>@>6=5=L AB0=>28;0  
1-2 @078 =0 4>1C, I> 70728G09 4>AO30TBLAO ?@8 ?V4B@87V 1-6 B01;5B>: (2-12 <3) I>4=O.  
0:A8<0;L=0 4>1>20 4>70 ?@8 E@>=VG=V9 V 3>AB@V9 4V0@5W 4;O 4>@>A;8E 8 B01;5B>: (16 <3);  
4;O 4VB59 WW A;V4 @>7@0E>2C20B8, 28E>4OG8 7<0A8 BV;0 48B8=8 (3 B01;5B:8 =0 20 :3 <0A8 BV;0  
48B8=8).

@8 3>AB@V9 4V0@5W, O:I> ?@>BO3< 48 3>48= =5 A?>AB5@V30TBLAO ;V=VG=>3> ?>:@0I5==O,  
?@89>< ?@5?0@0BC A;V4 ?@8?8=8B8 V 725@=CB8AO 4> ;V:0@O.

0FVT=B0< ;VB=L>3> 2V:C :>@5:FVO 4>78 =5 ?>B@V1=0.

0FVT=B0< V7 ?>@CH5==O< DC=:FVW =8@>: :>@5:FVO 4>78 =5 ?>B@V1=0.

0FVT=B8 V7 ?>@CH5==O< DC=:FVW ?5GV=:8. %>G0 D0@<0>:V=5B8G=V 40=V ?@> 4VN ;>?5@0  
@CH5==O< DC=:FVW ?5GV=:8 2V4ACB=V, B0:8< ?0FVT=B0< ?@5?0@0B A;V4 ?@89<0B8 7  
>15@56=VABN G5@57 C?>2V;L=5==O<5B01>;V73> ?@>E>465==O. &V ?0FVT=B8 <0NBL  
?5@51C20B8 ?V4 @5B5;L=8< =03;O4>< 7 <5B>N A2>TG0A=>3> 28O2;5==O >7=0: B>:A8G=>3>  
C@065==O &!.  
VB8. @5?0@0B =5 A;V4 70AB>AC20B8 4VBO< 2V:<< 4> 6 @>:V2.

5@54>7C20==O. !8<8 (C B. G. ?@8 2V4=>A=>7C20==V, ?>2O70=>@CH5==O< DC=:FVW ?5GV=:8):  
?@83=VG5==O &! (ABC?>@, ?>@CH5==O :>>@48=0FVW @CEV2, A>=;82VABL, 7, <O7>289  
3V?5@B>=CA, ?@83=VG5==O 48E0==O), 70B@84V1=8E 4> :8H:>2>W =5?@>EV4=>ABV. VB8 1V;LH  
GCB;82V 4> 2?;82C =0 &!, =V6 4>@>A;V.  
V:C20==O: A8<0B8G=0 B5@0?VO; 70AB>AC20==O 0:B82>20=>3> 2C3V;;O, ?@><820==O H;C=:0,  
HBCG=0 25=B8;OFVO ;535=L. =B84>B =0;>:A>=; 2@0E>2CNG8 B5, I> B@820;VABL 4VW ;>?5@0  
:A>=C, <>6;825 ?>2B>@=5 22545==O >AB0==L>3>.  
# 28?04:C ?5@54>7C20==O ?@5?0@0BC =5>1EV4=89 <548G=89 =03;O4 I>=09<5=H5 ?@>BO3>< 48  
3>48=.

>1VG=V @50:FVW.

I>:C H:V@8 V WW ?@840B:V2: 28A8?0==O, :@>?82O=:0, A25@1V6.

>2V4><;O;>AO ?@> 28=8:=5==O 0=3V>=52@>B8G=>3> =01@O:C, 1C;L>7=8E 28A8?0=L, 2;:NG0NG8  
A8=4@>< !BV25=A0-6>=A>=0, @<=C 5@8B5< 09T;;0.

I>:C VW A8AB5<8: @50:FVW ?V428I5=>W GCB;82>ABV, 0=0DV;0:B8G=V @50:FVW (C B. G.  
0=0DV;0:B8G=89 H>:) V 0=0DV;0:B>W4=V @50:FVW.

I>:C B@02=>W A8AB5<8: 1V;L C 25@E=V9 G0AB8=V 682>B0, :8H:>20 =5?@>EV4=VABL (C B. G.  
?0@0;VB8G=0), 74CBBO 682>B0, =C4>B0, 70?>@, 1;N20==O, <530>:>;= (C B. G. B>:A8G=89), <5B5>@87  
<, 48A?5?AVO.

I>:C A5G>284V;L=>W A8AB5<8: 70B@8

I>:C =5@2>2>W A8AB5<8: 70?0<>@>G5==O, A>=;82VABL, ?>@CH5==O :>>@48=0FVW, 2B@0B0 01>  
?@83=VG5=89 @V25=L A2V4><>ABV, ABC?>@, 3>;>2=89 1V;L, 7.

=HV: 0@B5@V0;L=0 3V?5@B>=VO.

?5@5;V:C ?>1VG=8E O28I, ?@> O:V ?>2V4><;O;>AO, =09G0ABVH5 7CAB@VG0;8AO A8<8,

E0@0:B5@=V 4;O 4V0@59=>3> A8=4@>@B, =C4>B0, 1;N20==O, ACEVABL C @>BV, 2V4GCBBO 2B>  
<8, A>=;82VABL, 70?0<>@>G5==O, 70?>@, <5B5>@87<). "> 2V4@V7=8B8 FV A8<8 V ?@>O28

?>1VG=8E 5D5:BV2.

"5@ABV.4 @>:8.

#<>28 715@V30==O. 15@V30B8 2 >@83V=0;L=V9 C?0:>2FV ?@8 B5□.  
15@V30B8 C =54>ABC?=>

#?0:>2:0. "01;5B:8 ?> 2 <3 10, 10×2 C 1;VAB5@0E C :>@>1FV.

0B53>@VO 2V4?CA:C. 57 @5F5?B0.

8@>1=8:. "«\$0@<0F52B8G=0 :>@>2□O».

VAF57=0E>465==O 28@>1=8:0 B0 9>3> 04@5A020465==O 4VO;L=>ABV.  
#:@0W=0, 61013,