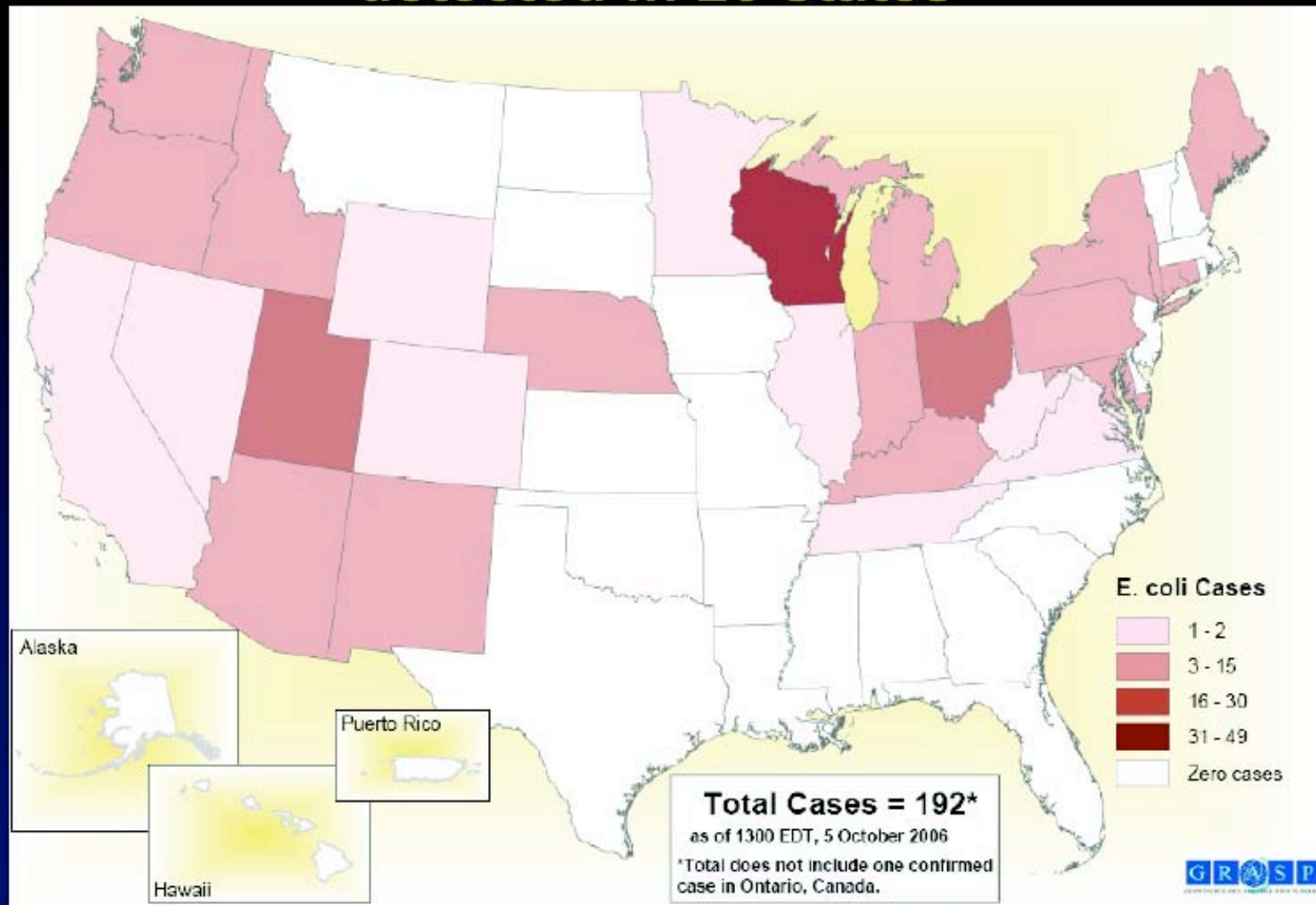

The U.S. Spinach Outbreak

***From Crisis ...
To Recovery and Growth***

Nothing Compares with the Human Impact of the Outbreak

***Embracing that fact emotionally is
what helps drive industry action***

192 cases of *E. coli* O157:H7 infection were detected in 26 states*



*as of October 3, 2006, 1:00pm EDT
All data are preliminary

Understanding the facts of a confusing situation

- Identification of the outbreak
 - State and CDC medical evaluation
- FDA's initial warning to consumers
- FDA, California traceback investigation
 - Food recalls
 - Confusion of outbreak risk/theoretical risk
- Industry action

