Maryland Department of Health and Mental Hygiene
Epidemiology and Disease Control Program
June 2004

Guidelines for the Epidemiological Investigation of Cholera and Other *Vibrio* Species Infections

I. INTRODUCTION

These guidelines are designed for Maryland state and local health department personnel who are investigating reports of cholera and other *Vibrio* infections. This version of the "Guidelines for the Epidemiological Investigation of Cholera and Other *Vibrio* Species Infections" is an updated replacement of the August 1998 version. The major differences between this 2004 version and the 1998 version are in flow of information and expected timeliness of actions as detailed in Part IV of the document, entitled "CASE INVESTIGATION AND MANAGEMENT (ANY SPECIES OF *VIBRIO)".

II. FEATURES OF CHOLERA

Cholera is an acute, diarrheal illness characterized by an abundance of milky-colored, watery stool and vomiting, which can lead to rapid dehydration, renal failure and death. The dehydration is characterized by loss of skin turgor, sunken eyes, wrinkled hands ("washerwoman's hands") and weak or absent pulses. Cases are commonly mild in children and adults in good health. The incubation period for cholera ranges between a few hours to 5 days after exposure, while it is usually 2-3 days. Prompt and effective rehydration therapy can prevent most complications due to cholera.

A person may get cholera by drinking water or eating food contaminated with the *V. cholerae* bacterium. Shellfish eaten raw have been frequently indicated as a source of cholera. Fruits and vegetables that have been exposed to *V. cholerae* infected waters may also be a source of the illness, if they are not properly washed and prepared. Cholera is most often seen in the developing world, and the first documented U.S. case was identified in Texas in 1973. U.S. cases have resulted from travel to endemic areas in Asia, Africa, and South America, seafood harvested from the Gulf of Mexico, and from other foods imported from endemic areas. The disease is not likely to spread through casual contact, so the risk of person-to-person transmission is very slight.

In Maryland, cholera is a reportable disease by health care providers and laboratories. Although all subtypes of *V. cholerae* can cause illness, only disease caused by subtypes O1 and O139, as determined by analysis of stool samples, are considered cholera.

III. FEATURES OF OTHER COMMON *VIBRIO* SPECIES

There are 13 known *Vibrio* subtypes. -Those most commonly seen in Maryland are *V. vulnificus* and *V. parahaemolyticus.* The other subtypes are:

V. cholerae O1
V. cholerae O139
V. cholerae non-O1, non-O139
V. damsela
V. furnissii
V. hollisae
V. alginolyticus
V. mimicus
V. cincinnatiensi
V. fluvialis
V. metschnikovi

