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Crashing into Prevention: Preventing an IPAC Lapse

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Crashing into Prevention Scenario

- A Group A Streptococcal (GAS) outbreak investigation involving postpartum women & health care providers revealed IPAC deficiencies in 2 non-hospital clinical settings (midwifery practice and birth centre)
- Timeline of Outbreak Investigation: April to July 2015
- IPAC investigation/follow-u completed: Dec 2015

Prevention Aspect of Outbreak Investigation

- OPH investigation extended beyond usual parameters of a complaint or outbreak investigation
- Would not have been aware of IPAC deficiencies without probing into clinical practices in these settings
- Investigation identified significant discrepancies between IPAC best practices and actual clinical practices

Applying a Different Lens to Findings in Case/Outbreak Investigations

- A number of recent investigations has influenced OPH current approach that extends beyond typical follow-up of cases/outbreaks:
  - Notified by CPSO/MOHLTC of IPAC deficiencies in an endoscopy clinic, resulting in large scale investigation (2011)
  - Notified by RICN of specific IPAC concern in a local fertility clinic resulting in a collaborative inspection with CPSO (March 2015)

Applying a Different Lens to Findings in Case/Outbreak Investigations

- Complaint from public regarding practices in an acupuncture clinic, resulting in collaboration with CTCMAO (July 2015)
- Notified by LTCH of ongoing inspections by Ministry (Performance Improvement & Compliance Branch) which led to liaising with Ministry & identification of IPAC issues (July 2015)
- Complaint from public regarding practices in a private health care clinic which led to on-site visit by OPH; no regulatory body involved (Aug 2015)

Question

Do you have examples of other ways that your PHU or organization has become aware of an IPAC issue?

Invasive Group A Streptococcal Disease (iGAS)

- Reportable to PHU under HPPA, both suspect & confirmed cases
- Caused by Gram-positive betahemolytic bacterium (Streptococcal pyogenes)
- >100 distinct M-protein serotypes of S. pyogenes have been identified
- Emm typing (M-protein gene DNA sequencing) is performed on all isolates sent to the PHOL to identify specific serotype
- PFGE (pulsed-field get electrophoresis--- the gold standard in epidemiological studies) is used for further subtyping (genotyping or genetic fingerprinting)

Clinical Presentation

- Skin or soft tissue infections, bacteremia with no septic focus, pneumonia, streptococcal toxic shock syndrome (STSS), necrotizing fasciitis
- S.pyogenes may colonize the throat of individuals (carriers) without symptoms & spread person to person
- Symptoms are variable & may be vague at onset (pain, swelling, fever, chills, ILI, generalized muscle aches, nausea, vomiting, etc)

Maternal Sepsis due to GAS

- Leading cause of severe, life-threatening sepsis antenatally, even in healthy women with uncomplicated pregnancy & delivery, most often in postpartum period
- Often preceded by a sore throat or an upper respiratory infection
- Typical symptoms: fever, tender/sub-involuted uterus, chills, malaise, lower abdominal pain, diarrhea, purulent/foul-smelling lochia, vaginal bleeding
- Risk factors: C/S, long labour, prolonged ROM, frequent vaginal exams in labour, traumatic delivery, or retained placental products

Occurrence

- Ontario has approximately 565 cases of iGAS reported each year
- Number of reported cases in Ontario has been increasing in recent years
- Cases follow a seasonal pattern, more frequent in late winter & spring
- 30 to 50 cases reported to OPH per year
- 1-4 cases per year are in women associated with childbirth
- Expected rate of throat carriage of GAS in the healthy adult population is estimated < 5%, with most studies reporting < 1% (Steer et al., 2012)

Timelines of GAS Outbreak

- **April 24**: Local hospital calls OPH about potential increase in cases of iGAS (2 cases in March) & non-invasive GAS infections in postpartum women
- **April 30**: OPH investigation initiated
- **May 8**: Outbreak declared
- **May to June:** Investigation conducted; follow-up actions taken to control outbreak
- **July 3:** Outbreak declared over; ongoing follow-up of IPAC practices; active surveillance for GAS infections in staff and clients/patients in 3 affected settings
- **Dec 31:** Active Surveillance completed

