

**Mesothelioma: Quebec's Experience.
The Tumor Registry Data**

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information
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Québec

Presentation Outline

- Pleural mesothelioma : Statistics
 - Incidence
- Context
 - Link with asbestos exposure
 - Surveillance program on asbestos-related diseases
- Validation study
 - Using Quebec's Tumor Registry Data (QTR)

Mesothelioma in Quebec : Incidence (Lebel & Gingras, 2007)

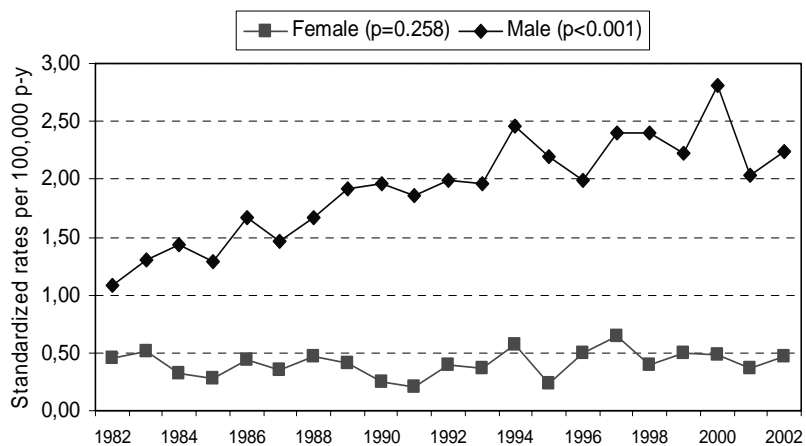
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- Persons:
 - 1982-2002 : 1530 new cases (72.9 per year, range : 37-115)
 - 79% males, average age: 65.9 years
 - s.s. ↑ in average age over period: 62.9 y.o. in 1982-1986 → 67.8 y.o. in 1997-2002
 - 21% females, average age: 64.5 years
 - No change in average age over period: 64.7 y.o. → 64.5 y.o. (non s.s.)
- Relative survival, *pleural cancer*, 1993-95:
 - 1-year ≈ 33% / 5-year ≈ 9%

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Incidence (Lebel & Gingras, 2007)

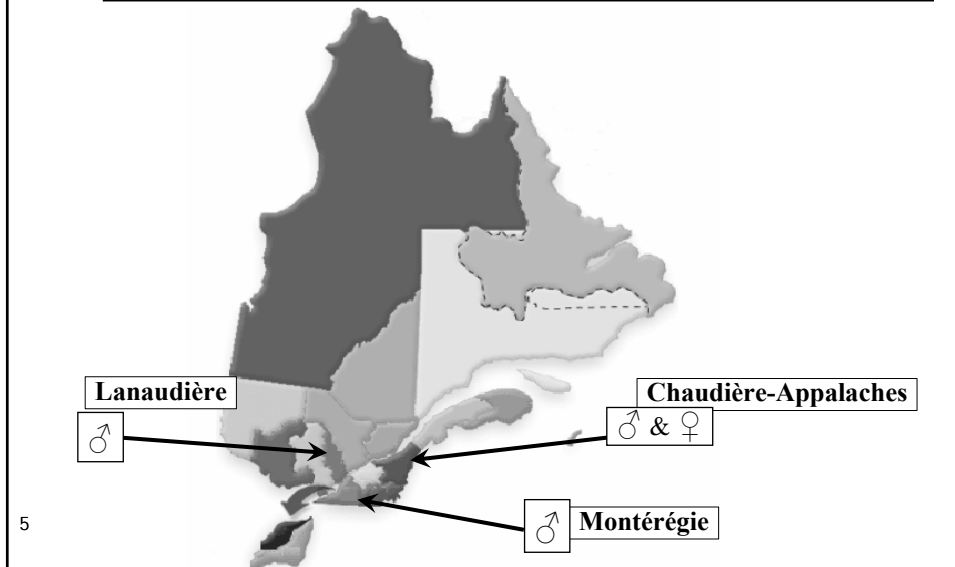
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Incidence (Lebel & Gingras, 2007)

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Link with asbestos

- 1960, South Africa : Wagner, Sleggs & Marchand
- Etiology:
 - Asbestos : 2 groups with different potency, amphiboles & serpentine rocks (chrysotile, mined in Quebec);
 - Other mineral fibers/particles? Radiotherapy (different latency). Simian Virus SV40?
- Occupations/Sectors
 - Mines, shipyards, asbestos-cement industry, etc.
 - Insulators, plumbers & pipefitters, construction workers, electricians, etc.
- Environmental exposures
 - Living with an asbestos worker, residing near an asbestos manufacturing plant, etc.