A. *V. vulnificus*

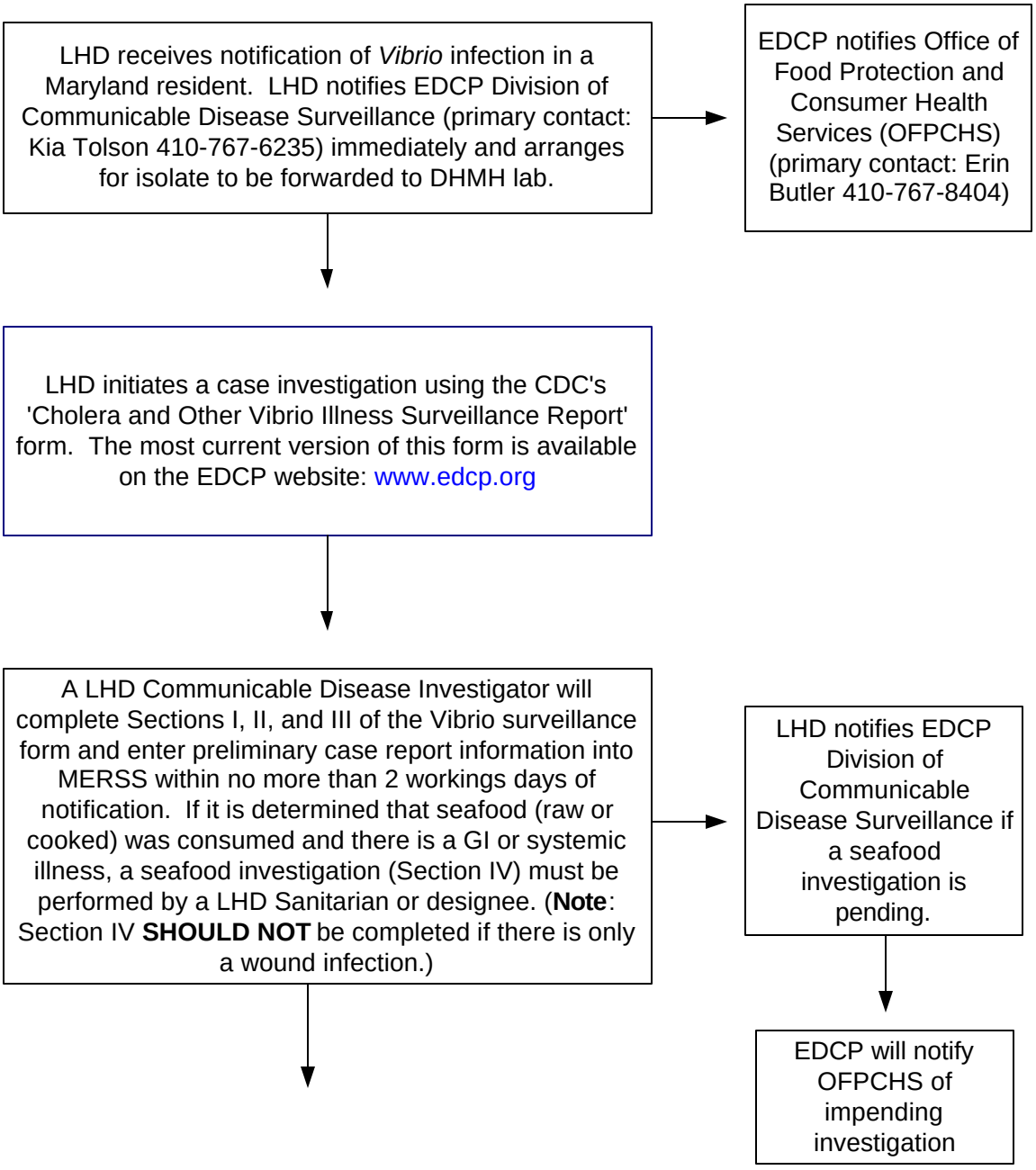
The incubation period for *V. vulnificus* is shorter than that of *V. cholerae*, with a majority of cases occurring from 12 hours to 3 days after exposure. *V. vulnificus* is most often associated with eating raw oysters but it can also develop following exposure of cuts or sores to contaminated saltwater. Symptoms and sequelae of this infection include shock, thrombocytopenia, and distinct, blistered skin lesions. This infection can result in septicemia in people with a history of liver disease, alcoholism, diabetes, cancer, hemochromatosis, or immunosuppression. V. vulnificus can also cause wound infections without sepsis.