Internal Stakeholder Engagement

- Involved a number of internal stakeholders in the investigation (A/MOH, Communications, ICN, Outbreak Management team, CDC team, Epidemiologist) to:
  - Plan & implement actions
  - Inform BOH, media, public (web postings)
  - Track & analyze data collected
  - Make decisions & recommendations
  - Evaluate findings/assess for further actions

Engaging External Stakeholders in the Investigation

- 5 local acute care hospitals with birthing units (IC & ID departments, labs)
- PHOL (outbreak created; emm typing and PFGE)
- Community laboratories (for management of throat swabs submitted in the community)
- PHO (e.g. IPAC Specialists & RICN)
- MOHLTC (Independent Health Facility Program)
- Regulatory Body (College of Midwives of Ontario)
- Adjacent Health Units (4)

Question

What is the value of engaging external stakeholders? How can they support prevention measures of PHUs?

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Answers:

- **Comprehensive and timely communication between affected organizations**
- **Identification of collaborative issues/actions to be taken**
- **Information gathering/case finding & case management**
- **Determination of roles & responsibilities of stakeholders affected by IPAC issue/deficiencies**

Goal of Investigation

- Identify potential sources of GAS infections & transmission
- Prevent further transmissions

Case Classifications for this Investigation

- **Confirmed iGAS case:** lab-confirmation of infection (isolation of GAS from a normally sterile site) with or without clinical evidence of invasive disease
- **Confirmed GAS case:** Lab-confirmed infection of GAS from a non-sterile site (nares, throat, wound, rectal) and presentation of pharyngitis or soft tissue infection)
- **GAS carrier:** Lab confirmation of GAS from a non-sterile site and asymptomatic