State/CDC Medical Evaluation

- States have initial responsibility
 - Receipt of local case reports
 - Epidemiology investigation
 - PFGE “fingerprint” testing
 - Forwarding to CDC PulseNET computer system
- CDC evaluates whether evidence indicates multi-state outbreaks
 - Looking through a rear-view mirror
 - CDC then advises FDA of vehicle

CDC Notification, FDA Advisory

- CDC reported 14 September
 - 50 cases, 8 states, 1 death linked by PFGE fingerprinting
 - Strong epidemiology implicating bagged fresh spinach, but with multiple brands, production dates possibly implicated
 - Continuing case reports accumulating
- FDA issues warning to consumers not to consume fresh bagged spinach

Case exposure to selected food items

Exposure	Cases (N=178)	%	
Any spinach	148 / 167	89%	vs. 17%
Raw fresh spinach	136 / 143	95%	in Foodnet 2002
Bagged fresh spinach	123 / 126	98%	population survey
Any brand A	89 / 104	85%	
Any brand B	12 / 104	12%	
Any brand C	14 / 104	14%	
Any brand D	4 / 104	4%	
Baby spinach	94 / 104	90%	
Organic spinach	13 / 84	15%	
Washed	32 / 115	28%	

All data are preliminary

Number of bagged spinach lot codes reported by patients (N=28)

Lotcode	Number		Observed	Expected	p-value
_227	15	⌋	15/28	1/14 1/7	< 0.0000001 =0.0000001
_230	1				
_233	1				
_234	1				
_235	2	⌋	2/28	1/14 1/7	=1.0 =0.4
_236	1				
_238	1				
_240	1				
_241	2				
_242	1				
_243	1				
_245	1				

All data are preliminary

FDA, California Investigation

- Within 24 hours, product recall issued by the single processing firm that would ultimately be determined as sole source
- Secondary recalls over next several days as trace-forward conducted
- But, major risk communications problems ensued as the days wore on . . .
 - Narrowing of investigation problematic
 - Concerns about general compliance with GAPs clouded communications

Industry Action

- Maintaining public trust in a crisis is key to eventual recovery
 - Public health directives came first
- Decisive, quick action was critical
 - Within 24 hours, an entire commodity chain shut itself down
 - Growers/processors immediately began examination of own operations
- But, we fell into the same risk communications trap as government