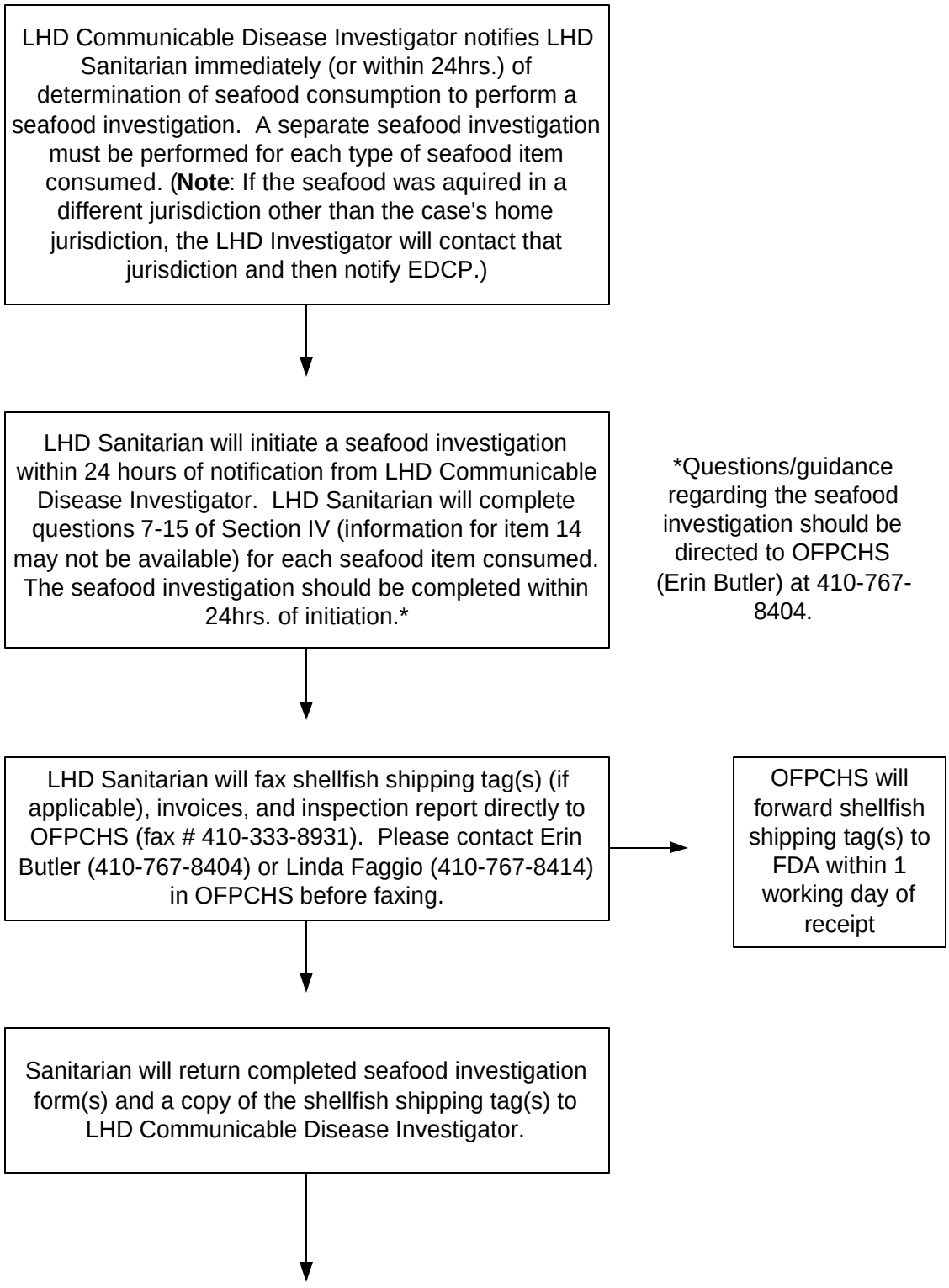
B. *V. parahemolyticus*

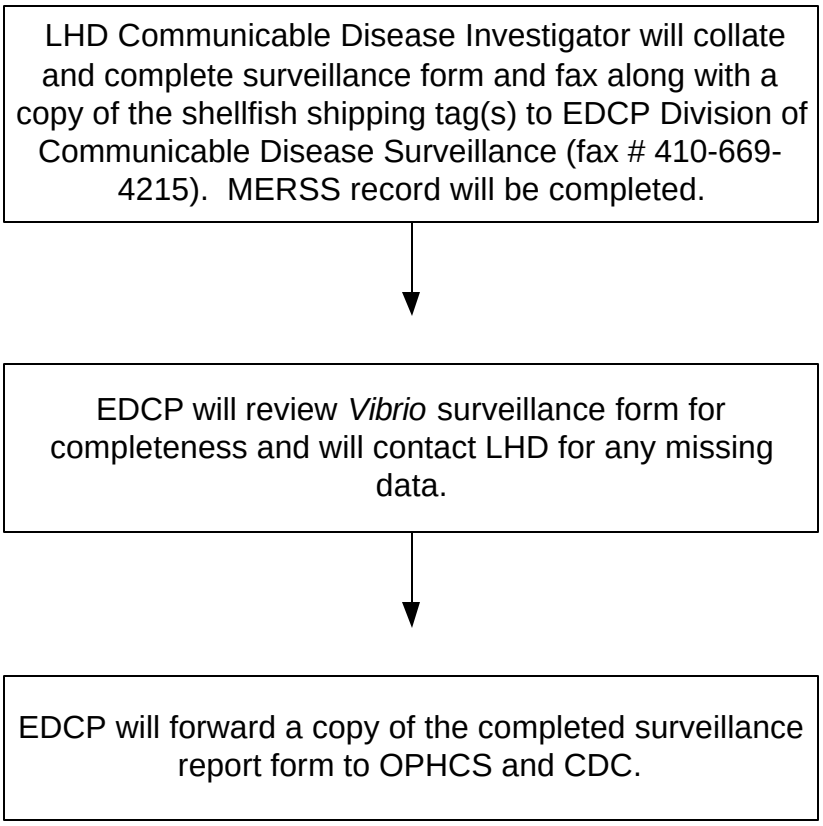
Infection with *V. parahemolyticus* results in illness with less severity than *V. vulnificus* or *V. cholera* types. This illness is characterized by watery diarrhea and abdominal cramps and occasionally with vomiting, nausea, fever, and headache. The incubation period is very short, typically within 12 to 24 hours after exposure, although this can range between 12 hours to 3 days. This illness rarely results in systemic infection or death. *V. parahemolyticus* can also occasionally cause wound infections. *V. damsela,* and *V. alginolyticus* have been linked to wound infections as well. *V. alginolyticus* has been linked with otitis externa (inflammation of the outer ear).