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Context

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- « *Politique d'utilisation accrue et sécuritaire de l'amiante chrysotile au Québec* » (2002):
 - Public health mandate: Development of a surveillance program for asbestos-related exposures and diseases
- Surveillance
 - "Systematic ongoing collection, collation and analysis of data and the timely dissemination of information to those who need to know so that action can be taken" (WHO)
- Tools : health & disease statistics

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Context

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- Main sources of data:
 - Quebec's Tumor Registry (QTR)
 - Exhaustive; unknown quality; no information on jobs
 - Commission de la santé et de la sécurité du travail du Québec (CSST, Workmen's Compensation Board)
 - Non exhaustive; known quality; complete job history
 - Prerequisite to ensure quality : case validity
 - Are these **real** cases? Are these **all** the cases?

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Context

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- Previous INSPQ study, 1982-1996 data
 - Mesothelioma cases compensated by the CSST = 22.1% of cases from QTR (or, QTR numbers \approx 4.5 times CSST numbers)
 - Questions that need answers...
 - Does QTR overestimate number of cases? (false positives) – **Real** cases? **All** cases?
 - Do CSST files underestimate number of cases? (less claims than real cases) – **Real** cases? **All** cases?

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Study aim & objectives

Validation of QTR data for the purpose of mesothelioma surveillance

Specific objectives

- Check the correctness of mesothelioma diagnoses as noted in the QTR, with clinical chart review and histopathological review;
- Estimate the importance of an eventual overestimation (« false positives »), in the QTR data; and
- Describe the diagnostic process of cases of mesothelioma

N.B. – Impossible to explore underascertainment

- Link with asbestos exposure purposefully not explored

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Methods

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- **Design:** Descriptive study (medical chart review)
 - **Identification** of all new cases of pleural mesothelioma (ICD-9 163, morphology 905) registered in 2001 & 2002, in the QTR
 - Authorisation from several Ethics committees
 - Medical chart **summary** for all cases (notes + photocopies)
 - **Family consent** sought (for access to histological slides and tissue blocks, x-rays and scans)

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Methods

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- **New revised "diagnosis"**, 5 categories definite/probable, possible, unlikely, not a mesothelioma, impossible to classify
 - **Pathological review** of histopathological material (new IHC stains will be performed if necessary) & 1st coding by pathologist
 - **Clinical review** of chart summaries by 2 specialists (chest physician & radiologist) during group working sessions & 1st coding

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Review process

- Satisfactory pathological material / slides with adequate IHC staining :
 - Pathologist's 1st code prevails when « Definite/probable" or "Not a mesothelioma"
 - When pathologist's code is "Unlikely", "Possible" or "Impossible to classify", discussion with other experts
- Unsatisfactory pathological material /absence of pathological material or unsatisfactory/incomplete chart information:
 - Coding of each expert has equal weight : discussion

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Process results

Informations	Patients	
	n	%
Subjects identified from QTR 2001-02	187	100.0
Subjects whose family was contacted	187	100.0
<i>Consent received</i>	119	63.6
<i>Not traced</i>	32	17.6
<i>No reply</i>	20	10.2
<i>Refusal</i>	16	8.6
Chart summaries available for review	187	100.0
Histopathological material available	106/119	89.1
Medical imaging material available	118/187	63.1

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Cases' characteristics (QTR data)

Characteristics	Males		Females		Total	
	n	%	n	%	n	%
Sex	152	81.3	35	18.7	187	100
Age at diagnosis (years)	68.1		62.7		67.1	
Average	66.4-69.7		58.2-67.1		65.5-68.6	
95% CI	68.0		63.0		68.0	
Median	68.0		63.0		68.0	
Type of mesothelioma - QTR						
<i>Not specified</i>	95	62.5	16	45.7	111	59.4
<i>Fibrous</i>	4	2.6	0	--	4	2.1
<i>Epithelioid</i>	44	28.9	17	48.6	61	32.6
<i>Biphasic</i>	9	5.9	2	5.7	11	5.9

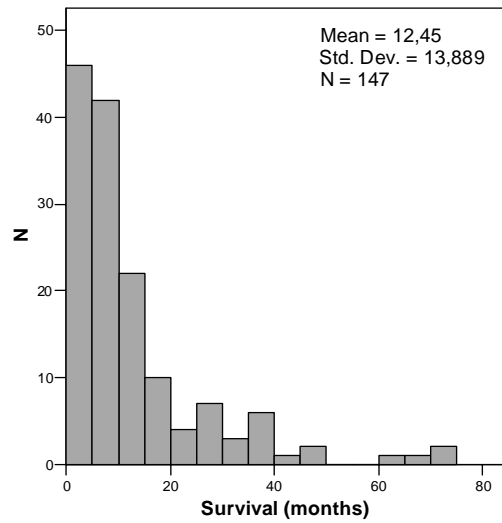
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Clinical characteristics