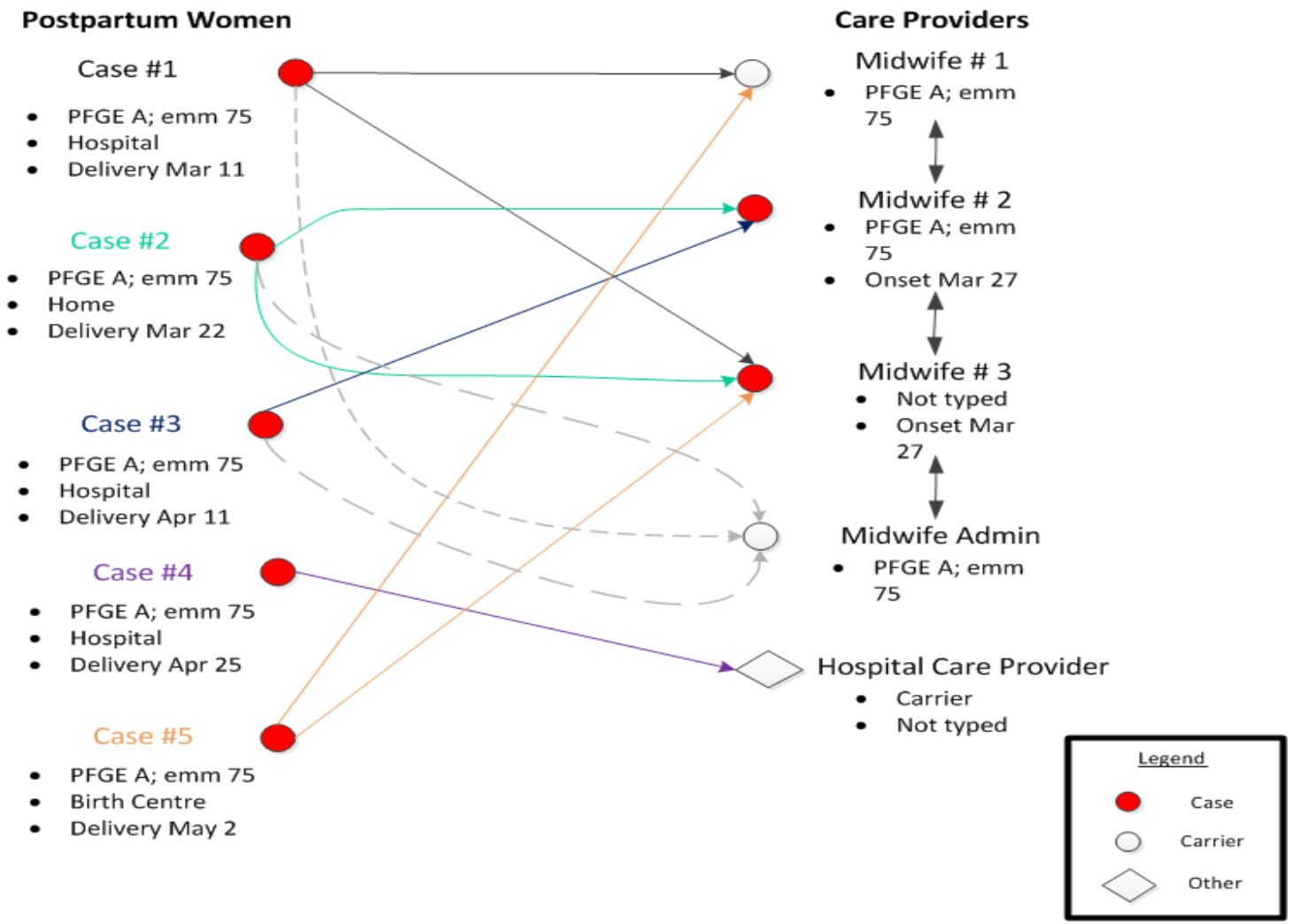
Investigative Actions Taken

- Liaised with local hospitals, surrounding health units and labs to identify any additional potentially linked cases
- Connected with birthing facilities and HCPs who provide perinatal care to women in Ottawa (heightened vigilance, prompt testing & treatment when GAS suspected or confirmed
- Screening of HCPs in affected facilities as per OHA protocol & treatment of those found to be positive
- Inspected facilities & provided direction/IPAC recommendations
- Reviewed IPAC policies & procedures from midwifery practice & birth centre
- Liaised with College of Midwives of Ontario and MOHLTCH Independent Health Facilities Program

Investigation Findings

- 5 postpartum women with same rare strain of GAS (*emm*75) & indistinguishable PFGE pattern, all clients of same midwifery practice and/or hospital (where the midwifery group had privileges) or birthing centre (where all midwifery groups have privileges)
- 3 midwives/1 admin staff were GAS positive (3 with identical strain/PFGE, 1 not available for testing); 2 symptomatic & 2 asymptomatic carriers
- (1) hospital staff was GAS positive but not typed
- All 9 cases were epi-linked with strong laboratory evidence of transmission

Investigation Findings



Question

What factors do you think may have contributed to the transmission of GAS infection amongst these postpartum women and their HCPs?

Inadequate/improper environmental cleaning & disinfection

HCPs working when symptomatic

- Nosocomial transmission to patients or HCWs can occur by large respiratory droplets or direct contact with infected person (or carriers)
- HCWs, including surgeons, OBS, anaesthetists & nurses have been epidemiologically & microbiologically linked to patient cases in several outbreaks
- Improving IPAC practices, identifying and treating HCWs who are symptomatic may prevent transmission of GAS in HC settings
- Treatment of infected persons with effective antibiotics for 24 hours or longer generally eliminates their ability to spread GAS

Inadequate or improper use of PPE

- HCWs can reduce the risk of infection by the consistent use of routine practices (e.g. wearing a surgical mask & eye protection/face shield when performing a procedure where contamination with droplets from the oropharynx is possible) regardless of the setting
- PIDAC *Best Practices for IPAC in Perinatology (in all Health Care Settings that Provide Obstetrical and Newborn Care, Feb 2015)*

Question: What factors do you think contributed to transmission?