IV. CASE INVESTIGATION AND MANAGEMENT (ANY SPECIES OF *VIBRIO*)

While the burden of disease from *Vibrio* infections in Maryland is not large, it is extremely important to investigate these cases quickly so necessary controls may be implemented. The case investigation and management of *Vibrio* species infections has been revised from the August 1998 version. The State and Local Health Departments should use the following flow chart in their investigation of *Vibrio* species infections.


LHD receives notification of *Vibrio* infection in a Maryland resident. LHD notifies EDCP Division of Communicable Disease Surveillance (primary contact: Kia Tolson 410-767-6235) immediately and arranges for isolate to be forwarded to DHMH lab.
EDCP notifies Office of Food Protection and Consumer Health Services (OFPCHS) (primary contact: Erin Butler 410-767-8404)
LHD initiates a case investigation using the CDC's 'Cholera and Other Vibrio Illness Surveillance Report' form. The most current version of this form is available on the EDCP website: www.edcp.org
A LHD Communicable Disease Investigator will complete Sections I, II, and III of the Vibrio surveillance form and enter preliminary case report information into MERSS within no more than 2 workings days of notification. If it is determined that seafood (raw or cooked) was consumed and there is a GI or systemic illness, a seafood investigation (Section IV) must be performed by a LHD Sanitarian or designee. (**Note**: Section IV **SHOULD NOT** be completed if there is only a wound infection.)
LHD notifies EDCP Division of Communicable Disease Surveillance if a seafood investigation is pending.
EDCP will notify OFPCHS of impending investigation


LHD Communicable Disease Investigator notifies LHD Sanitarian immediately (or within 24hrs.) of determination of seafood consumption to perform a seafood investigation. A separate seafood investigation must be performed for each type of seafood item consumed. (**Note**: If the seafood was aquired in a different jurisdiction other than the case's home jurisdiction, the LHD Investigator will contact that jurisdiction and then notify EDCP.)
LHD Sanitarian will initiate a seafood investigation within 24 hours of notification from LHD Communicable Disease Investigator. LHD Sanitarian will complete questions 7-15 of Section IV (information for item 14 may not be available) for each seafood item consumed. The seafood investigation should be completed within 24hrs. of initiation.*
*Questions/guidance regarding the seafood investigation should be directed to OFPCHS (Erin Butler) at 410-767-8404.
LHD Sanitarian will fax shellfish shipping tag(s) (if applicable), invoices, and inspection report directly to OFPCHS (fax # 410-333-8931). Please contact Erin Butler (410-767-8404) or Linda Faggio (410-767-8414) in OFPCHS before faxing.
OFPCHS will forward shellfish shipping tag(s) to FDA within 1 working day of receipt
Sanitarian will return completed seafood investigation form(s) and a copy of the shellfish shipping tag(s) to LHD Communicable Disease Investigator.


LHD Communicable Disease Investigator will collate and complete surveillance form and fax along with a copy of the shellfish shipping tag(s) to EDCP Division of Communicable Disease Surveillance (fax # 410-669-4215). MERSS record will be completed.
EDCP will review *Vibrio* surveillance form for completeness and will contact LHD for any missing data.
EDCP will forward a copy of the completed surveillance report form to OPHCS and CDC.