

Rural health department costs associated with response to outbreaks of Measles and Pertussis: Grant County Health District, Washington, 2008 and 2010 (2011)

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Overview

- Grant County, Washington and Grant County Health District (GCHD).
- Measles outbreak: 2008.
- Review of Measles-related costs.
- Pertussis outbreak: 2010-2011.
- Review of Pertussis-related costs.
- Lessons learned and limitations.

Washington State



Grant County, Washington



Grant County, Washington

- Large rural county in East. Washington (2.5x the area of Rhode Island).
- Population 87,300 ('08); 89,120 ('10).
- White: 57.3%; Latino: 38.3%; Other: 4.4%. Large migrant farmer population.
- Below poverty: 18.6%.
- Agriculture, tourism, hydropower, govt.

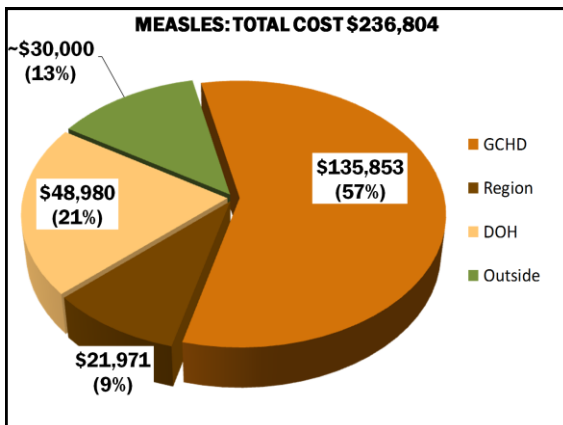


Grant County Health District

- Board-governed governmental jurisdiction.
- Two branches (in two largest cities).
- Total staff: 24.3FTE ('08); 20.6FTE ('10).
- Total budget (expenses): \$2.01mIn ('08);
\$1.89mIn ('10).
- Flexible (non-categorical): \$551,129 ('08);
\$521,808 ('10).

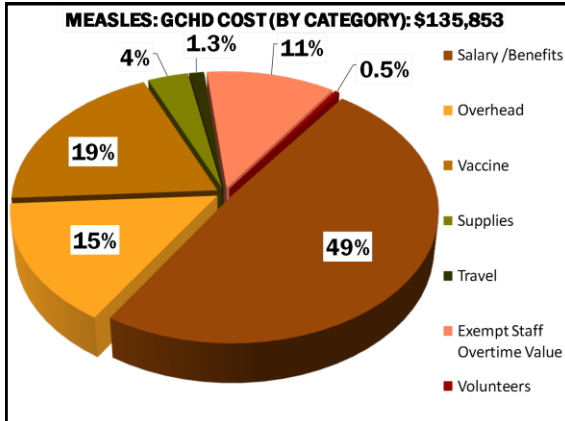
MEASLES OUTBREAK 2008

- Duration: 4/11/08-June 2008.
- Total cases: 19 cases in 7 weeks.
- Two index cases: attended a 3,000+ international church gathering.
- All linked through school or religious activities: age range 9 mos. – 23 yrs.
- 18 out of 19 cases unvaccinated.



MEASLES: TOTAL COST \$236,804

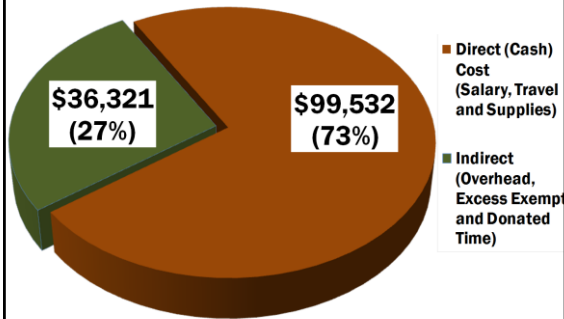
- Grant Co. Health District: \$135,853.
- Regional assistance: \$21,971.
- WA Department of Health: \$48,980.
- Outside non-public health agencies (clinics and hospitals): ~\$30,000.
- Total Cost to outside agencies: \$100,951 or 42.6%.



MEASLES: GCHD TOTAL COST \$135,853; BY CATEGORY

- Salary and Benefits: \$66,600 (49%).
- Overhead: \$20,446 (15%).
- MMR Vaccine: \$26,355 (19%).
- Supplies: \$4,812 (4%).
- Travel and Mileage: \$1,765 (1.3%).
- Exempt Staff Time Value: \$15,275 (11%).
- Volunteer Time Value: \$600 (0.5%).