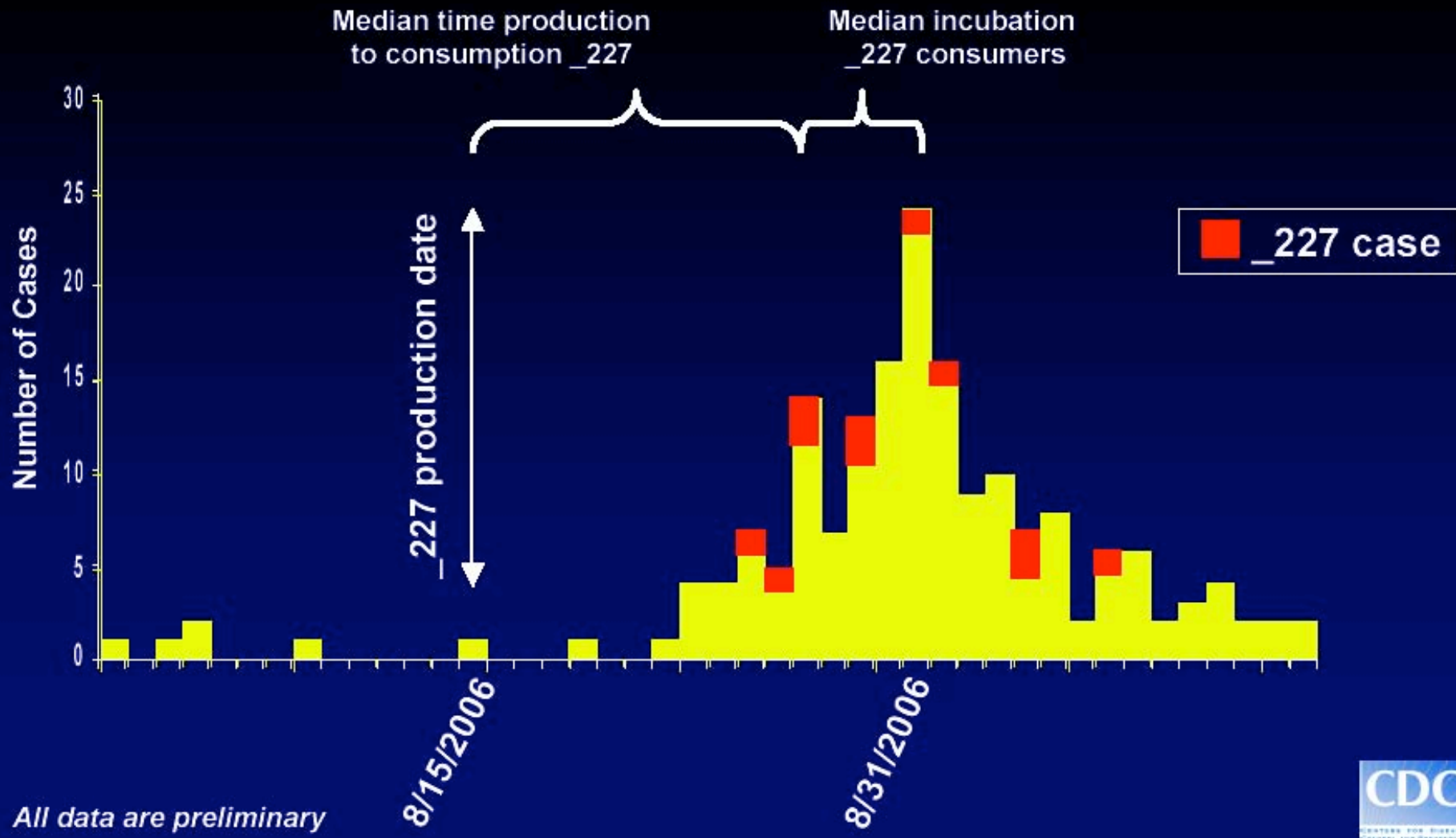
Looking at the Outbreak With the Benefit of Hindsight