Characteristics	Males		Females		Total	
	N	%	N	%	n	%
Tumor in right side	88	57.9	18	51.4	106	56.7
Pleural plaques	48	31.6	2	5.7	50	26.7
	Mean +95% CI		Mean +95% CI		Mean +95% CI	
Survival (months), n=147 (<i>Approximate onset</i>)	10.9 8.9-13.0		19.5 11.0-28.1		12.4 10.2-14.7	

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Approximate survival



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First signs & symptoms

Presentation	Males		Females		Total	
	N	%	N	%	n	%
Dyspnea	92	60.5	26	74.3	118	63.1
Chest pain	70	46.1	21	60.0	91	48.7
Cough	55	36.2	10	28.6	65	34.8
Fatigue	50	32.9	9	25.7	59	31.6
Weight loss	41	27.0	4	11.4	45	24.1

Fortuitous finding	7	4.6	2	5.7	9	4.8
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Medical chart information

Available information	Males		Females		Total	
	N	%	N	%	n	%
Tobacco consumption	146	96.0	31	88.6	177	94.6
Mention of job ¹	142	93.4	21	60.0	163	87.2
Mention of asbestos ²	106	69.7	13	37.1	119	63.6
Mention of reference to CSST ²	70	46.1	4	11.4	74	39.6

¹ At least 1 job noted

² Anywhere in the chart

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Concordance (preliminary results) Chest physician/radiologist – pathologist

Chest MD /radiologist	Pathologist					Total
	Definite /probable	Possible	Unlikely	Not a meso	Impossible to classify	
Definite/ probable	25	5	0	0	1	31
Possible	7	4	3	0	2	16
Unlikely	0	2	2	0	0	4
Not a meso	0	0	0	1	0	1
Impossible to classify	0	1	0	0	2	3
Total	32	12	5	1	5	55

Exact concordance : 61.8% / ± 1 category: 80.0%

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Validation with QTR data – 2001-2002 (preliminary results)

Clinical review only, no pathology

Code	Males		Females		Total	
	N	%	N	%	n	%
Definite/probable	76	50.0	19	54.3	95	50.8
Possible	38	25.0	7	20.0	45	24.1
Unlikely	16	10.5	1	2.9	17	9.1
Not a meso	11	7.2	5	14.3	16	8.6
Impossible to classify	11	7.2	3	8.6	14	7.5
Total	152	100	35	100	187	100

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Mesothelioma rates estimates – 2001-2002 (preliminary results – Clinical review)

Definite/Probable/Possible mesotheliomas

	Males	Females	Total
Numbers QTR	152	35	187
Numbers Study	114	26	140
Rate/100,000 QTR	2.151	0.472	1.292
Rate/100,000 Study	1.613	0.351	0.967
Overestimation	33.3%	34.5%	33.6%

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Work to do...

- Finish pathological review, with additional IHC staining for less than half of available tissue (≈ 30 cases)
- Final consensus meetings
- Data cleaning & analysis for accessory information (e.g. preventive irradiation of biopsy site, type of treatment proposed, etc.)

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Conclusion

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- Characteristics of mesothelioma cases from the QTR are consistent with known epidemiology (age, sex; type of tumour ?)
- Some overestimation of the number of mesothelioma cases in the QTR ($\approx 34-97\%$)
- Compensation cases would correspond $\approx 43-63\%$ of "real" cases

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Conclusion

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- Validation rates comparable to those of other studies in countries where mesothelioma registers exist:
 - 33 - 68% confirmed
 - 6 - 24% possible/undetermined
 - Clinical/pathological concordance comparable to literature numbers:
 - Between-pathologists concordance : 37.6% to 83.6% (average: 69.9%)

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Final words

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QTR data

- Overestimation? *Yes, probably*
- Underascertainment?
*Not addressed in this study, but **probable***
 - Pleural cancer, other morphology; lung cancer (adenocarcinoma)
 - Previous study showed CSST mesothelioma cases coded differently in QTR

CSST data

- Overestimation? *No, probably*
- Underascertainment? *Probably...*
 - Not every worker requests compensation
 - Some may not be insured
 - Unknown or forgotten exposures (MDs & workers)

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Final words...

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- Both QTR and CSST data are worth considering for a mesothelioma surveillance program
- We still have to emphasize the importance of taking an occupational history (medical students, residents & MDs)
- Workers have a right to compensation and it is worth encouraging them or their family to submit a claim

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Research Team

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