MEASLES: GCHD COST (DIRECT (CASH) vs. INDIRECT): \$99,532 vs. 36,321

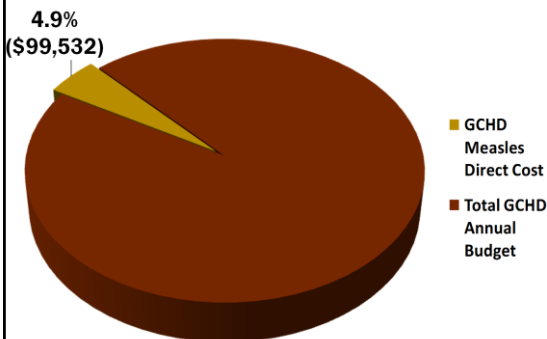


MEASLES: DIRECT (CASH) vs. TOTAL COST

	Cost (in 2008 \$)	Per Case (\$) (n=19)	Per Capita (\$) (Population 87,300)
GCHD Direct	\$99,532	\$5,239	\$0.06
GCHD Total Cost	\$135,853	\$7,150	\$0.08
All Agencies Total	\$236,804	\$12,463	\$0.14

- GCHD incurred direct (cash) cost of \$99,532 or \$5,238.53 per case (n=19).
- When considering GCHD and all agencies totals, the cost was \$7,150 and \$12,463 per case, respectively.

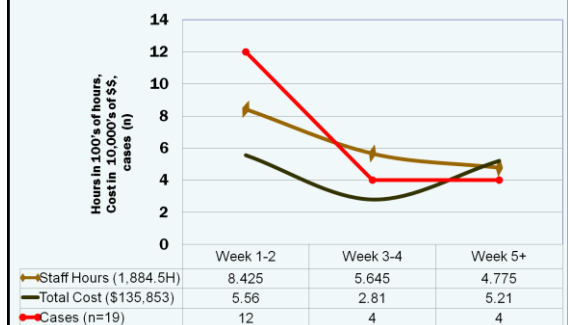
MEASLES: GCHD DIRECT (CASH) COST AS A PERCENTAGE OF THE AGENCY ANNUAL BUDGET



MEASLES vs. GCHD ANNUAL BUDGET

- GCHD Total Annual Budget Expenditures (2008): \$2,011,152.
- GCHD Measles-Attributable Direct Cost:
 - 4.9% (\$99,532) of annual budget.
 - 18.1% of the annual flexible /non-categorical dollars (\$551,129).

MEASLES: STAFF HOURS, COST, CASES (Comparison by Weeks of Outbreak)

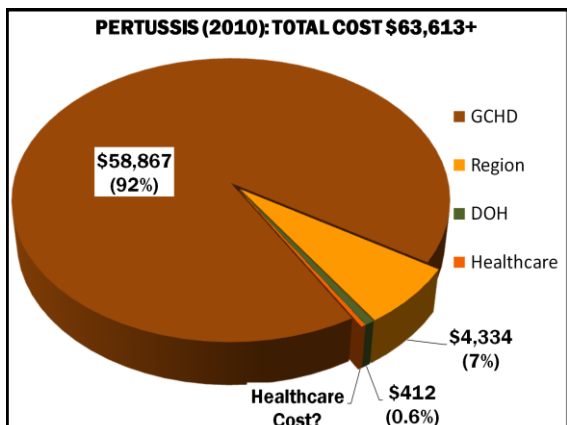


MEASLES: Staff Hours, Cost, Cases (Comparison by Weeks of Outbreak)

- GCHD Total Hours: 1,884.5
- Hours declined with outbreak duration.
- GCHD Cost: ~\$55,600 in weeks 1-2; ~\$28,100 in weeks 3-4; ~\$52,100 in week 5-9+.
- Increase in weeks 5-9+ attributable to MMR vaccine (\$26,355).

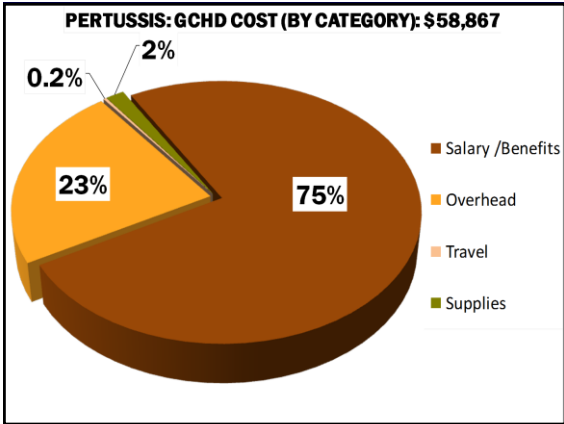
PERTUSSIS OUTBREAK 2010 (-2011)

- Duration: 8/20/10-present; ongoing.
- Total cases: 57 cases in 13 months (2010-11); 28 in 2010 alone; 59% at least partially vaccinated.
- Unknown index cases. One fatality.
- Age range 22 days old – 67 years old.
- Contacts: 254 (2010); 326 (2011).



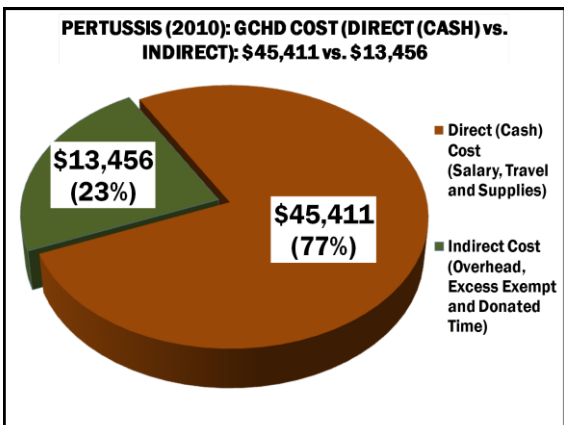
PERTUSSIS 2010: TOTAL COST \$63,613+

- Grant Co. Health District: \$58,867 (92%)
- Regional assistance: \$4,334 (7%).
- WA Department of Health: \$412 (0.6%).
- Healthcare cost: Unknown.