Spinach product testing results by spinach bag lot code

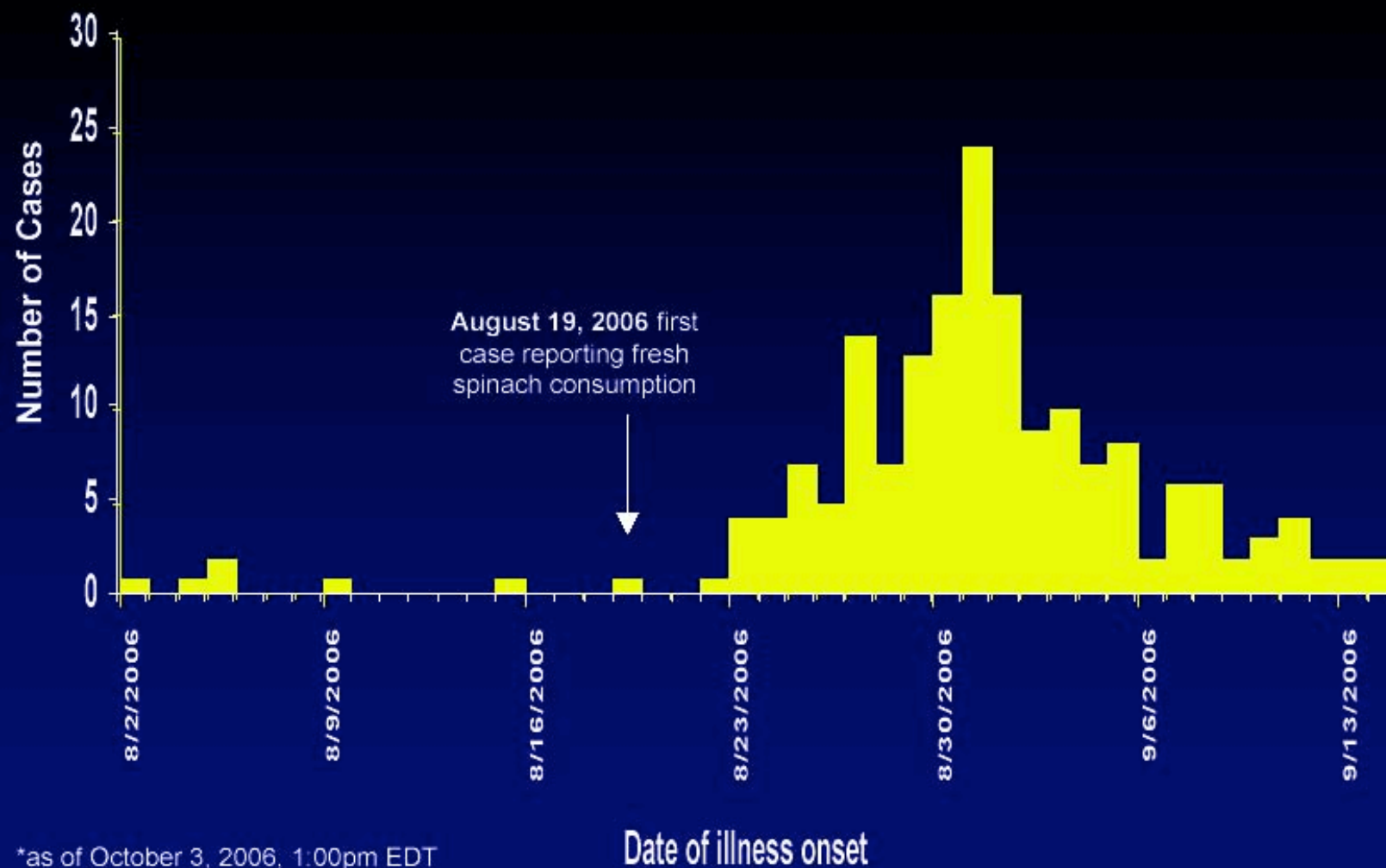
Lotcode	PFGE matched <i>E. coli</i> O157 isolated (n=21)
_227	11 / 14
...	...
_230	0 / 1
_231	0 / 1
_235	0 / 1
_236	0 / 1
_240	0 / 1
_241	0 / 1
_243	0 / 1

All data are preliminary

Number of cases of *E. coli* O157:H7 by date of illness onset, United States, August-September 2006 (N=181)*



Number of cases of *E. coli* O157:H7 by date of illness onset, United States, August-September 2006 (N=181)*



*as of October 3, 2006, 1:00pm EDT

All data are preliminary

What Lessons Can We Learn?

Medical Science:

- Medical science has come far
 - Identification of outbreak was clear and irrefutable
- But, more timely action is still needed to reduce illness
 - The U.S. system needs to shorten recognition/reaction time
 - What will be the impact of internet?

What Lessons Can We Learn?

Risk Communications:

- Failure to clearly isolate outbreak to a single day, single lot caused massive confusion of risk
- Openness to media became obsession
 - Implied continuing outbreak
- Desire to “clear” certain production areas created food safety limbo
 - Potential farms in traceback morphed into “counties of concern”

What Lessons Can We Learn?

Consumer Impact:

- Consumers showed wisdom, resolve, and patience
 - No hysteria in marketplace, like some food scares of the past
 - Trust in government was high
 - Confidence in other produce offered by retail, foodservice in midst of the outbreak
 - Readiness today to again buy safe, healthy spinach

What Lessons Can We Learn?

Industry Impact:

- A single outbreak can be devastating
 - To the entire supply chain
 - To multiple producers, brands and companies not linked at all
 - To entire regions of production
- The entire industry breathes with its least common denominator

Next Steps?

- Strong focus on grower compliance with best agricultural practices
 - Standardized measurement criteria
 - Expanded verification programs
- Re-evaluation of government/industry future risk communications
- Public communications
 - To better address risks and outbreaks
 - To stimulate market recovery