Answers:

- HCPs working while symptomatic
- Inadequate or improper use of PPE
- Inadequate hand hygiene
- Lack of IPAC training/significant IPAC knowledge gaps
- Incorrect or inadequate reprocessing; lack of trained & certified staff on-site
- Lack of comprehensive IPAC policies & procedures
- Inadequate or improper cleaning & disinfection in clinical settings

IPAC Concerns Identified Specific to Childbirth

Water Births

- Health care-associated infections have been linked to the use of birthing tanks, whirlpools and whirlpool spas for birthing
- Potential routes of infection include incidental ingestion of the water, sprays & aerosols, direct contact with wounds/non-intact skin
- Must have stringent policies and procedures for cleaning and disinfection of hydrotherapy equipment after each use
- Equipment manufactured for home use (e.g., whirlpool spas, hot tubs) is not designed or constructed for birthing purposes; manufacturers are not obligated to provide cleaning and disinfecting instructions to the same standard that is required for medical equipment
- Careful evaluation of birthing tubs in a health care setting must be conducted before purchase and must involve IPAC

Birthing Tubs that are difficult to clean & disinfect

Birthing Tubs

IPAC Concerns Identified Specific to Childbirth: Home Births

- In Ontario, midwives performed 2,360 home births in fiscal 2008, an increase of 23 per cent in just five years
- Percentage of non-hospital births more than tripled in Canada between 1991 & 2007 but remain under 2% of total births
- Similar rates in Western Europe and USA; approx 1/3 of women give birth at home in Netherlands

Prevention of an IPAC Lapse

- IPAC recommendations provided; ongoing feedback provided to ensure IPAC best practices are implemented & maintained
- Referred to pertinent reference documents/guidelines
- Referred to appropriate organizations (CMO and MOHLTC/IHFP for ongoing support; PHO/RICN for expert advice/educational support)
- Hospital identified some IPAC deficiencies & enhanced their training & auditing
- Active surveillance of staff & clients for further GAS infections X 6 months after outbreak declared over

Positive Outcomes

- Collaborative relationship established with CMO & IHFP
- CMO has formed an IPAC task force with representation from midwives across the province, including from Ottawa
- Midwives participating in IPAC Canada workgroups or committees
- Triggered discussions about use of birthing tubs from IPAC perspective
- Development & improvements in IPAC policies & procedures
- Improved IPAC practices (replacement of equipment, furniture, cleaning & disinfection practices, hand hygiene practice & auditing, use of PPE, reprocessing practices & training)
- Increased awareness & vigilance

Challenges Identified during investigation

- Need for ongoing monitoring of IPAC practices after investigation and/or outbreak is over
- Need to develop criteria for when an IPAC investigation is necessary/parameters of investigation
- Development of disclosure policies re: IPAC lapses (MOHLTC guidance document)
- Community health care facilities have limited resources & expertise to ensure IPAC best practices
- Multiple regulatory bodies in Ontario with lack of standardized IPAC practices
- Lack of comprehensive best practice documents for water and home births

References

- PIDAC documents:
  - *Recommendations on Public Health Management of Invasive Group A Streptococcal (iGAS) Disease, 2014*
  - *Infection Prevention & Control for Clinical Office Practice, 2015*
  - *Best Practices for Cleaning, Disinfection and Sterilization of Medical Equipment/Devices, 2013*
- Ontario Hospital Association/Ontario Medical Association, 2014; *Group A Streptococcal (GAS) Disease Surveillance Protocol for Ontario Hospitals.*
- Steer, Jane A. et al, 2011; *Guidelines for prevention and control of group A streptococcal infection in acute healthcare and maternity settings in the UK.*
- The Facility Guidelines Institute, 2014; *Guidelines for Design & Construction of Hospitals and Outpatient Facilities*

Question

Given this scenario, would you consider doing anything differently, going forward, with IPAC complaints, issues identified in your HU or organization?

IPAC saves lives; you make a difference!