PERTUSSIS 2010: GCHD COST \$58,867; BY CATEGORY

- Salary and Benefits: \$44,265 (75%).
- Overhead: \$13,456 (23%).
- Supplies: \$980 (2%).
- Travel and Mileage: \$166 (0.2%).

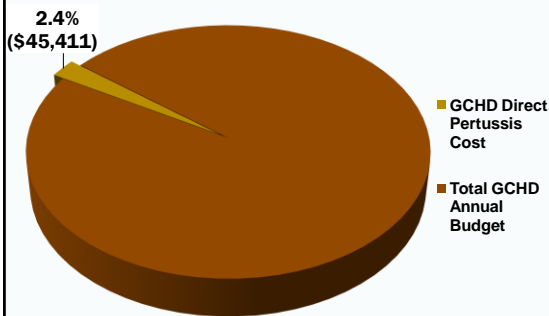


PERTUSSIS: DIRECT (CASH) vs. TOTAL COST

	Cost (in 2010 \$)	Per Case (\$) (n=28)	Per Capita (\$) (Population 89,120)
GCHD Direct	\$45,411	\$1,622	\$0.018
GCHD Total Cost	\$58,867	\$2,102	\$0.024
All Agencies Total	\$63,613	\$2,272	\$0.025

- GCHD incurred direct /cash cost of \$45,411 or \$1,623.82 per case (n=28).
- When considering GCHD and All Agencies Totals, the cost was \$2,102 and \$2,257 per case, respectively.

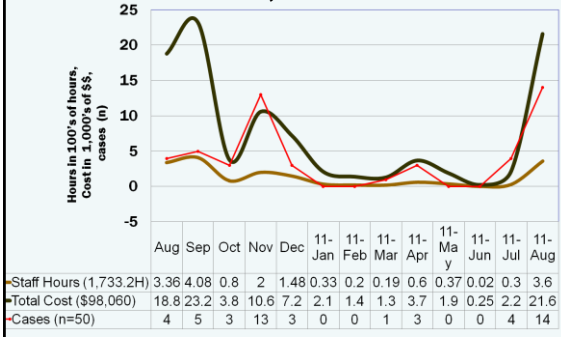
PERTUSSIS (2010): GCHD DIRECT (CASH) COST AS A PERCENTAGE OF THE AGENCY ANNUAL BUDGET



PERTUSSIS vs. GCHD ANNUAL BUDGET (2010)

- GCHD Total Annual Budget Expenditures (2010): \$1,898,703.
- GCHD Pertussis-Attributable Direct Cost:
 - 2.4% (\$45,411) of annual budget.
 - 8.7% of the annual flexible /non-categorical dollars (\$521,808).

PERTUSSIS 2010-2011: STAFF HOURS, COST, CASES



PERTUSSIS 2010(-2011)

- GCHD Total Hours to Date: 1,733.2 (1,172.5 in 2010);
- Total Cost to Date: \$98,060 (n=50)
- Upfront cost at onset (“set-up” cost).
- Decrease in cases proportionately decreases cost (“carry-on” cost).
- Late increase in cases disproportionately increases cost (“resurgence” cost).

FACTORS AFFECTING LHJ’s COST

- Effectiveness and type of interventions to control spread.
- Staff hours (exempt vs. non-exempt).
- Perceived disease importance.
- Number of contacts.
- School vaccination exemption rates.
- Outside agency assistance.

INTERVENTIONS COMPARISON

Measles	Pertussis
Laboratory testing by state.	Testing by commercial labs.
Robust media campaign, multiple conference calls.	Press releases as cases roll in, sporadic conference calls.
Isolation and school exclusion required and enforced by LHJ (hand delivered orders).	Isolation and exclusion by primary care providers (PCP's), LHJ phone follow up.
MMR vaccine purchased /administered mainly by LHJ.	Tdap vaccine, antibiotics administered mainly by PCP's.
Active reporting /response system.	Passive reporting /response.

LESSONS LEARNED I

- A case of Measles was significantly more costly than a case Pertussis: **\$5,239 vs. \$1,622** (\$12,463 vs. \$2,272).
- Measles cost were spread out to outside agencies: **42.6% or \$100,951** borne outside of GCHD.

LESSONS LEARNED II

- Pertussis cost burden was borne by LHJ and local community.
- Outbreaks stretched LHJ's budgets:
 - 4.9%** (Measles) and **2.4%** (Pertussis) of total budget, OR
 - 18.1%** and **8.7%** (respectively) of flexible non-categorical dollars.

LIMITATIONS

- Total cost may be underestimated (individual practices and clinics).
- Comparing “incomparable:” two different diseases and interventions.
- Grant County and GCHD may not be representative of other rural jurisdictions.

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THANK YOU.